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# **ARTICLE**

## **ISSUES OF PROPERTY, ETHICS AND CONSENT IN THE TRANSPLANTATION OF FETAL REPRODUCTIVE TISSUE**

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### **I. INTRODUCTION**

In January 1994, a team of doctors led by Roger Gosden at the University of Edinburgh announced the successful transplantation of the ovaries of fetal sheep to adult animals, a procedure that could soon be

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carried out on humans.<sup>1</sup> Reaction was immediate and emotional. The idea that fetal reproductive tissue could be used to create "grandmothers who were never mothers" and the "genetic offspring of a dead fetus"<sup>2</sup> raised ontological and ethical questions that elicited an impassioned response from the public, European governments, and the United States legal community.<sup>3</sup>

The controversy over transplantation of fetal germ cells is part of a broader ethical debate on the use of fetal tissues in medical treatment and research. Transplanted fetal tissue has been recently used to treat Parkinson's disease<sup>4</sup> and diabetes.<sup>5</sup> But the use of reproductive fetal tissues raises "a new set of ethical and legal issues"<sup>6</sup> on which there is little consensus in this country.

This Article discusses some of the biological, legal, and ethical implications of transplanting fetal germ cells. Part II explains how the technology differs from current infertility treatments. Part III discusses the regulatory and ethical issues involved in the transplantation of fetal reproductive tissue. Part IV sets forth in detail several doctrines of property law on which consent to donate fetal tissue may be based.

## II. THE TECHNOLOGY

### A. Current Methods for Treating Infertility

The treatment of infertility<sup>7</sup> has been a booming business for more than a decade.<sup>8</sup> The course of treatment for couples who cannot conceive

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1. Eugene Robinson, *Furor Over Fertility Options: Should Eggs from Fetuses or Cadavers Be Used to Help Women Become Pregnant?*, WASH. POST, Jan. 11, 1994, at 6.

2. Roger C. Gosden, *Transplantation of Fetal Germ Cells*, 9 J. ASSISTED REPRODUCTION & GENETICS 118, 122 (1992).

3. Gina Kolata, *Reproductive Revolution is Jolting Old Views*, N.Y. TIMES, Jan. 11, 1994, at A1.

4. This use was suggested in Ignacio Madrazo et al., *Open Microsurgical Autograft of Adrenal Medulla to the Right Caudate Nucleus in Two Patients with Intractable Parkinson's Disease*, 316 NEW ENG. J. MED. 831 (1987). For a recent analysis, see C.G. Goetz, *Fetal-Tissue Transplantation for Parkinson's Disease*, 329 NEW ENG. J. MED. 1498 (1993).

5. Marlene Cimons & Thomas Maugh, *After 5-Year Wait, Scientists are Set to Resume Research on Fetal Cells*, L.A. TIMES, Jan. 26, 1993, at A5.

6. Gosden, *supra* note 2, at 122.

7. Infertility is a temporary condition, usually due to age, but often due to unknown causes. Sterility is a permanent condition, frequently due to known causes such as menopause or removal of the ovaries. See Lawrence J. Kaplan & Carolyn M. Kaplan, *Natural Reproduction and Reproduction-Aiding Techniques*, in *THE ETHICS OF REPRODUCTIVE TECHNOLOGY* 30 n.7 (Kenneth D. Alpern ed., 1992) (difference between sterility and infertility); Michael Freeman, *The Unscrambling of Egg Donation*, in *LAW REFORM AND HUMAN REPRODUCTION* 273 (Sheila McLean ed., 1992) (causes of sterility). In this Article I will refer to infertility and sterility collectively as "infertility."

8. See Ellen Hopkins, *Tales from the Baby Factory*, N.Y. TIMES, Mar. 15, 1992, at 40.

a child without medical assistance usually proceeds from the least invasive to the most invasive procedure.<sup>9</sup> For instance, artificial insemination is available when sperm dysfunction causes infertility.<sup>10</sup> Depending on the cause of infertility—and the financial resources of the infertile couple—treatment may proceed to in vitro fertilization ("IVF").<sup>11</sup>

IVF was developed in the late 1970s.<sup>12</sup> "In vitro" literally means "in glass,"<sup>13</sup> and gives rise to the familiar term "test tube baby."<sup>14</sup> IVF involves mixing sperm and ova in a petri dish, and implanting the resulting embryo into the womb of the gestational mother.<sup>15</sup> The ova used in the process may be harvested from either the gestational mother or a donor genetic mother. Donor ova are necessary when a woman seeks IVF because her own ova are too old or otherwise incapable of fertilization.<sup>16</sup>

Today, IVF is widely practiced. However, it has a disappointing success rate of less than one in four.<sup>17</sup> In addition, its availability is limited by a severe lack of willing egg donors.<sup>18</sup> Egg donation is time-consuming, painful, invasive, and dangerous.<sup>19</sup> Consequently, egg donor services are expensive, commonly costing thousands of dollars.<sup>20</sup> A

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9. BARBARA KATZ ROTHMAN, ENCYCLOPEDIA OF CHILDBEARING 197 (1993) (entry under "Infertility"). The least invasive is listed as using the "correct" method of sexual intercourse. *Id.* Unfortunately, the author does not elaborate on what this might be.

10. *Id.*

11. *Id.*

12. The first IVF baby, Louise Brown, was born in 1978 under the care of British doctors Steptoe and Edwards. Kaplan & Kaplan, *supra* note 7, at 25.

13. *Id.*

14. Hopkins, *supra* note 8, at 40.

15. Kaplan & Kaplan, *supra* note 7, at 24, 26.

16. Freeman, *supra* note 7, at 273.

17. While only 10% of all couples enrolled in IVF programs actually bring home babies, couples who are "good candidates" for IVF may have a one in three chance of successful pregnancy. Ellen Hopkins, *Behind the IVF Hype: A Shocking Failure Rate*, MED. ECON., June 1, 1992, at 152. The reported success rates of individual clinics are, of course, instrumental to their financial health, and may therefore be over-reported. This concern prompted Representative Ron Wyden of Oregon to sponsor a bill mandating uniform reporting of success rates. Melinda Beck et al., *How Far Should We Push Mother Nature?*, NEWSWEEK, Jan. 17, 1994, at 54, 55.

18. Robinson, *supra* note 1, at 6.

19. ROTHMAN, *supra* note 9, at 120 (entry under "Egg Retrieval"). Some women have died from the laparoscopy procedure, whose danger stems primarily from the need for general anesthesia. *Id.* A new non-surgical ultrasound procedure, which is replacing laparoscopy, is less dangerous because it only requires local anesthesia. Kaplan & Kaplan, *supra* note 7, at 25. However, the ultrasound procedure still requires hospitalization and hormonal injection. *Id.*

20. See Hopkins, *supra* note 8, at 40. In comparison, the fee for the average sperm donation is about \$50. Sam Howe Verhovek, *New York, in Move to Bar AIDS, Puts New Limits on Sperm Banks*, N.Y. TIMES, Oct. 4, 1989, at A1.

recent article in the *New England Journal of Medicine* estimated the "cost of a successful delivery" using IVF to range from \$44,000 to \$800,000.<sup>21</sup>

### B. Fetal Germ Cell Transplants

The drawbacks of IVF have motivated medical researchers like Doctor Gosden to seek alternative infertility treatments.<sup>22</sup> Gosden's fetal germ cell transplant procedure offers several advantages. First, it relies on fetuses, of which there is an ample supply from elective abortion. At a stroke, Gosden's procedure could transform the contours of infertility treatment from extreme scarcity—expensive and dangerous egg donation—to extreme abundance—each fetus painlessly providing one or more women with a lifetime of fertility. Second, the costs of Gosden's procedure, while necessarily still speculative for human treatment, may rival or fall below the cost of a single round of IVF. Finally, successful transplantation provides the recipient with a lifetime of fertility; subsequent pregnancies can be achieved without medical intervention.

Transplantation of fetal germ cells differs in method and result from existing fertility treatments. Unlike in IVF, conception does not take place *in vitro*, but *in vivo*. The fetal ovary, once transplanted into the recipient, grows rapidly to maturity and begins producing ova, entirely replacing the missing or non-functional ovary.<sup>23</sup> Ovulation and conception then take place naturally—in the Fallopian tube rather than in the laboratory.<sup>24</sup> The ova produced carry the DNA of the fetal donor, not the adult recipient.<sup>25</sup>

In contrast to existing fertility treatments, which are simply temporary expedients to conceive,<sup>26</sup> fetal ovary transplants provide health benefits to the recipient. Healthy ovaries perform both a generative function of oocyte maturation and a vegetative function of estrogen and progesterone production.<sup>27</sup> In women who suffer from "gonadal dysgenesis," neither function is performed.<sup>28</sup> This results in both lifelong sterility and a variety of health problems associated with

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21. Peter J. Neumann et al., *The Cost of a Successful Delivery with In Vitro Fertilization*, 331 NEW ENG. J. MED. 239, 239 (1994). These figures are somewhat misleading on their face because they are adjusted in a variety of ways. They are discounted by the success rate and stratified by number of cycles. A complete explanation is provided in the "Methods" section of the article. *Id.* at 241-42.

22. Gosden, *supra* note 2, at 118-19.

23. *Id.* (Transplanted sheep ovaries, while remaining smaller in size, acquired adult morphology within a few weeks).

24. *Id.*

25. See Robinson, *supra* note 1, at 6.

26. *Id.*

27. DICTIONARY OF OBSTETRICS AND GYNECOLOGY 175 (1988) (entry under "Ovarium").

28. See *id.* (entries under "Dysgenesis, gonadal" and "Dysgenesis, pure gonadal").

low estrogen levels, such as cardiovascular disease and bone demineralization.<sup>29</sup> Women who have gone through menopause or who have undergone a complete hysterectomy also experience sterility and estrogen-deficiency ailments.<sup>30</sup> Although health problems stemming from insufficient estrogen can be treated with hormone injections, such therapy does not restore fertility.<sup>31</sup> These women may benefit from fetal reproductive tissue transplants not only by becoming fertile, but also by permanently regaining the hormonal production and regulation of a functioning ovary.<sup>32</sup> In contrast, when such women undergo existing fertility treatments, their estrogen levels return to abnormally low levels once the pregnancy is over, and there is no expectation of continuing health benefits.<sup>33</sup>

Like most mammals, female humans produce all of their "germ cells" or oocytes well before birth.<sup>34</sup> In fact, the number of oocytes dramatically decreases during late gestation and childhood.<sup>35</sup> Female midterm fetuses have several million oocytes,<sup>36</sup> newborns around one million,<sup>37</sup> and pubescents approximately 250,000.<sup>38</sup> These remaining quarter of a million oocytes are sufficient for the average reproductive life span.<sup>39</sup> Because nature supplies the fetus with sufficient oocytes to survive the process of pre-natal and childhood attrition, one fetus, at least theoretically, can provide enough germ material for several mature women.<sup>40</sup> If full ovary transplants were performed, a fetus could supply one or two adult women with tissue to overcome sterility and hormonal deficiency.

To date, fetal ovary transplants have only been carried out on animals. Roger Gosden and his team are, of course, optimistic that the

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29. Gosden, *supra* note 2, at 118.

30. Harinder Grewal, *The Good and Bad Cholesterol*, 14 TOTAL HEALTH 44 (1992); Most Women "Medical Rebels" About Taking Hormones, VANCOUVER SUN, Sept. 20, 1994, at B2.

31. Gosden, *supra* note 2, at 118.

32. *Id.* at 118-19.

33. *Id.* at 118.

34. *Id.*

35. *Id.*

36. T. G. Baker, *A Quantitative and Cytological Study of Germ Cells in Human Ovaries*, 158 PROC. ROYAL SOC'Y 417 (1963). The number of oocytes increases rapidly from 600 thousand at two months of gestation to 6 million to 7 million at five months. *Id.* It should be noted, in light of the discussion of *Roe v. Wade* in Part III.A, *infra*, that two months is long before fetal viability and five months is near the current point of viability. See Dena Kleiman, *When Abortion Becomes Birth: A Dilemma of Medical Ethics Shaken by New Advances*, N.Y. TIMES, Feb. 15, 1984, at B1.

37. Baker, *supra* note 36, at 417.

38. Gosden, *supra* note 2, at 118.

39. *Id.*

40. *Id.* at 119.

procedure will work on humans.<sup>41</sup> Gosden states, "These prospects for germ cell transfer are not merely wishful thinking but are borne out by a large body of critical experimental evidence in animals."<sup>42</sup> While rejection of the transplanted tissue by the recipient's immune system is often a problem with human transplants,<sup>43</sup> it is unlikely to prevent fetal tissue transplants for two reasons. First, rejection of non-fetal tissue has been successfully minimized by treatment with immunosuppressants such as cyclosporine<sup>44</sup> and monoclonal antibodies.<sup>45</sup> Second, many fetal tissues appear to be "immunologically privileged," or especially resistant to rejection.<sup>46</sup> While fetal ovaries have yet to be tested,<sup>47</sup> they may well be similarly privileged.

However, transplantation of ova from aborted fetuses raises another medical issue. The requirement that an individual survive through childhood and adolescence in order to reproduce helps to ensure that defective genetic sequences are not passed on. The genes of ova taken from an aborted fetus have not undergone this test. Thus, pregnancies resulting from fetal ovary transplants may have an increased risk of birth defects and other genetically transmitted diseases. Gosden points out that many of the worst genetically transmitted diseases can be tested at the fetal stage<sup>48</sup> and suggests that fetal reproductive tissue may be screened to prevent the transmission of defective genetic sequences. However, this argument is not convincing. First, it assumes too much knowledge on the part of scientists; many genetic defects are certainly still unknown or unidentified.<sup>49</sup> Second, it might be difficult to test ova, because some genetic disorders are only expressed as the result of the

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41. *Id.*

42. *Id.*

43. Animal ovarian transplants, routine for many years, are not prone to rejection because the donors and recipients are immunologically identical or syngeneic. *Id.*

44. W.A. Baumgartner et al., *Heart and Lung Transplantation: Program, Development, Organization, and Initiation*, 4 J. HEART TRANSPLANTATION 197 (1985).

45. D.J. Norman, *An Overview of the Use of Monoclonal Antibody OKT3 in Renal Transplantation*, 20 TRANSPLANT PROC. 1248 (1988).

46. See T.J. Gill & H.W. Kunz, *The Role of Regional Differences in the Major Histocompatibility Complex in the Production During Pregnancy of a Serum Factor Inhibiting Macrophage Migration*, 7 J. IMMUNOGENETICS 157 (1980); Warren Leary, *U.S. Panel Backs Research Use of Fetal Tissue From Abortions*, N.Y. TIMES, Sept. 17, 1988, at 1.

47. Gosden, *supra* note 2, at 122.

48. *Id.*

49. See Rex Dalton, *Born with a Broken Heart; Detectives Search for Gene That Causes Abnormalities in Family's Boys*, SAN DIEGO UNION-TRIBUNE, Dec. 1, 1993, at E1; Jim Morris, *Baby Tragedy has No Bounds; Woodlands, Like the Valley, Sees Infants Missing Brains*, HOUS. CHRONICLE, Aug. 2, 1992, at 1.

fully combined gene sequences of both parents.<sup>50</sup> Third, it leaves the door open for eugenic selection, which is widely rejected on moral grounds.<sup>51</sup>

### III. LEGAL AND ETHICAL ISSUES FOR FETAL REPRODUCTIVE TISSUE TRANSPLANTS

#### A. Regulatory Issues

Several European governments have taken a strong stand regarding treatment of infertility. The United Kingdom has already banned not only the use of fetal ovarian tissue, but the use of fetal eggs for IVF—a procedure that is not yet available.<sup>52</sup> France and Italy are calling for a broad ban on all reproductive technologies that will restore fertility to post-menopausal women.<sup>53</sup>

In contrast, there is currently little regulation of medically assisted reproduction in the United States.<sup>54</sup> The only federal statute that has specifically addressed the fertility industry is the Fertility Clinic Success Rate and Certification Act of 1992.<sup>55</sup> The Act is primarily directed toward consumer protection, but also authorizes the Centers for Disease Control to develop standards for certification of fertility clinics,<sup>56</sup> suggesting that federal regulation may be imminent. However, if human fetal germ cell transplants were feasible today, most of the relevant regulatory law would lie in state statutory schemes pertaining to the general use of fetal tissue in therapeutic transplantation.

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50. See Robert Steinbrook, *Healing Genes: Medicine's Attack of Genetic Diseases*, L.A. TIMES, Nov. 1, 1993, at A1 (discussing cystic fibrosis).

51. See George J. Annas, *Genetics and the Law: Mapping the Human Genome and the Meaning of Monster Mythology*, 39 EMORY L.J. 629, 645-46 (1990); see generally DANIEL KEVELS, IN THE NAME OF EUGENICS: GENETICS AND THE USES OF HUMAN HEREDITY (1985).

52. Magie Verrall, U.K. Bans Use of Fetal Eggs in IVF, 370 NATURE 241 (1994). In the current state of the art, oocytes will not mature in vitro. Therefore, oocytes must be harvested from adult ovaries upon maturation. Fetal eggs are therefore not yet viable for IVF. Sir Colin Campbell, chairman of the Human Fertilization and Embryology Authority, described the technology as "still 10-20 years away from being feasible in humans." *Id.* The U.K. ban essentially prohibits any use of fetal tissue in infertility treatment. *Id.* Roger Gosden called the move "misinformed." David Dickson, U.K. Parliament Passes Surprise Ban on Fetal Embryos in IVF, 368 NATURE 676 (1994).

53. An Inconceivable Breakthrough? Science Poised to Create Offspring from Aborted Fetus, CHI. TRIB. Jan. 6, 1994, at 14.

54. See Beck, *supra* note 17, at 55 ("There are no federal rules or guidelines governing the estimated 300 assisted-fertility clinics operating nationwide . . .").

55. Pub. L. No. 102-493 (codified at 42 U.S.C.A. §§ 201, 263(a)(1-7) (Supp. 1994)).

56. *Id.*

## 1. THE FEDERAL MORATORIUM

The federal government currently controls the extent of fetal tissue transplantation solely through its allocation of research funding. Federal law explicitly defers regulation of the use of fetal tissue to the states.<sup>57</sup> However, in 1988, the Reagan administration injected its anti-abortion political philosophy into the field of science funding by taking a stand against fetal tissue implantation. In that year, the National Institutes of Health ("NIH") began a voluntary moratorium, banning the use of tissue from elective abortions in fetal tissue research. It did so with the explicit intention of delaying further research pending discussion of the legal and ethical issues involved.<sup>58</sup> In September of the same year, an NIH Advisory Committee voted unanimously to recommend that the moratorium be lifted.<sup>59</sup> However, the moratorium remained in place, despite the Advisory Committee's recommendation.<sup>60</sup> President Bush never lifted the ban while he was in office.

Although the Reagan/Bush moratorium was a lightning rod for controversy, it did not halt all fetal tissue research. Because the moratorium only applied to federally funded research, private research could—and did—continue during the moratorium.<sup>61</sup> In addition, an exception to the moratorium that permitted funding for fundamental scientific research allowed the NIH to spend \$45 million on fetal tissue research while the moratorium was in place.<sup>62</sup> Also, the moratorium did not affect research in Europe and Britain—where Gosden's team developed its new procedure.

In January 1993, on his second day in office, President Clinton lifted the moratorium on federally funded fetal tissue research.<sup>63</sup> Congressional hearings on the regulation of fetal tissue research soon followed.<sup>64</sup> In March 1993, Congress passed the National Institutes of Health

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57. 45 C.F.R. § 46.210 (1992) ("Activities involving the dead fetus, macerated fetal material, or cells, tissue, or organs excised from a dead fetus shall be conducted only in accordance with any applicable State or local laws regarding such activities").

58. Gina Kolata, *Federal Agency Bars Implanting of Fetal Tissue*, N.Y. TIMES, Apr. 16, 1988, at A1.

59. National Institutes of Health, Human Fetal Tissue Transplantation Research, Report of the Advisory Committee to the Director 7 (Dec. 14, 1988); Leary, *supra* note 46, at 1.

60. *Fetal Tissue Study Ban Retained*, L.A. TIMES, Oct. 16, 1989, at P2; Emanuel Thorne & Julia Paradise, *Politicians in the Lab . . . Life, Death and Debate: The Ban on Fetal Tissue Research*, WASH. POST, June 23, 1991, at B3.

61. Thorne & Paradise, *supra* note 60, at B3.

62. Sharon Begley et al., *Cures from the Womb*, NEWSWEEK, Feb. 22, 1993, at 48.

63. Susan Brink, *Top 10 Health Stories to Watch*, U.S. NEWS & WORLD REP., May 10, 1993, at 81.

64. Health and the Environment Subcommittee of the House Energy and Commerce Committee, §§ 111-13, Feb. 3, 1993.

Revitalization Act.<sup>65</sup> This Act amended the Public Health Service Act to authorize research on human fetal tissue transplantation without regard to whether the tissue is obtained from a spontaneous or induced abortion.<sup>66</sup>

It is unlikely that the debate concerning federal funding of fetal tissue transplants is over. The current administration has merely sidestepped the issue by lifting the NIH moratorium. States are still free to legislate against the use of fetal tissue, and, as demonstrated by the federal moratorium, NIH funding of fetal tissue research may be only as healthy as the tenure of the current administration.

The influence of politics on federal funding of research addressing human reproduction was underscored quite recently. On December 3, 1994, in the wake of a resounding Democratic electoral defeat,<sup>67</sup> President Clinton ruled out using federal money to support work on human embryos specifically created for research purposes.<sup>68</sup> The President, citing "profound ethical and moral questions" associated with the subject, refused to follow the contrary recommendation of a National Institutes of Health panel.<sup>69</sup> Nevertheless, the President's order did not specifically bar federal support for research carried out on left-over embryos from IVF clinics.<sup>70</sup>

## 2. STATE LAWS REGARDING THE USE OF FETAL TISSUE

State laws regarding fetal tissue donation address two issues: who may give consent for donation, and what may be done with the tissues once they are donated. The Uniform Anatomical Gift Act ("UAGA"), which has been adopted in every state, permits either parent to donate a dead fetus.<sup>71</sup> The circuitous path by which the UAGA is applied to fetal donation demonstrates that the act was not written with fetal tissue transplants in mind. The UAGA defines a "decedent" to include a dead or stillborn fetus.<sup>72</sup> It then specifies a list of relatives who are authorized

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65. Pub. L. No. 103-324, § 112, 107 Stat. 133 (codified at 42 U.S.C. § 289g-2 (Supp. 1994)).

66. Bill Tracking Report, *Research on Human Fetal Tissue Amendments Act of 1993*, Mar. 2, 1993.

67. Warren Leary, *Clinton Rules Out Federal Money for Research on Human Embryos Created for That Purpose*, N.Y. TIMES, Dec. 3, 1994, at 8.

68. *Id.*

69. *Id.*

70. *Id.*

71. UNIF. ANATOMICAL GIFT ACT (1987) §§ 1(2), 3(a)(3), 8A U.L.A. 30, 40 (1993) [hereinafter UAGA]; UNIF. ANATOMICAL GIFT ACT (1968) §§ 1(b), 2(3), 8A U.L.A. 94, 99 (1993). The 1987 revision of the Act has been adopted in 15 states. The 1968 Act is in force in the other 35 states and in the District of Columbia. *Table of Jurisdictions Wherein Act Has Been Adopted*, 8A U.L.A. 19, 63 (1993).

72. UAGA (1987) at § 1(2).

to donate the body of a "decedent."<sup>73</sup> That list contains (1) the "spouse," (2) an "adult son or daughter"—none of which a fetus will have—and finally, (3) "either parent."<sup>74</sup>

State statutes defining the legal uses of an aborted fetus vary widely in form and purpose. The Arkansas statute exemplifies those aimed narrowly at public health and sanitation: it directs that "the fetal remains and all parts thereof" should be "disposed of in a fashion similar to that in which other tissue is disposed."<sup>75</sup> Twenty-five states have enacted statutes specifically authorizing the donation of fetal tissue for therapeutic use.<sup>76</sup> Only a few states have passed statutes prohibiting the use of fetuses.<sup>77</sup>

State statutes that set moral or ethical standards for disposal of fetal tissue have consistently failed constitutional scrutiny. In *City of Akron v. Akron Center for Reproductive Health*,<sup>78</sup> the United States Supreme Court struck down as impermissibly vague a local ordinance that stated, "Any physician who shall perform or induce an abortion upon a pregnant woman shall insure that the remains of the unborn child are disposed of in a humane and sanitary manner."<sup>79</sup> Likewise, a Louisiana statute requiring the "decent burial" of the "remains of the unborn child" was struck down by a federal district court as not narrowly tailored to serve a compelling state interest.<sup>80</sup>

### 3. CONSTITUTIONAL LIMITATIONS ON THE REGULATION OF FETAL TISSUE USE

Some supporters of fetal tissue research take comfort in the constitutional guarantees of *Roe v. Wade*.<sup>81</sup> They believe the *Roe* line of authority implies that the state cannot prevent a woman from conceiving, whatever the purpose of conception.<sup>82</sup> Moreover, under *Roe* the state

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73. *Id.* at § 3(a).

74. *Id.*

75. ARK. STAT. ANN. § 82-436 (Supp. 1985).

76. For a list, see Note, *Fetal Tissue Transplants: A Proposal to Amend the Uniform Anatomical Gift Act*, 1989 U. ILL. L. REV. 1095, 1108 n.132.

77. For a list of the 8 states and the relevant statutes, see *id.* at 1109 n.138.

78. 462 U.S. 416 (1983).

79. *Id.* at 424 n.7 (citing AKRON, OHIO, ORDINANCES § 1870.16 (1978)).

80. See Margaret S. v. Edwards, 488 F. Supp. 181 (E.D. La. 1980). The statute was amended in response to this decision, but fared no better after its amendment. See Nicolas P. Terry, *Alas! Poor Yorick! I Knew Him Ex Utero: The Regulation of Embryo and Fetal Experimentation and Disposal in England and the United States*, 39 VAND. L. REV. 419, 427 (1986).

81. 410 U.S. 113 (1973).

82. *Carey v. Population Services International* protected the "decision whether or not to beget or bear a child." 431 U.S. 678, 685 (1977).

cannot prevent a woman from terminating a pregnancy until fetal viability, when the state's interest in fetal life becomes compelling.<sup>83</sup>

However, the guarantees of *Roe* are legally and technically precarious. *Roe* protects access to abortion based on the fundamental right of privacy.<sup>84</sup> Although the result of *Roe* may be desirable, its definition of the right to choose whether to bear a child as a part of the privacy right subjects it to the vagaries of jurisprudence on non-textual rights.<sup>85</sup> For this reason, and because of the political controversy that surrounds the abortion issue, even supporters of *Roe* remain concerned that it will be overturned.<sup>86</sup>

Moreover, the facts underlying *Roe* are becoming outdated. *Roe* holds that the state's interest in protecting fetal life does not become compelling until the fetus is "viable."<sup>87</sup> This line, drawn in *Roe* and affirmed in *Planned Parenthood v. Casey*,<sup>88</sup> is shifting as technology advances. In *City of Akron*, Justice O'Connor wrote:

Recent studies have demonstrated increasingly earlier fetal viability. It is certainly reasonable to believe that the fetal viability in the first trimester of pregnancy may be possible in the not-too-distant future . . . . The *Roe* framework, then, is clearly on a collision course with itself.<sup>89</sup>

If medical technology advances fetal viability to the date of conception, a strict application of the *Roe* framework could prevent the use of fetal tissue. Even if a woman retained the right to terminate her pregnancy,<sup>90</sup> the state's interest in protecting potential life might allow it to mandate that the fetus be allowed to complete gestation after the abortion. This would, of course, prevent the use of the fetus for transplant purposes.

## B. Ethical Issues

Many of the ethical issues surrounding transplantation of fetal reproductive tissue stem from the technique's reliance on abortion as a

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83. *Roe*, 410 U.S. at 163.

84. *Id.* at 154. See also, Note, *Fetal Tissue Transplants: Restricting Recipient Designation*, 39 HASTINGS L.J. 1079, 1096 (1988).

85. For a discussion of the changeability of abortion law, see Anita L. Allen, *Autonomy's Magic Wand*, 72 B.U. L. Rev. 683 (1992).

86. See Note, *The Supreme Court's Abortion Jurisprudence*, 65 NOTRE DAME L. REV. 731, 738 (1990).

87. *Roe*, 410 U.S. at 163.

88. 112 S. Ct. 2791, 2811-12 (1992) ("Whenever it may occur, the attainment of viability may continue to serve as the critical fact, just as it has done since *Roe* was decided. . . .").

89. *City of Akron*, 462 U.S. at 457-58 (O'Connor, J., dissenting).

90. See *Roe*, 410 U.S. at 163-164 ("If the State is interested in protecting fetal life after viability, it may go so far as to proscribe abortion during that period. . . .").

source of transplant tissue. Two ethical arguments advanced in opposition to fetal ovary transplants involve abortion. One argument is that any technology based on abortion is immoral because abortion itself is inherently wrong. A second is that the technology is immoral because it encourages women to elect abortion.

A complete discussion of the ethical implications of abortion is beyond the scope of this Article. However, there is no way to reconcile the Gosden technology with the absolutist position that abortion is inherently wrong. Those opposing abortion on moral grounds object to transplantation of fetal tissue from elective abortions, but sometimes do not object to the use of tissue from spontaneous abortions.<sup>91</sup> However, scientists usually consider the reproductive tissue from spontaneously aborted fetuses unusable for transplants because there is a high risk of genetic anomaly<sup>92</sup> and the tissue is likely to be necrotic.<sup>93</sup> Thus, the transplantation of fetal reproductive tissue is inextricably tied to elective abortion.

The second objection, that the availability of fetal tissue transplants will encourage abortions, proceeds along two lines. First, a woman may be motivated to abort in order to donate the fetus' reproductive tissue to help solve another's fertility problem.<sup>94</sup> Second, a market in reproductive tissue may develop, leading women to abort for a pecuniary motive.

There is no empirical proof that the encouragement feared by opponents of fetal tissue transplants will take place on a significant scale. During the Reagan-era ban on fetal tissue research, 1.6 million elective abortions were performed in the United States in a single year.<sup>95</sup> Even though abortions have recently been reported at a thirteen-year low, there were still over 1.5 million abortions performed in 1992.<sup>96</sup> Given the supply of fetal tissue already available from elective abortions, there is no reason to expect that the availability of fetal ovary transplants will significantly increase the number of abortions.

Although there have been several news reports of women who expressed the desire to conceive in order to provide critically ill relatives with fetal tissue for transplants,<sup>97</sup> there has never been a documented case

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91. Mark Siegler, *USA: Politics of Fetal Tissue Research*, 339 LANCET 1404 (1992).

92. David Fletcher, *Just How Far Should Baby Doctors Go?*, DAILY TELEGRAPH, Jan. 8, 1994, at 1; Charles Krauthammer, *Hostage to Abortion Politics*, WASH. POST, May 22, 1994, at A25.

93. James Kilpatrick, *Fetal Research Raises Tough Questions*, ST. PETERSBURG TIMES, Sept. 23, 1988, at 21A.

94. Comment, *Conceiving to Abort and Donate Fetal Tissue*, 36 UCLA L. REV. 1167 (1989).

95. Begley, *supra* note 62, at 48.

96. Tamar Lewin, *Abortions in U.S. Hit 13-Year Low, A Study Reports*, N.Y. TIMES, June 16, 1994, at A1.

97. Marlene Cimons, *Fetal Tissue Research Stirs Debate*, L.A. TIMES, Sept. 26, 1988, at Metro p.3 (to help husband who had Parkinson's disease); Christine Gorman, *A Balancing Act of Life and Death*, TIME, Feb. 1, 1988, at 49 (to help father who had Parkinson's disease); Emanuel Thorne, *Trade in Human Tissue Need Regulation*, WALL ST. J., Aug. 19, 1987, at A16 (to help father who needed kidney tissue).

in which the result was achieved.<sup>98</sup> Moreover, several commentators have convincingly argued that this result could be avoided by limiting a woman's right to specify the recipient of a fetal tissue donation.<sup>99</sup>

However, two recent news stories demonstrate that the availability of tissue donation procedures may influence the decision to conceive or deliver a child. The first involved a decision to conceive a child to provide tissue for transplantation. In 1989, Mary and Abe Ayala conceived a child to be a bone marrow donor for their older daughter.<sup>100</sup> Medical ethicists reacted with shock and disgust. In the opinion of Phillip Boyle of the Hastings Center, the decision was "outrageous."<sup>101</sup> Law and medicine professor Alexander Capron commented that the Ayala decision was unethical because a child should not be conceived for any reason other than the child's own welfare.<sup>102</sup>

The second story concerned a woman's decision to carry an anencephalic baby ("Baby Theresa") to term to provide organs for harvest. Anencephaly is gross developmental defect in which most of the brain fails to form.<sup>103</sup> While the remaining brain stem can support the heart and lungs, most anencephalics do not survive to birth, and those that do have a life expectancy of less than one week.<sup>104</sup> Because anencephaly can be accurately diagnosed during pregnancy, many anencephalic fetuses are aborted.<sup>105</sup> However, the mother of one such fetus chose to bring her to term and deliver her by Caesarean section so that her organs would be more useful for donation.<sup>106</sup>

Conception intended solely to provide donor fetal reproductive tissue differs materially from both examples. Both the Ayala case and the "Baby Theresa" case involved potentially life-saving donations without lethal intervention. Bone marrow donation is a potentially life-saving procedure that poses little risk to the donor child.<sup>107</sup> An anencephalic

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98. *Fetal Tissue Transplants: Restricting Recipient Designation*, *supra* note 84, at 1080.

99. Vivian Dempsey, *Clash of Ethics: Use of Fetal Remains in Medical Treatment Provokes a Furor over Ownership of Tissue*, *RECODER*, Sept. 8, 1987, at 19; Rorie Sherman, *The Selling of Body Parts*, *NAT'L. L.J.*, Dec. 7, 1987, at 1; Beverly Burlingame, *Commercialization in Fetal-Tissue Transplantation: Steering Medical Progress to Ethical Cures*, 68 *TEX. L. REV.* 213, 236 (1989).

100. *Baby Is Conceived to Save Daughter*, *N.Y. TIMES*, Feb. 17, 1990, at A1.

101. *Id.*

102. *Id.* While this is an admirable standard, if the only children born were those so ethically conceived, humans might be an endangered species. It should also be noted that this is an objection to the conception itself, not to the decision to abort. It is not likely to be shared by those who oppose abortion—a group that voices no opinion on the decision to conceive.

103. Charles N. Rock, *The Living Dead: Anencephaly and Organ Donation*, 7 *N.Y.L. SCH. J. HUM. RTS.* 243 (1989).

104. *Id.*

105. Charles Krauthammer, *The Case of Baby Theresa*, *WASH. POST*, Apr. 3, 1992, at A21.

106. Julie Koenig, *The Anencephalic Baby Theresa*, 17 *NOVA L. REV.* 445 (1992); Krauthammer, *supra* note 105, at A21.

107. Denise Hamilton, *Woman Is Having Baby to Save Her Ailing Daughter*, *L.A. TIMES*, Feb. 16, 1990, at A1.

fetus is destined to die soon after birth,<sup>108</sup> and its mother's decision to bring the fetus to term merely prolongs its life. By comparison, fetal death is a prerequisite to reproductive tissue donation, and the donated tissue, while enhancing the quality of the recipient's life, does not preserve life.

This scant evidence suggests that the danger that availability of the Gosden technique will encourage women to have abortions is minimal. This is simply because when a woman exercises her freedom of choice, she is unlikely to prefer another woman's fertility to the life of her fetus. It is understandable that a woman may wish to abort in order to save the life of a loved one; yet, there is no evidence that any woman has made such a choice. Given this, it seems unlikely that she would do so just to solve an infertility problem.

Fetal reproductive tissue transplants also raise ethical concerns about the possibility of abortion for pecuniary motives. Opponents worry that even if another woman's fertility is not motive enough, money might be. It is undeniable that healthy reproductive tissue commands a high price; with ovum collection from donors costing thousands of dollars,<sup>109</sup> it is likely infertile couples would be willing to pay comparable amounts for fetal ovaries.

The objection to abortion for pecuniary motive comes in two forms. Many, including those who generally oppose abortion on moral grounds, conclude that it cannot be ethical to terminate fetal life in exchange for money. Another, very different, camp objects to the commodification of body parts and human properties.<sup>110</sup>

It is probably unnecessary to resolve this ethical dilemma, because abortion for profit is already illegal. The National Organ Transplant Act<sup>111</sup> prohibits acquiring, receiving, or otherwise transferring any human organ for valuable consideration.<sup>112</sup> A 1988 amendment to the Act added fetal organs to the definition of human organs.<sup>113</sup> The National Institutes of Health Revitalization Act of 1993 also prohibits the sale of fetal material,<sup>114</sup> as does the 1987 revision of the Uniform Anatomical Gift Act,<sup>115</sup> which has been adopted by fifteen states.<sup>116</sup> Thus, the only lawful commercial opportunities in fetal tissue are for biotechnology companies

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108. Krauthammer, *supra* note 105, at A21.

109. See note 20 and accompanying text.

110. See Margaret Jane Radin, *Market-Inalienability*, 100 HARV. L. REV. 1849 (1987); Stephen J. Schnably, *Property and Pragmatism: A Critique of Radin's Theory of Property and Personhood*, 45 STAN. L. REV. 347 (1993).

111. Pub. L. No. 98-507, 98 Stat. 2339 (1984) (codified at 42 U.S.C. §§ 273-274(e) (1988)).

112. 42 U.S.C. § 274(e).

113. Pub. L. No 100-607, tit. IV, § 407, 102 Stat. 3116 (1988) (codified at 42 U.S.C. § 274e(c)(1) (1988)).

114. Pub. L. No. 103-43, § 112, 107 Stat. 133 (codified at 42 U.S.C. § 289g-2 (Supp. 1994)).

115. UNIF. ANATOMICAL GIFT ACT (1987) § 10, 8A U.L.A. 58 (1993).

116. *Table of Jurisdictions Wherein Act Has Been Adopted*, 8A U.L.A. 19 (1993).

intending to market fetal cell lines.<sup>117</sup> These cell lines are based on cloned tissue, and therefore require a small number of fetuses,<sup>118</sup> which could be easily obtained without payment.

Of course, this protection has limitations: among others, it reaches only as far as the jurisdiction of American law, whereas the technology spans the globe. Organs for transplant command high prices in some countries, and murder for the purpose of harvesting organs has been reported in China, Guatemala, and the Philippines.<sup>119</sup> It is not difficult to imagine that forced abortion for the purpose of harvesting fetal organs could be just as likely, and even harder to detect.

#### IV. PROPERTY RIGHTS AND CONTROL OVER FETAL TISSUE

Central to the issue of the use of fetal reproductive tissue in transplantation is the question of who has the right to consent to the donation. Of course, the fetus itself is incapable of giving consent to donate its organs.<sup>120</sup> The UAGA's implicit reliance on parental consent glosses over potentially serious questions. The adequacy of the parent's consent depends on our social and moral attitudes regarding the nature of the fetus and the parent's control over it.

The next section of this Article is devoted to the issue of consent, and frames the issue as one of property rights. Our legal system often couches the determination of legal status in property terms, and thus we must ask whether the fetus is property, and, if so, to whom it belongs. The answer to each of these questions has specific implications for the adequacy of consent for fetal donation.

##### A. Fundamental Property Theory

The *Restatement of Property* uses the concepts of right, privilege, power, and immunity to define property in terms of the legal relations between people.<sup>121</sup> American property law thus views property as a

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117. See, e.g., Thomas Maugh, *Use of Fetal Tissue Stirs Hot Debate*, L.A. TIMES, Apr. 16, 1988, at 1.

118. *Id.*

119. Maud Beelman, *Body Parts Needed for Transplants; Trade in Human Organs Stirs Global Attention*, L.A. TIMES, July 16, 1989, at 6; Victor Perera, *Behind the Kidnapping of Children for Their Organs*, L.A. TIMES, May 1, 1994, at M1; *Grim Commerce in China*, N.Y. TIMES, Aug. 30, 1994, at A20. It should be noted, however, that reports of "baby theft" in Guatemala are now thought to be a hoax. Perera, *supra*, at M1.

120. Gina Kolata, *Fetal Ovary Transplant is Envisioned*, N.Y. TIMES, Jan. 6, 1994, at A16 (quoting Arthur Caplan).

121. *RESTATEMENT OF PROPERTY*, ch. 1 Introductory Note (1936). The black letter of American property law is founded primarily upon the writings of Wesley Hohfeld. See Wesley N. Hohfeld, *Fundamental Legal Conceptions As Applied in Judicial Reasoning*, 26 YALE L.J. 710 (1917); Wesley N. Hohfeld, *Some Fundamental Legal Conceptions As Applied to*

"bundle of rights" or collection of interests with respect to the thing owned—interests protected by the state.<sup>122</sup> These interests include exclusive possession or enjoyment, control over use, disposal, alienability, and devisability.<sup>123</sup> A property interest may contain any of these interests, but need not contain them all.<sup>124</sup> Fetal tissue is inalienable,<sup>125</sup> and, presumably, even the most ardent biological mother would have no interest in possessing it *ex utero*. Thus, the question of a property interest in it centers upon the right to control or determine the disposition of fetal material.

There are several ways to approach the construction of such an interest. First, the fetus might be considered a part of the gestational mother's body, with a right of control based on the mother's property right in her own body. Second, the fetus might be considered a child, with a right of custody and control associated with parental power. Third, the aborted fetus might be viewed as abandoned property and therefore subject to state ownership through escheat.

## B. Property Rights in One's Own Tissue

The notion of a property interest in one's own body has long been associated with the philosophy of natural rights. This philosophy was articulated by John Locke in his *Second Treatise of Government*. Locke stated that each person has "property in his own person."<sup>126</sup> The construction of this right is more recently expressed as a right of identity; one owns one's body because the body is an extension of one's self.<sup>127</sup>

This issue first arose in a legal context in the seminal case of *Moore v. Regents of University of California*.<sup>128</sup> There, the California Supreme Court discussed the issue of ownership of bodily tissues, although it declined to decide whether one can own one's tissues.<sup>129</sup> The *Moore* court held that a medical patient whose excised spleen cells were used without his

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Judicial Reasoning, 23 YALE L.J. 16 (1913). The American Law Institute adopted Hohfeld's conception of property when it drafted the *Restatement of Property*. RESTATEMENT OF PROPERTY §§ 1-4 (1936).

122. 63A AM. JUR. 2D *Property* §§ 1-3 (1984).

123. LAWRENCE C. BECKER, *PROPERTY RIGHTS* 18 (1980); BLACK'S LAW DICTIONARY 1216 (6th ed. 1990).

124. BECKER, *supra* note 123, at 18.

125. See notes 111-118 and accompanying text.

126. JOHN LOCKE, *TREATISE OF CIVIL GOVERNMENT AND A LETTER CONCERNING TOLERATION* 19 at ¶ 27 (Charles L. Sherman ed., 1965). Locke's formulation, however, is derived from a labor theory of value, which does not ultimately support a property right in one's tissue; one does not acquire one's tissue through one's own labor. Note, *Genetic Information and Property Theory*, 87 NW. U. L. REV. 1037, 1070-72 (1993).

127. ALAN RYAN, *PROPERTY* 61 (1987) (citing Robert Nozick).

128. 271 Cal. Rptr. 146 (1990)..

129. *Id.*

knowledge to create a marketable cell line did not have a cause of action for conversion.<sup>130</sup> Although the court did not "purport to hold that excised cells can never be property for any purpose whatsoever,"<sup>131</sup> it declined to enforce any property interest in Moore's cells, based on the public interest in the reproduction and distribution of cell tissue for research purposes.<sup>132</sup>

The application of *Moore* to situations involving fetal tissue is unclear. The California Court of Appeal decision in *Moore* explicitly declined "to resolve the complex issues relating to the human fetus."<sup>133</sup> The transition from ownership of one's own cells to ownership of a fetus is doctrinally and ethically problematic.

Some commentators have argued that *Roe v. Wade* and its progeny imply that a woman has a property interest in her fetus manifested by the right to dispose of the fetus by abortion.<sup>134</sup> However, this argument strains the scope of the already precarious *Roe* reasoning. While the right to control disposition is one of the important elements of the property right, *Roe* confers the right to terminate a pregnancy rather than the right to dispose of a fetus. Moreover, as set forth above, property rights generally encompass more than the right to dispose. Ultimately it appears that the *Roe* decision "says very little about the legal status and rights of the fetus."<sup>135</sup>

If the fetus is considered part of its mother's body, then any property rights inhering in it depend on a property right in one's own tissue. If we take this view, then we may deduce two corollaries. First, that property right belongs to the mother—and not the father. Second, we have presupposed that the fetus is not a separate being, distinct from its mother.

This was the approach implicit in the recent New York Supreme Court case *Kass v. Kass*.<sup>136</sup> During their marriage, Maureen and Steven Kass underwent IVF and an unsuccessful attempt to implant one of the

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130. *Id.* at 147, 155, 164.

131. *Id.* at 160.

132. *Id.* at 162-63.

133. *Moore v. Regents of Univ. of Calif.*, 249 Cal. Rptr. 494, 506 n.8 (1988).

134. See, e.g., Nancy E. Field, *Evolving Conceptualizations of Property: A Proposal to De-Commercialize the Value of Fetal Tissue*, 99 YALE L.J. 169, 182-83 (1989).

135. Harold P. Green, *The Fetus and the Law*, in GENETICS AND THE LAW 19, 20 (National Symposium on Genetics and the Law ed., 1976).

136. *Kass v. Kass*, No. 19658/93 (N.Y. Sup. Ct., Nassau Cty., filed Jan. 18, 1995). An appeal is expected. *Judge Rules Woman Who Provides Eggs Has Right to Decide Embryos' Fate*, N.Y. TIMES, Jan. 20, 1995, at B5. The facts of *Kass* are similar to those of *Davis v. Davis*, discussed *infra* at notes 154-162 and accompanying text. In its opinion, the *Kass* court rejected the rationale of *Davis* and departed diametrically from its result.

resulting pre-embryos.<sup>137</sup> Following their subsequent divorce, the Kasses disagreed about the disposition of the five remaining pre-embryos. Maureen Kass wished them to be implanted in herself;<sup>138</sup> Steven Kass desired that they be donated for research.<sup>139</sup>

The *Kass* court awarded Maureen Kass the exclusive right to determine the fate of the pre-embryos.<sup>140</sup> The court stated, based on *Roe v. Wade* and its progeny, “[i]t cannot seriously be argued that a husband has a right to procreate or avoid procreation following an in vivo fertilization.”<sup>141</sup> The court reasoned that the result should not change when conception takes place in “the public glare of a petri dish” rather than in the fallopian tube of the mother.<sup>142</sup> In doing so, the court implicitly concluded that a pre-embryo, however created and whatever its actual location, is a part of the mother’s body.

This reasoning misconstrues the U.S. Supreme Court precedent on which it relies. Insofar as U.S. Supreme Court precedent speaks to the rights of the father, it balances his rights against the rights of the mother while presuming the mother is gestating the child.<sup>143</sup> The *Roe* holding does not deny the existence of a father’s right to control the fetus; it merely prevents him from exercising that right where it would interfere with the bodily integrity of the mother.<sup>144</sup> Since the pre-embryos in *Kass* are located in a laboratory vial rather than a human uterus, there is no issue of bodily integrity involved. Because the fertilization occurred outside the mother’s body, the parents’ rights to decide the fate of the pre-embryos are brought into equipoise.

The *Kass* opinion also confuses the issue of property rights. Contrary to the court’s assertion of “the legal dichotomy of person or property,”<sup>145</sup> personhood and property rights are not incompatible.<sup>146</sup> The combination of this error with the court’s statement that “[e]quating

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137. *Kass*, slip op. at 1. A zygote is the cell formed by fertilization of an ovum. The term “pre-embryo” refers to a zygote less than two weeks after conception. *Id.*

138. *Id.*

139. *Id.* at 2.

140. *Id.* at 4.

141. *Id.* at 3.

142. *Id.* at 4.

143. See *Planned Parenthood of Missouri v. Danforth*, 428 U.S. 52, 71 (1976) (“The obvious fact is that when the wife and husband disagree on this [abortion] decision, the view of only one of the two marriage partners can prevail. Inasmuch as it is the woman who physically bears the child and who is the more directly and immediately affected by the pregnancy, as between the two, the balance weighs in her favor”).

144. See John A. Robertson, *In the Beginning: The Legal Status of Early Embryos*, 76 VA. L. REV. 437, 456 n.50 (1990).

145. *Kass*, slip op. at 2.

146. For instance, parental control of children is one of the few express exceptions to the Thirteenth Amendment proscription against involuntary servitude. *Robertson v. Baldwin*, 165 U.S. 275, 282 (1897); *Clyatt v. United States*, 197 U.S. 207, 215-16 (1905).

zygotes with washing machines and jewelry for purposes of a marital distribution borders on the absurd"<sup>147</sup> gives the impression that the decision is inconsistent with a conception of pre-embryos as property. Actually, *Kass* is completely consistent with such a notion. By holding the pre-embryos subject to maternal control, the court has merely designated them maternal property rather than marital property. The mere status of the embryo as property says little about its nature, and everything about who possesses the right of control.<sup>148</sup>

### C. Property Rights in Children

If the fetus is considered a child, then property rights may inhere in its parents. The question of whether children are property of their parents is a difficult one,<sup>149</sup> but in abstract terms, children are often treated like the property of their parents. Parents exercise rights of control, transferability, and even alienability with respect to the custody of children. These rights are generally considered to inhere in both parents equally.<sup>150</sup>

This view is attractive in light of the recent attention to paternal rights.<sup>151</sup> The most lasting effect of the transplantation of fetal ova or ovaries is not its immediate effect on fetal life, but its perpetuation of the genetic legacy of the fetus. This legacy is, unarguably, the provenance of both the mother and father, who contribute equally to the genetic makeup of the fetal donor. Rationally or not, humans feel a strong personal stake in whether and how their genes are passed on.<sup>152</sup> Even sperm and egg donors who have no part in conceiving, gestating, or raising a child sometimes care greatly about their genetic legacy.<sup>153</sup> The model of equal interests on the part of the mother and father is the only one that appropriately recognizes this connection.

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147. *Kass*, slip op. at 2.

148. Robertson, *supra* note 137, at 454-55.

149. Heather J. Meeker, *Issac's Revenge: Children as Property in Western Law* (1994) (unpublished manuscript, on file with author). See also Barbara Bennett Woodhouse, *Who Owns the Child?: Meyer and Pierce and the Child as Property*, 33 WM. & MARY L. REV. 995 (1992); Francis Barry McCarthy, *Parents, Children and the Courts: The Confused Constitutional Status and Meaning of Parental Rights*, 22 GA. L. REV. 975 (1988).

150. McCarthy, *supra* note 149, at 975 n.3.

151. Janet L. Dolgin, *Just a Gene: Judicial Assumptions About Parenthood*, 40 UCLA L. REV. 637 (1993); John Hill, *What Does it Mean to be a Parent? The Claims of Biology As the Basis for Parental Rights*, 66 N.Y.U. L. REV. 353 (1991); Note, *Michael H. v. Gerald D.: The Presumption of Paternity*, 39 CATH. U. L. REV. 831 (1990).

152. See Paul Dean, *Two Men and a Baby; Birth Fathers, Adoption's Once-Silent Partners, Seek Role in Their Children's Lives*, L.A. TIMES, Oct. 29, 1989, at E1; Herman Wong, *Family Search; Adult Adoptees Seek Roots*, L.A. TIMES, May 18, 1990, at N1; JOHN H. BECKSTROM, *SOCIOBIOLOGY AND THE LAW* 11 (1985).

153. *Davis v. Davis*, 842 S.W.2d 588, 603 n.26 (Tenn. 1992).

#### D. Custody

Even if there is to be an equal interest in the mother and father, there are still two possibilities—ownership and custody. *Davis v. Davis*, an unreported 1989 decision of the Tennessee Court of Appeals, addressed the issue of control of human embryonic tissue.<sup>154</sup> While the decision was subsequently reversed by the Tennessee Supreme Court, *Davis* illustrates the doctrinal difference between ownership and custody, and the confusion between them that may result when reproductive material is at issue.

*Davis* was a dispute between husband and wife over the right to implant seven frozen embryos, obtained through IVF of the couple's germ cells.<sup>155</sup> Following the couple's divorce, Mrs. Davis wished the embryos to be implanted into her,<sup>156</sup> and Mr. Davis wished them to remain in cryogenic stasis until the parties could come to an agreement concerning their use.<sup>157</sup>

The *Davis* court explicitly found that "[h]uman embryos are not property."<sup>158</sup> Rather, the court found that the fertilized embryos were "unborn human beings" and thus the children of Mr. and Mrs. Davis.<sup>159</sup> The court based its decision entirely on the *parens patriae* doctrine and the best interests of the child.<sup>160</sup> Because the "practical storage life" of the embryos was two years,<sup>161</sup> the court reasoned that the embryos' best chance for survival was implantation and awarded custody to Mrs. Davis for that purpose.<sup>162</sup>

Here, the result follows necessarily from the premise. Because the parent's interest in the child is one of custody rather than ownership, it must be exercised in the child's best interest. This necessitated a ruling in favor of implantation of the frozen embryos. When applied to fetal reproductive tissue transplants, the custody model would preclude either parent from consenting to abortion and the subsequent donation of fetal tissue. Adoption of the custody model is tantamount to making the ethical judgment that this technology should not be used.

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154. 1989 WL 140495 (Tenn. Cir. 1989), *rev'd*, 842 S.W.2d 588 (Tenn. 1992).

155. *Id.* at \*3.

156. *Id.* at \*11.

157. *Id.* at \*19.

158. *Id.* at \*1.

159. *Id.* at \*1, \*9. It was this holding that the Tennessee Supreme Court found to be error; rather, it found that the human embryos at issue in the case "[could] not be considered persons under Tennessee law." *Davis v. Davis*, 842 S.W.2d 588, 594 (Tenn. 1992).

160. *Davis*, 1989 WL 140495 at \*10-\*11.

161. *Id.* at \*3.

162. *Id.* at \*11.

### E. Quasi-Property Rights in Dead Bodies

Alternatively, we can approach the consent issue by taking the position that fetuses are not living tissue at all. If so, then an entirely different doctrine should apply—far closer to the pure property model.

The law of control and disposal rights in dead bodies is illustrated by *McCoy v. Georgia Baptist Hospital*.<sup>163</sup> In *McCoy*, the court considered whether a couple had a quasi-property interest in the body of their stillborn infant.<sup>164</sup> Although Georgia recognized a quasi-property interest in the dead body of a relative, the court stated that the plaintiffs had no such interest after they signed an agreement authorizing the hospital staff to "dispose of this infant in any manner they deem advisable."<sup>165</sup> Although the *McCoy* court did not clearly find that a stillborn child was a relative within the meaning of Georgia law, a parental quasi-property interest in the body of the stillborn child may be inferred from the decision—if the couple signed their rights away, they must have had the rights at some point. The court, perhaps intentionally, never reached the issue.

Currently, many states recognize the quasi-property right discussed in *McCoy*,<sup>166</sup> either under common law or under statute. The Uniform Anatomical Gift Act provides that the next-of-kin has a right to dispose of a body.<sup>167</sup> It should be noted that the right is quite limited. The next-of-kin does not have the right to sell the body,<sup>168</sup> and must dispose of it in a manner consistent with the public health.<sup>169</sup>

*McCoy* is distinguishable from the situation under discussion here because the stillborn infant in *McCoy* was a deceased but fully formed human being. Our culture plainly recognizes the difference between a fetus and an infant, whether born alive or stillborn. Most notably, society recognizes the difference through ritual: infants, even stillborn infants,

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163. 306 S.E.2d 746, 748 (Ga. Ct. App. 1983).

164. *Id.* at 747-48.

165. *Id.*

166. See, e.g., *Cohen v. Groman Mortuary*, 41 Cal. Rptr. 481, 483-84 (Cal. Ct. App. 1964); *Przybyszewski v. Metropolitan Dade County*, 363 So. 2d 388 (Fla. Dist. Ct. App. 1978); *Speigel v. Evergreen Cemetery Co.*, 186 A. 585, 586 (N.J. 1936); *In re Johnson*, 612 P.2d 1302, 1305 (N.M. 1980); *Nichols v. Central Vt. Ry. Co.*, 109 A. 905, 906 (Vt. 1919); Note, *Toward the Right of Commerciality: Recognizing Property Rights in the Commercial Value of Human Tissue*, 34 UCLA L. REV. 207, 225-27 (1986).

167. UNIF. ANATOMICAL GIFT ACT (1968) § 7(a), 8A U.L.A. 124 (1993). The corresponding section of the 1987 revision of the Act merely states that custody "vests in the person under obligation to dispose of the body." UNIF. ANATOMICAL GIFT ACT (1987) § 8(a), 8A U.L.A. 56 (1993).

168. *Dougherty v. Mercantile-Safe Deposit & Trust Co.*, 387 A.2d 244, 246 (Md. 1978).

169. *Georgia Lions Eye Bank v. Lavant*, 335 S.E.2d 127, 128-29 (Ga. 1985).

are usually buried,<sup>170</sup> but most aborted fetuses are disposed of by incineration.<sup>171</sup> A bioethics professor commented, "[I]t is intuitively wrong to say that a two-week embryo is [much] like us."<sup>172</sup>

If we use this approach, then we have posited that the fetus is not a living being at all. But it should be noted that the fetus does not always experience death as soon as an abortion is performed.<sup>173</sup> Indeed, the advance of medical technology will probably insure that, in the future, no such assumption can be made. Thus, this approach may be based on an incorrect factual assumption—or at least an assumption that will soon be obsolete.

#### F. Escheat: Property Rights in Abandoned Property

A final alternative is to presume an aborted fetus to be abandoned property. In *Moore*, the court viewed such abandonment as implicit: "Moore clearly did not expect to retain possession of his cells following their removal . . ."<sup>174</sup> This approach is implied by the Uniform Anatomical Gift Act, which provides that the next-of-kin may give consent for the use of the deceased's organs "[i]n the absence of any other action or contrary indication by that individual before death . . ."<sup>175</sup> In addition, some states have "presumed consent laws," which allow body parts to be used when there is an appropriate recipient, and there is no known objection, either by the deceased or the next-of-kin, to its use.<sup>176</sup> Louisiana's "Human Embryo" law declares that unwanted embryos must be made available for "adoptive implantation."<sup>177</sup>

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170. The facts of *McCoy* included an inquiry from the hospital whether to release the body of the stillborn infant to the funeral home for burial; this eventually took place. *McCoy*, 306 S.E.2d at 747-49.

171. Terry, *supra* note 80, at 427 n.40. Not surprisingly, one of the practices of anti-abortion activists is to give fetal remains a burial ceremony. But oddly, the same activists have sought to escape culpability for theft of the remains by calling them "abandoned property." See Respondent's Brief at A2, *National Organization for Women v. Scheidler*, 114 S. Ct. 798 (1994) (No. 92-780). This concept of abandonment is wholly inconsistent with the notion of the fetus as a person. See the discussion of escheat, *infra*, at Part IV.F.

172. Laurie Garrett, *Abortion in America*, NEWSDAY, Apr. 24, 1989, at 7.

173. See TENN. CODE ANN. § 39-15-207 (1994) (providing for state custody of a fetus born alive in the course of a voluntary abortion).

174. *Moore v. Regents of Univ. of Cal.*, 271 Cal. Rptr. 146, 155 (1990).

175. UNIF. ANATOMICAL GIFT ACT (1968) § 2(b), 8A U.L.A. (1993). See also, UNIF. ANATOMICAL GIFT ACT (1987) § 3(a), 8A U.L.A. 40 (1993).

176. For a list of the state statutes, see Note, *She's Got Bette Davis['s] Eyes: Assessing the Nonconsensual Removal of Cadaver Organs Under the Takings and Due Process Clauses*, 90 COLUM. L. REV. 528, 537 n.35 (1990) [hereinafter *She's Got Bette Davis['s] Eyes*].

177. LA REV. STAT. ANN. § 130 (West 1991).

Presumed consent is loosely based on the doctrine of escheat.<sup>178</sup> Escheat is the "reversion of property to the state in consequence of a want of any competent individual to inherit."<sup>179</sup> At common law, it was a device by which real property reverted to the crown if the line of succession ended and there was no heir.<sup>180</sup>

Because escheat is a state action potentially adverse to private interest, it is subject to a Takings Clause analysis.<sup>181</sup> Several commentators have raised the objection that presumed consent laws violate the Takings Clause.<sup>182</sup> Three such challenges in state courts have failed because, in each case, the court held that the property interest did not rise to the level of constitutional significance.<sup>183</sup> Because property interests in the body of an adult relative do not merit constitutional protection in the face of a compelling interest in providing medically needed tissue, it is unlikely that a court would find a protectable property interest in a fetus based on its usefulness in restoring fertility.

Such an approach, again, brings us to an entirely new result. If an aborted fetus is escheatable abandoned property, it is the property of the state. If so, then consent for the use of fetal tissue adheres in the state, not the parent or parents. Depending on its assessment of the social value of fetal transplants, the state might prohibit, or, at the other extreme, mandate, donation.

## G. A New Category

As shown above, slight changes in the underlying philosophical or legal model lead to wide variation in the appropriate rule of consent. Because these models, all of which have a secure place in our legal philosophy, exhibit so little internal consistency, it is tempting to simply create a new category for fetal reproductive tissue. When it reviewed *Davis v. Davis* on appeal,<sup>184</sup> the Tennessee Supreme Court made such a finding regarding the status of cryogenically preserved human

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178. See Gregory S. Crespi, *Overcoming the Legal Obstacles to the Creation of Futures Market in Bodily Organs*, 55 OHIO ST. L.J. 1, 53 (1994).

179. BLACK'S LAW DICTIONARY 488 (5th ed. 1979).

180. See Note, *Virginia's Acquisition of Unclaimed and Abandoned Personal Property*, 27 WM. & MARY L. REV. 409, 409 (1986).

181. Standard Oil v. New Jersey, 347 U.S. 428 (1951).

182. *She's Got Bette Davis's Eyes*, *supra* note 176, at 570-74 (concluding that nonconsensual organ donation violates the Takings Clause).

183. *State v. Powell*, 497 So. 2d 1188, 1193 (Fla. 1986), cert. denied, 481 U.S. 1059 (1987); *Georgia Lions Eye Bank v. Lavant*, 335 S.E.2d 127, 128 (Ga. 1985); *Tillman v. Detroit Receiving Hosp.*, 360 N.W.2d 275, 277 (Mich. Ct. App. 1984).

184. 842 S.W.2d 588 (Tenn. 1992).

pre-embryos.<sup>185</sup> "We conclude that pre-embryos are not, strictly speaking, either 'persons' or 'property,' but occupy an interim category that entitles them to special respect because of their potential for human life."<sup>186</sup> Of course, the value of fetal reproductive tissue stems from its reproductive potential rather than its "potential for human life."

Each of the other models has its conceptual difficulties. To call the fetus mere property, escheatable to the state, denies its nature as a living organism. To impose a duty of custody on parents is an unnecessarily inflexible application of a doctrine that was developed in a wholly different context, and denies the important difference between fetuses and children. To call the fetus merely a part of its mother's body denies its potential for transmitting the genetic legacy of both parents. For these reasons, I conclude that the joint property model—giving equal and undivided right of consent to both parents—is the most appropriate for this technology.

In reality, it is quite possible that these rights will be determined not by operation of law, but by private agreement. If fetal tissue becomes a valuable commodity in light of its increased usefulness in transplantation, then hospitals will likely begin to contract with potential patients for the right to use it. Hospitals may sidestep the issue of ownership by contracting with all possible parties—mother, father, and state. This would not only eliminate all those with standing to bring a suit, but cover all those likely to claim the right to give consent.

In practice, fetal tissue for research is usually obtained by contract with the biological mother. The National Disease Research Interchange, a non-profit organization funded by the NIH, has obtained fetal tissue through volunteers who sought "the informed consent of women who had already given their consent for abortions."<sup>187</sup> However, these donations were made before fetal germ cell transplants were announced. The decision to allow the use of genetic material is qualitatively different. The same women who consented to therapeutic use of fetal tissue might have balked at authorizing the use of genetic material rather than brain, bone or skin.

## V. CONCLUSION

The ethical objections to transplantation of fetal tissue have been widely discussed, largely as a result of the federal moratorium on

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185. *Id.* at 596. The court declined to make its holding based on the best interests of the pre-embryos, thus affirming the Court of Appeals' unpublished reversal of the trial court's holding. *Id.* at 604.

186. *Id.* at 597.

187. Burlingame, *supra* note 99, at 222. In addition, there are non-profit tissue banks that provide researchers with various types of fetal tissue. *Id.* at 221-22.

research funding. After the ban was lifted, and even before, fetal tissue research proceeded with promising results. However, the transplantation of fetal germ cells raises ethical issues that go beyond those of transplanting fetal cells for treatment of Parkinson's disease or diabetes.

There are various ethical objections to using fetal genetic tissue. In addition, there are biological concerns, and an important question as to whether great resources should be devoted to such procedures. Infertility, unlike Parkinson's and diabetes, is not a life-threatening condition.

Serious questions remain as to who should have the power to give informed consent for use of fetal reproductive tissue. Existing common law supports a variety of property interests that may include the power to control and dispose of fetal tissue. Unfortunately, subtle differences in doctrine can lead to wide variations in result. This power could inhere in the mother, the father, the state—or no one. But with increased social emphasis on the genetic legacy of the parent, a joint parental interest in the right to give consent may be most appropriate.

Gosden's ovarian transplant procedure, if it becomes feasible for humans, promises to revolutionize treatment of infertility and gonadal dysgenesis. However, the success of the new procedure will depend on the availability of fetal reproductive tissue. This may be a bigger barrier to the technology than science or ethics. While the technology may add one more factor to the already complex choice to terminate a pregnancy, it will probably not have a significant impact on behavior. Women who choose to terminate a pregnancy have declined motherhood. It seems unlikely that they will make a further choice to donate the fetus—a choice resulting in progeny—to solve an infertility problem that is not life-threatening.



# **ARTICLE**

## **NON-PROLIFERATION AND FREE ACCESS TO OUTER SPACE: THE DUAL-USE CONFLICT BETWEEN THE OUTER SPACE TREATY AND THE MISSILE TECHNOLOGY CONTROL REGIME**

**BARRY J. HUREWITZ<sup>†</sup>**

Outer space . . . shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law. . . . There shall be freedom of scientific investigation in outer space . . . and States shall facilitate and encourage international cooperation in such investigation.<sup>1</sup>

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1. Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space Including the Moon and Other Celestial Bodies, Jan. 27, 1967, 18 U.S.T. 2410, T.I.A.S. No. 6347 [hereinafter Outer Space Treaty].

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## I. INTRODUCTION

The Charter of the United Nations guarantees all nations the right to pursue "higher standards of living, full employment, and conditions of economic and social progress and development."<sup>2</sup> In the 1967 Outer Space Treaty, this promise of progress was extended skyward. Article I of the Outer Space Treaty guarantees all nations, regardless of their size or level of development, the right to peacefully explore and use outer space.<sup>3</sup>

More recently, however, fears of mass nuclear annihilation have led to strict controls over the international exchange of the commodities and technologies necessary for a renegade state to launch an attack. To coordinate these controls, the leading industrial states implemented the multilateral Missile Technology Control Regime (MTCR). Often, the technologies used to build sophisticated weaponry are "dual-use"—similar or even identical to the technologies required for civilian space programs. The dual-use nature of these technologies has led created tension between the right of states to use and explore outer space and the need to control weapons proliferation. The MTCR, particularly as applied by the United States, heavily favors non-proliferation goals at the expense of newly emerging civilian space programs.

This Article questions the United States' application of the MTCR to the extent that it impedes the legitimate national space programs of developing nations. First, this Article asserts that the 1967 Outer Space Treaty remains binding international law. The treaty guarantees all states the right to engage in non-aggressive activities in outer space, without

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2. U.N. CHARTER, art. 55.

3. See discussion *infra* at notes 9-25 and accompanying text.

discrimination of any kind and which prohibits the appropriation of space by any state. Second, this Article discusses the MTCR and its implementation in domestic U.S. law. Third, this article demonstrates that the MTCR, as implemented by the United States, handles dual-use space launch technologies in a manner which is inconsistent with the legal obligations set forth in the Outer Space Treaty and which also fails to fully address articulated national security and foreign policy goals of the United States. Finally, it examines recent MTCR developments and proposes modifications of the MTCR to bring that agreement into compliance with the goals of the Outer Space Treaty.

## II. FREE ACCESS PRINCIPLES OF THE 1967 OUTER SPACE TREATY

International law guarantees all nations the right of access to outer space for "peaceful purposes."<sup>4</sup> The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space Including the Moon and Other Celestial Bodies,<sup>5</sup> widely considered the fundamental document of international space law,<sup>6</sup> contains several provisions which are designed to safeguard peaceful space launch programs. Prior to this agreement, outer space was not formally addressed in an international treaty. The Outer Space Treaty extended the scope of general international law into space<sup>7</sup> and set forth additional principles to govern national activities in space, including the right of all nations to explore and use outer space without discrimination.<sup>8</sup> In addition to access, the treaty promotes international cooperation, prohibits national appropriation of space, and protects the right to use military technologies for peaceful purposes in space.

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4. The definition of "peaceful purposes" is controversial and is beyond the scope of this paper. For this analysis, "peaceful purposes" includes civilian as well as "non-aggressive" military uses of space.

5. Outer Space Treaty, *supra* note 1.

6. BARRY E. CARTER & PHILLIP R. TRIMBLE, INTERNATIONAL LAW 1112 (1991) (the Outer Space Treaty is the "basic legal regime governing outer space").

7. Outer Space Treaty, *supra* note 1 art. III. The article provides:

States Parties to the Treaty shall carry on activities in the exploration and use of outer space, including the moon and other celestial bodies, in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international cooperation and understanding.

*Id.*

8. *Id.* art. I.

### A. Evolution of the Right of Free Access to Space

All states are entitled to conduct peaceful activities in outer space. The basic principle of free access to outer space is articulated in Article I of the Outer Space Treaty, which provides in part that "[o]uter space, including the moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law . . ."<sup>9</sup> This principle has a long history which supports a liberal interpretation of its scope.

Early space law was the province of the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS), which was established by the U.N. General Assembly in 1958.<sup>10</sup> In its first report, COPUOS acknowledged the emergence of "a generally accepted rule to the effect that, in principle, outer space is, on conditions of equality, freely available for exploration and use by all in accordance with existing or future international law and agreements."<sup>11</sup> This free access principle was further developed in General Assembly Resolutions 1721<sup>12</sup> and 1962,<sup>13</sup> adopted in 1961 and 1963 respectively.

Unrestricted access to outer space became the unambiguous, articulated policy of the United States during the period leading up to the 1967 Outer Space Treaty. The United States strongly favored the nondiscrimination principle adopted in the earlier resolutions. Speaking before the General Assembly after the adoption of Resolution 1721, U.S. Ambassador Adlai Stevenson acknowledged that "small nations have an overriding interest in seeing to it that access to space and the benefits of

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9. *Id.*

10. G.A. Res. 1348, U.N. GAOR, 13th Sess., Supp. No. 18 at 5, U.N. Doc. A/4090 (1958). See Paul G. Dembling & Daniel M. Arons, *Space Law and the United Nations: The Work of the Legal Subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space*, 32 J. AIR L. & COM. 329 (1966) (chronicling the work of COPUOS preceding the Outer Space Treaty).

11. Report of the Ad Hoc Committee on the Peaceful Uses of Outer Space, UN Doc. A/4141/25 (1959), *excerpted in* 1 MANUAL ON SPACE LAW 3-4 (Nandasiri Jasentuliyana & Roy S.K. Lee, eds. 1981).

12. G.A. Res. 1721, U.N. GAOR, 16th Sess., Supp. No. 17 at 6, U.N. Doc. A/5100 (1962). The resolution offered guiding principles including a recommendation to all states that "[o]uter space and celestial bodies are free for exploration and use by all States in conformity with international law and are not subject to national appropriation." *Id.* See 1 MANUAL ON SPACE LAW, *supra* note 11 at 5 (discussing the developments leading up to Resolution 1721).

13. G.A. Res. 1962, U.N. GAOR, 18th Sess., Supp. No. 15 at 15, U.N. Doc. A/5515 (1963). Entitled "Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space," Resolution 1962 declared that "[o]uter space and celestial bodies are free for exploration and use by all States on a basis of equality and in accordance with international law." *Id.*

space science are not preempted by a few nations . . . ."<sup>14</sup> Four years later, President Lyndon Johnson declared that among the "essential elements" of the nascent Outer Space Treaty were "freedom of scientific investigation,"<sup>15</sup> international cooperation, and a prohibition of claims of sovereignty in space.<sup>16</sup>

The access principles of Resolutions 1962 and 1721 were incorporated into the 1967 Outer Space Treaty without much debate.<sup>17</sup> However, the history of the negotiations that led to the treaty demonstrate that its free access provision was intended to protect the rights of countries that did not yet have space capabilities. For example, during discussions about the treaty's free access clause, the United States initially argued that the phrases "on the basis of equality" and "without discrimination of any kind" were redundant. However, the Americans were persuaded that the inclusion of both phrases would appropriately emphasize the rights of all countries to freely enter and use outer space.<sup>18</sup> Ultimately, then-U.S. Ambassador Arthur J. Goldberg expressly endorsed the apparent redundancy, which, he said, would

make clear the intent of the treaty that outer space and celestial bodies are open not just to the big powers or the first arrivals but shall be available to all, both now and in the future. This principle is a strong safeguard for the interests of those states which have, at the present time, little or no active space program of their own.<sup>19</sup>

Complementing the nondiscrimination principle is a second component of the right of free access to outer space. Article II of the Outer Space Treaty provides that "[o]uter space, including the moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means."<sup>20</sup> By banning all claims of sovereignty in space, the treaty's drafters strengthened the free access provision, for "[i]f an individual nation cannot claim sovereignty to any particular area of outer space . . . , it

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14. Adlai E. Stevenson, U.S. Ambassador to the U.N., Address Before the U.N. (Dec. 4, 1961), in 46 DEP'T. ST. BULL. 180 (1962).

15. Pres. Lyndon B. Johnson (May 7, 1966), in 56 DEP'T ST. BULL. 900 (1966).

16. *Id.* See 1 MANUAL ON SPACE LAW, *supra* note 11, at 6 (discussing President Johnson's aspirations for the Outer Space Treaty).

17. Paul G. Dembling & Daniel M. Arons, *The Evolution of the Outer Space Treaty*, 33 J. AIR L. & COM. 419, 429 (1967).

18. *Id.* at 430.

19. Arthur J. Goldberg, U.S. representative to the U.N. General Assembly, Address Before the U.N. Gen. Assembly (Dec. 17, 1966), in 56 DEP'T ST. BULL. 78, 81 (1967).

20. Outer Space Treaty, *supra* note 1, art. II. This provision restates one of the nine guiding principles governing space activities set forth in Resolution 1962. See Dembling & Arons, *supra* note 10, at 335.

cannot deny access to that area.<sup>21</sup> Significantly, there was no debate over the meaning of the phrase “any other means,” leaving open the question of what actions may constitute an illegal appropriation of space.<sup>22</sup>

The Outer Space Treaty also contains other provisions that support the rights of all states to freely enter and use outer space for civilian or peaceful military purposes. Article I promotes the notion of international cooperation, stating that “States shall facilitate and encourage international cooperation in [scientific] investigation [of outer space].”<sup>23</sup> Article III provides that activities carried on “in the exploration and use of outer space”<sup>24</sup> must be peaceful and in accordance with international law.<sup>25</sup> Although this provision regulates behavior in space, it does not restrict any state’s *access to space*.

## B. Dual-Use Technologies Are Not Prohibited in Space

Whether a particular technology is permitted in space depends both upon the intended use of the technology and whether it is to be used in the vacuum of outer space or on the surface of a celestial body such as the moon.<sup>26</sup> The military origin or potential military use of a particular technology is not a factor.<sup>27</sup> Thus, under the Outer Space Treaty, all spacefaring states are entitled to utilize military technologies in their peaceful space activities.<sup>28</sup> Weapons of mass destruction are considered aggressive and are therefore prohibited in space and on celestial bodies.<sup>29</sup> However, non-aggressive military uses of outer space (as opposed to celestial bodies) are *not* prohibited,<sup>30</sup> and military equipment and personnel may be used for peaceful purposes even on the moon and other celestial bodies.<sup>31</sup>

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21. Dembling & Arons, *supra* note 17, at 431. See Goldberg statement, *supra* note 19, at 81 (the prohibition of appropriation of outer space is one of the key provisions emphasizing Article I’s protection of the interests of non-space powers).

22. See *infra* notes 142-44 and accompanying text.

23. Outer Space Treaty, *supra* note 1, art. I.

24. *Id.* art. III.

25. *Id.*

26. *Id.* art IV. See Dembling & Arons, *supra* note 17, at 432-35.

27. Outer Space Treaty, *supra* note 1, art IV. See Dembling & Arons, *supra* note 17, at 432-35.

28. Outer Space Treaty, *supra* note 1, art IV. See Dembling & Arons, *supra* note 17, at 432-35.

29. Outer Space Treaty, *supra* note 1, art. IV, para. 1.

30. *Id.* art. IV, para. 2. Although the Outer Space Treaty failed to delineate precisely which “peaceful purposes” were permissible, “one might conclude [from the Outer Space Treaty] that any military use of outer space must be restricted to nonaggressive purposes . . . .” Dembling & Arons, *supra* note 17, at 434.

31. Outer Space Treaty, *supra* note 1, art IV, para. 2 (“The use of any equipment or facility necessary for peaceful exploration of the moon and other celestial bodies shall . . . not be prohibited.”). See *Hearings Before the Senate Comm. on Foreign Relations*,

The question of whether to permit military equipment and personnel in space and on celestial bodies sparked a lively debate at the Outer Space Treaty conference. Several delegations, including that of the Soviet Union, initially opposed even the peaceful use of military assets on celestial bodies.<sup>32</sup> The United States, however, maintained that "the use of military personnel and equipment for scientific research or any other peaceful purpose should not be prohibited"<sup>33</sup> because military resources "played an indispensable role [in space activity] and would continue to be an essential part of future space programmes."<sup>34</sup> The British delegate agreed, arguing that equipment should be judged only by its actual end-use, because "[m]ilitary needs frequently [lead] to important technological advances" and "[t]he fact that a piece of equipment owed its origin to military development should not preclude its use for peaceful purposes."<sup>35</sup> Ultimately, the Anglo-American view prevailed. The final treaty embodied the understanding that the actual end-use of a piece of equipment used in space is more important than its military origin or potential military capabilities.<sup>36</sup> Thus, the practical effect of Article IV is that under the Outer Space Treaty, "dual-use" equipment with both

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90th Cong., 1st Sess. 81 (1967) [hereinafter Outer Space Treaty Hearings] (testimony of Cyrus Vance, Dep. Sec. of Defense) ("The treaty does not mean that military personnel or equipment will be excluded from space. Only weapons of mass destruction are barred from space."); Dembling & Arons, *supra* note 17, at 433-34.

32. See U.N. GAOR, COPUOS, Legal Subcomm., 5th Sess., 70th mtg. at 3, U.N. Doc. A/AC.105/C.2/SR.70 (1966) (statement by the Soviet delegate), reprinted in 3 MANUAL ON SPACE LAW, *supra* note 8, at 62 (The USSR "could not agree to the use of military equipment on celestial bodies even on the pretext of carrying out scientific research or other peaceful undertakings, for that might result in activities which would run directly counter to the principle of the use of celestial bodies exclusively for peaceful purposes."). See also Dembling & Arons, *supra* note 17, at 434 (discussing Soviet-led opposition to permitting use of military equipment on celestial bodies).

33. U.N. GAOR, COPUOS, Legal Subcomm., 5th Sess., 62nd mtg. at 6, U.N. Doc. A/AC.105/C.2/SR.62 (1966) (statement by U.S. Amb. Goldberg), reprinted in 3 MANUAL ON SPACE LAW, *supra* note 11, at 59.

34. *Id.* See Dembling & Arons, *supra* note 17, at 435 (the U.S. delegation favored liberal allowance of military assets in space for peaceful purposes).

35. U.N. GAOR, COPUOS, Legal Subcomm., 5th Sess., 71st mtg., U.N. Doc. A/AC.105/C.2/SR.71 (1966) (statement by the British delegate), reprinted in 3 MANUAL ON SPACE LAW, *supra* note 11, at 63. See Dembling & Arons, *supra* note 17, at 435 (the British delegation argued in favor of allowing dual-use equipment on celestial bodies). This strong defense of dual-use space technologies has been ignored by the U.S. in its implementation of the space technology export controls. See *infra*, notes 144-45 and accompanying text.

36. See Dembling & Arons, *supra* note 17, at 435 (Article IV emphasizes "the purpose for which a piece of military equipment is to be used on a celestial body").

military and non-military applications may be deployed for peaceful purposes anywhere in space.<sup>37</sup>

### C. The Free Access Principle As International Law

Although treaties are generally said to bind their signatories as a matter of international law,<sup>38</sup> it is sometimes unclear whether a particular treaty provision states a legally binding obligation or merely a hortatory policy pronouncement. The free access principles articulated in the Outer Space Treaty, however, constitute legally binding, self-executing international law under both American and international textual analyses, or alternatively, as customary international law.<sup>39</sup>

In matters of treaty interpretation, the United States Congress, courts, and agencies "are generally more willing than [courts] of other states to look outside the instrument to determine its meaning."<sup>40</sup> There is no indication in the legislative history of the ratification of the Outer Space Treaty that the free access provision was ever considered hortatory. During its hearings on the matter, the U.S. Senate questioned whether a portion of Article I created a binding obligation on the part of the United States. Its concerns focused on the first paragraph of Article I, which provides that the exploration and use of space shall "be carried out for the benefit and in the interests of all countries"<sup>41</sup> and shared among all nations as the "province of all mankind."<sup>42</sup> Specifically, Sen. Albert Gore, Sr., feared that these clauses would obligate the United States to make its communications satellites available to all nations.<sup>43</sup> Ambassador

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37. An opposing view was represented by the Japanese delegate, who argued that "the provision to the effect that celestial bodies should be used exclusively for peaceful purposes . . . should be extended to include outer space as a whole." U.N. GAOR, COPUOS, Legal Subcomm., 5th Sess., 71st mtg., U.N. Doc. A/AC.105/C.2/SR.71 (1966) (statement by the Japanese delegate), reprinted in 3 MANUAL ON SPACE LAW, *supra* note 11, at 70.

38. The fundamental international legal doctrine of *pacta sunt servanda* establishes that "[e]very treaty in force is binding upon the parties to it and must be performed by them in good faith." Vienna Convention on the Law of Treaties, May 23, 1969, entered into force Jan. 27, 1980, U.N. Doc. A/CONF.39/27 §26. The Vienna Convention, however, is not controlling with respect to the Outer Space Treaty both because the Outer Space Treaty entered into force before the Vienna Convention took effect and also because the United States has not ratified the Vienna Convention.

39. See Dembling & Arons, *supra* note 17, at 456 ("[P]arties [to the Outer Space Treaty] are now contractually obligated to carry out their activities in outer space . . . in accordance with accepted norms and goals validated in a legal form significantly more binding upon the parties than the United Nations resolutions and utterances of individual nations that preceded the Treaty.").

40. RESTATEMENT (THIRD) OF FOREIGN RELATIONS LAW OF THE UNITED STATES, § 325 cmt. g (1987). See CARTER & TRIMBLE, *supra* note 6, at 103-06.

41. Outer Space Treaty, *supra* note 1, art. I, para. 1.

42. *Id.*

43. Outer Space Treaty Hearings, *supra* note 31, at 12 (remarks Senator Gore).

Goldberg responded that "Article I, paragraph 1 of the space Treaty does not . . . create legal obligations with respect to the terms of international cooperation on any existing or future space projects."<sup>44</sup> The discussion, however, was limited to the paragraph containing the clauses about using space "for the benefit of mankind," and did not touch on the notion of open, nondiscriminatory access to space.<sup>45</sup>

The free access provisions have been even more broadly interpreted by other members of COPUOS in the years since the Outer Space Treaty. Some COPUOS delegations have gone so far as to propose a formal Committee declaration that spacefaring states are affirmatively obligated by Article I to promote "the development by all States of *indigenous capability* in space science and technology and their applications."<sup>46</sup> To this end, the proposal calls for space powers to "promote and facilitate the exchange of expertise and technology" as well as "material and equipment . . . within just and equitable parameters of price and payment."<sup>47</sup>

Finally, the free access principles articulated in the Outer Space Treaty constitute binding international law independent of the Outer Space Treaty. Commentators have noted that, based on the behavior of states in the international community, there is ground for the assumption that "all the members of the international community are bound by the fundamental principles and rules contained in [the Outer Space Treaty] because these principles and rules have acquired the status of general

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44. Outer Space Treaty Hearings, *supra* note 31, at 53 (testimony of Arthur J. Goldberg).

45. See Nandasiri Jasentuliyana, *Article I of the Outer Space Treaty Revisited*, 17 J. SPACE L. 129, 140 (1989) ("Article I, paragraph 1 is formulated rather vaguely and could give the impression that it was meant to lay down only a general principle with no legally binding force.").

46. *Report of the Legal Subcommittee*, U.N. Doc. A/AC.105/544 Apr. 15, 1993, at 34 (emphasis added).

47. *Id.* See Arthur L. Levine, *Commercialization of Space: Implications for U.S. Relations with Developing Countries*, in *INTERNATIONAL SPACE POLICY: LEGAL, ECONOMIC, AND STRATEGIC OPTIONS FOR THE TWENTIETH CENTURY AND BEYOND* 119, 133 (Daniel S. Papp & John R. McIntyre eds., 1987) (advocating active promotion of indigenous "capacity for space research and management").

Activist proposals such as this, which stand little chance of acceptance as international law by the leading space powers, may contribute to the diminished effectiveness of COPUOS, which is no longer "the most important single source of international law relating to space activities." GLENN H. REYNOLDS & ROBERT P. MERGES, *OUTER SPACE: PROBLEMS OF LAW AND POLICY* 47 (1989).

customary [international] law."<sup>48</sup> Customary international law applies to all states, including those not parties to the Outer Space Treaty.<sup>49</sup>

For a principle or practice to become recognized as customary international law, three basic conditions must be met. First, the practice must be widespread.<sup>50</sup> Second, it must arise from a sense of legal obligation.<sup>51</sup> Finally, it must be long-standing in practice,<sup>52</sup> as determined by an appropriate international authority.<sup>53</sup> The first requirement—widespread adherence to an international norm—may be satisfied by states' explicit acceptance of the rule or by states' acquiescence to it.<sup>54</sup> The right of free and equal access to space is widely recognized under this standard, since most of the world's nations explicitly accepted the norm by voting for Resolutions 1721 and 1962 and by signing the Outer Space Treaty.<sup>55</sup>

With regard to the second requirement, the free access principles set forth in the Outer Space Treaty were generally considered to be legally binding obligations even before the treaty was drafted. Subsequent statements by signatories indicate that the treaty is commonly viewed, in

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48. Vladlen S. Vereshchetin & Gennady M. Danilenko, *Custom as a Source of International Law of Outer Space*, 13 J. SPACE L. 22, 32 (1985) ("It follows that, independent of the formal participation in the 1967 Outer Space Treaty, all states should observe the obligations arising from its provisions because these provisions are binding as rules of customary law.").

49. *Id.* See generally CARTER & TRIMBLE, *supra* note 6 at 109-22.

50. See Colleen Driscoll Sullivan, *The Prevention of an Arms Race in Outer Space: An Emerging Principle of International Law*, 4 TEMPLE INT'L & COMP. LJ. 211, 227 (1990) (citing M. HUDSON, THE PERMANENT COURT OF INTERNATIONAL JUSTICE 526 (1934)).

51. *Id.*

52. See CARTER & TRIMBLE, *supra* note 6, at 109-114 (discussing the elements of customary international law).

53. See Sullivan, *supra* note 50, at 227.

54. *Id.* at 229 (citing Louis Sohn, *Generally Accepted International Rules*, 6 WASH. L. REV. 1073, 1074 (1986)). U.N. General Assembly Resolutions do not create customary international law, but may be considered evidence of widespread explicit acceptance of an international legal principle. See CARTER & TRIMBLE, *supra* note 6, at 114-21 (discussing the legal force of U.N. resolutions).

55. See, e.g., Vereshchetin & Danilenko, *supra* note 48, at 33 (quoting R.S. Jakhu, *Developing Countries and the Fundamental Principles of International Space Law*, in NEW DIRECTIONS IN INTERNATIONAL LAW 362 (1982)) ("[T]he fundamental principles of international space law, confirmed and declared by the Outer Space Treaty, have been formulated and recognized and accepted by express consent or acquiescence by virtually all countries, developed as well as developing."). Assertions by non-signatories that the Outer Space Treaty does not represent binding customary international law have been consistently rejected. See *id.* at 32 (arguments by "[s]ome of the equatorial states which are not parties to the 1967 Outer Space Treaty . . . that they are not bound by the principles embodied in the treaty" have been rejected by "the overwhelming majority of states. . . .").

large part, as a codification of principles which had already evolved into binding customary international law.<sup>56</sup>

Some commentators have questioned the continued vitality of the third traditional requirement—that a rule be “long-standing” before rising to the level of customary international law.<sup>57</sup> Given the rapid and open development of national activities in space, “the development of customary legal principles has become an accelerated process rather than a gradual evolution.”<sup>58</sup> Consequently, “[t]he passage of only a short period of time after the beginning of the exploration and use of outer space did not prevent the customary norms of the international law of outer space from coming into existence.”<sup>59</sup>

Thus, the fundamental principles set forth in the Outer Space Treaty, including freedom of use and exploration, prohibition of national appropriation, and non-prohibition of military equipment, bind *all nations* as customary international law, notwithstanding any one state’s interpretation of the terms of the treaty.<sup>60</sup> These concepts had crystallized into customary international law even before the drafting of the 1967 treaty.<sup>61</sup>

To summarize, the 1967 Outer Space Treaty articulated pre-existing norms of customary international law, including the right of all states to enter space freely for exploration, use, and scientific investigation, without discrimination or national appropriation, and in accordance with general principles of international law. Moreover, the treaty established that states are free to employ any technology, civilian or military in origin, for peaceful activities in space or on celestial bodies. The United

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56. See Vereshchetin & Danilenko, *supra* note 48, at 32 (citing statements by COPUOS delegates from Czechoslovakia, Italy, and Japan which demonstrate their understanding that the basic principles of the Outer Space Treaty were intended to codify existing binding international law).

57. See Sullivan, *supra* note 50, at 229; Vereshchetin & Danilenko, *supra* note 48, at 25.

58. Sullivan, *supra* note 53, at 229.

59. Vereshchetin & Danilenko, *supra* note 48, at 25. Vereshchetin and Danilenko assert that “international law does not require the existence of practice from ‘times immemorial’ for the creation of its customary rules.” *Id.* at 26. In support of this view, they cite the International Court of Justice, which has stated that “the passage of only a short period of time is not necessarily, or of itself, a bar to the formation of a new rule of customary international law.” *Id.* (quoting 1969 I.C.J. REPORTS 43).

60. See Report of the 58th Conference of the International Law Association 2 (Manila 1978) (“the freedom of outer space for exploration and use is a principle of general international law and thus a principle valid independently of any treaty”); Vereshchetin & Danilenko, *supra* note 48, at 33 (“the doctrine of international law is unanimous on the question of the universally binding character of the fundamental principles laid down by the 1967 Outer Space Treaty”).

61. See Vereshchetin & Danilenko, *supra* note 48, at 31 (“It is generally recognized that treaty and custom interrelate on the following two main levels. . . . A treaty may incorporate and confirm the existing customary law” or may “contain new rules which regulate new problems or change the existing norms”).

States fully supported all of these principles and is bound by them either as a treaty signatory or under customary international law.

### III. THE DUAL-USE PROBLEM OF NON-PROLIFERATION, SPACE EXPLORATION AND EXPORT CONTROLS

At first glance, attempts by some nations to stem the proliferation of nuclear weapons may appear unrelated to the rights of other countries to develop civilian space programs. In fact, however, the nuclear powers' non-proliferation goals collide head-on with the rights of emerging countries to obtain space technologies as a result of trade restrictions intended to prevent the international transfer of certain militarily significant equipment and technologies. Export control regulations either prohibit or impose restrictive export licensing requirements on international transfers of certain commodities and technical data in order to promote foreign policy, national security, or economic objectives. However, due to the "dual-use" nature of many technologies, export controls aimed at military systems may also restrict the flow of civilian space technologies.

#### A. Summary of U.S. Technology Export Control Laws

The present state of U.S. technology export controls results from both national security and foreign policy concerns. The national security concerns arose from the technology-driven arms race that occurred during the Cold War.<sup>62</sup> Foreign policy considerations generated the non-proliferation movement which sought to contain the scope of the arms race by ensuring that it remained a largely bipolar affair.<sup>63</sup> Both policy objectives have been addressed by restricting the international availability of numerous technologies with potential military applications.

U.S. export control law is divided into two major branches. First, exports of purely military articles and services are controlled by the Arms Export Control Act (AECA).<sup>64</sup> The AECA is administered by the State

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62. The arms race simultaneously generated "increased [U.S.] Government concern over the risk that exported high-technology equipment may fall into Communist, particularly Soviet, hands where it might be used for military purposes." OFFICE OF TECHNOLOGY ASSESSMENT, U.S. CONGRESS, PUB. NO. OTA-ISC-239, INTERNATIONAL COOPERATION AND COMPETITION IN CIVILIAN SPACE ACTIVITIES 192 (1985) [hereinafter OTA Report].

63. The Treaty on the Non-Proliferation of Nuclear Weapons, July 1, 1968, 21 U.S.T. 483, T.I.A.S. No. 6839, 729 U.N.T.S. 161, was intended to deny developing states the technological capabilities necessary to develop and deploy nuclear weapons. See *infra* note 72.

64. 22 U.S.C. §§ 2751-2796 (1993). See generally Arthur M. Dula, *Export Controls Affecting Space Operations*, 51 J. AIR L. & COM. 927, 944-48 (1986); Dan Haendel & Amy L.

Department's Office of Defense Trade Controls (ODTC),<sup>65</sup> which promulgates International Traffic in Arms Regulations (ITARs).<sup>66</sup> The ITARs list specific military articles and services for which potential exporters must obtain export licenses.<sup>67</sup>

The Export Administration Act of 1979 (EAA) established the second major branch of U.S. export controls.<sup>68</sup> The EAA is administered by the Commerce Department's Bureau of Export Administration (BXA), which is responsible for regulating the flow of a vast category of technologies not covered by the ITARs. The BXA promulgates Export Administration Regulations (EARs),<sup>69</sup> which reflect decisions to restrict particular technologies that may be used for undesirable purposes, such as contributing to the proliferation of nuclear or other weapons of mass destruction.<sup>70</sup>

## B. Dual-Use Technology Export Controls

The EARs contain the Commerce Control List<sup>71</sup> which sets forth certain technologies which, while not inherently military in nature, are deemed to have potentially undesirable applications for either national security or foreign policy reasons.<sup>72</sup> These so-called "dual-use" technologies, which have both civilian and military applications, potentially include "[m]ost commercial technology,"<sup>73</sup> including civilian space launch vehicles and components.

In the national security area, the EAA authorizes dual-use export controls where necessary "to restrict the export of goods and technology which would make a significant contribution to the military potential of any . . . countries which would prove detrimental to the national security

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Rothstein, *The Shifting Focus of Dual Use Export Controls: An Overview of Recent Developments and a Forecast for the Future*, 25 INT'L LAW. 267, 268 (1991) (summarizing the operation of AECA).

65. 22 C.F.R. § 120.12 (1993). Formerly Office of Munitions Control. 58 Fed. Reg. 39,280 (1993).

66. 22 C.F.R. §§ 120-30 (1993). The ITARs were extensively revised in 1993. 58 Fed. Reg. 39,280-326 (1993).

67. See 22 C.F.R. § 121 (1993) ("The United States Munitions List") (setting forth defense articles covered by AECA, including firearms, military vehicles, munitions, and components); 22 U.S.C. § 2278(b) (1993); 22 C.F.R. § 120.20 (1993) (the export licensing requirement).

68. 50 U.S.C. app. §§ 2401-19 (1993). See generally Dula, *supra* note 64, at 938-44 and Haendel & Rothstein, *supra* note 64, at 268-73 (discussing the operation of the EAA).

69. 15 C.F.R. §§ 768-99 (1993).

70. Haendel & Rothstein, *supra* note 64, at 268-69.

71. See 50 U.S.C. app. § 2404(c) (Supp. 1993) (mandating the implementation of a list of technologies controlled by the EAA).

72. Haendel & Rothstein, *supra* note 64, at 268-69.

73. *Id.* at 268.

of the United States.<sup>74</sup> Historically, these controls have been directed at Eastern Bloc nations.<sup>75</sup> Until recently, the content and scope of the Commerce Control List has been determined in cooperation with the Coordinating Committee for Multilateral Export Controls (COCOM), an organization of Western nations created to restrict the flow of Western technologies to communist countries by harmonizing national security-based export control policies.<sup>76</sup>

The EAA also authorizes BXA to impose export controls which "further significantly further the foreign policy of the United States."<sup>77</sup> Export controls to promote policy objectives such as non-proliferation are authorized by this section.<sup>78</sup> Just as the Western industrial powers facilitated large-scale international coordination of national security-based export controls through COCOM, they have similarly tried to harmonize their diverse restrictions on the international transfer of missile technologies. The Missile Technology Control Regime is the result.

#### IV. THE MISSILE TECHNOLOGY CONTROL REGIME

In 1987, the governments of the leading industrial nations adopted the Missile Technology Control Regime (MTCR)<sup>79</sup> in order to coordinate their export controls aimed at controlling nuclear proliferation.<sup>80</sup> The then-existing non-proliferation system, largely based on the 1968 Nuclear Non-Proliferation Treaty,<sup>81</sup> was intended to keep strategic nuclear

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74. 50 U.S.C. app. § 2402(2)(A) (Supp. 1993).

75. Haendel & Rothstein, *supra* note 64, at 269.

76. *Id.* at 269-70. The end of the Cold War brought massive changes to COCOM, which ultimately disbanded in April 1994, after liberalizing restrictions on exports to the newly democratic states of Eastern Europe. See U.S., *Allies Agree to Dismantle COCOM by April 1, 1994, and Set Up New Regime*, 10 INT'L TRADE REP. 1960, Nov. 24, 1993. However, the demise of COCOM does not mean the end of national security export controls. See *infra* notes 170-73 and accompanying text (COCOM to be replaced by a new, broader export control system).

77. 50 U.S.C. app. § 2402(2)(B) (Supp. 1993).

78. Haendel & Rothstein, *supra* note 64, at 272-73.

79. Canada-France-Federal Republic of Germany-Italy-Japan-United Kingdom-United States: Agreement on Guidelines for the Transfer of Equipment and Technology Related to Missiles [hereinafter MTCR Guidelines and MTCR Equipment and Technology Annex], *exchange of letters announced Apr. 16, 1987*, 26 I.L.M. 599 (1987).

80. MTCR Guidelines, *supra* note 79, at 600. But see Martha Fitzpatrick, Note, *Arms Control: Export Controls on Missile Technology*, 29 HARV. INT'L L.J. 142, 145-46 (1988) ("As a system of voluntary supplier restraint, the [MTCR] has been likened to [COCOM].") However, Fitzpatrick explains, the two regimes exhibit differences in structure and operation that call into question the long-term effectiveness of the MTCR.).

81. Under the Treaty on the Non-Proliferation of Nuclear Weapons, *supra* note 63, the nuclear powers agreed not to assist or encourage non-nuclear states in obtaining nuclear weapons, and non-nuclear states agreed not to seek such weapons. Fitzpatrick, *supra* note 80, at 144 n.31.

materials out of the hands of developing countries. Responding to the apparent inadequacy of the earlier non-proliferation regime, the seven initial MTCR adherents<sup>82</sup> informally agreed in an exchange of letters to "address the problem of global nuclear proliferation through export controls on weapons *delivery systems*, rather than on nuclear materials and technology,"<sup>83</sup> in order to "[control] transfers that could make a contribution to nuclear weapons delivery systems other than manned aircraft."<sup>84</sup> Thus, the MTCR added a second level of restrictions to supplement already existing controls on the transfer of nuclear materials and technologies. The new two-tiered approach to non-proliferation was based on the premise that even renegade nuclear-armed countries cannot threaten world peace if they lack the technical means to strike at their adversaries.<sup>85</sup>

### A. MTCR Provisions

The MTCR places strict controls on exports of space launch vehicles, components, and the production technologies used in civilian space programs. Under the MTCR, all "missile-related" technologies are divided into two categories, that distinguish the most strictly controlled articles from less restricted ones.

Category I, the most restricted group, includes "[c]omplete rocket systems (including ballistic missile systems, *space launch vehicles*, and sounding rockets) and unmanned air vehicle systems . . . [of a certain range]<sup>86</sup> as well as the specially designed production facilities for these

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82. The original members of the MTCR were the "G-7" countries, including Canada, Federal Republic of Germany, France, Italy, Japan, United Kingdom, and United States. MTCR Guidelines, *supra* note 79, at 599.

83. Fitzpatrick, *supra* note 80, at 144, citing 23 WEEKLY COMP. PRES. DOC. 395 (Apr. 20, 1987) (emphasis added). The shift from controlling nuclear weapons themselves to payload delivery systems marked a "new dimension of arms control . . . developed in response to growing concerns that developing states could adapt conventional missiles and launch systems to the delivery of nuclear devices, thereby dramatically increasing the destabilizing effects of their emerging nuclear capabilities." *Id.* Thus, "efforts to control the transfer of weapons delivery systems to fledgling nuclear states provide a significant complement to the existing non-proliferation regime." *Id.*

84. MTCR Guidelines, *supra* note 79, at 600.

85. Aaron Karp, *The Commercialization of Space Technology and the Spread of Ballistic Missiles*, in INTERNATIONAL SPACE POLICY: LEGAL, ECONOMIC, AND STRATEGIC OPTIONS FOR THE TWENTIETH CENTURY AND BEYOND 179, 189 (Daniel S. Papp & John R. McIntyre eds., 1987).

86. The MTCR Guidelines were later broadened in scope to include all nuclear, chemical, and biological weapons delivery systems of any range. *Munich Economic Summit Political Declaration: Shaping the New Partnership*, 28 WEEKLY COMP. PRES. DOC. 1213, 1219 (July 13, 1992). U.S. missile technology policy was revised in accordance with the new consensus among MTCR members. *Controlling Missile Technology: Guidelines Extended to Cover Biological and Chemical Weapons* (statement by Richard Boucher, U.S. Dep't of State spokesman, Jan. 7, 1993), reprinted in 3 FOREIGN POL'Y BULL. 97 (Jan.-Apr. 1993).

systems.<sup>87</sup> Category I also includes "complete subsystems usable in"<sup>88</sup> such rocket systems.<sup>89</sup>

Category I technology transfers, and thus all proposed transfers of space launch vehicles, components, and production facilities, are strictly controlled under the MTCR. The regime imposes a "strong presumption to deny" export applications for the listed Category I items.<sup>90</sup> This presumption may be rebutted only when the recipient state provides binding assurances that "[t]he items will be used only for the purpose stated"<sup>91</sup> and that the item will not be retransferred without permission.<sup>92</sup> The exporting state, in turn, must "assume[] responsibility for taking all steps necessary to ensure that the item is put only to its stated end-use."<sup>93</sup>

Category II comprises an extensive list of dual-use technologies which may have potential uses in MTCR-controlled projects, such as propulsion components, propellants, structural materials, communications equipment, avionics equipment, and certain computers.<sup>94</sup> These transfers are presumptively permitted, provided they do not contribute to a "project of concern."<sup>95</sup> Projects of concern are identified case-by-case by evaluating the risks of nuclear proliferation, the status of the recipient state's missile and space programs, whether the transfer will contribute to the development of a delivery system, the proposed end-use of the item, and any other "relevant multilateral agreements."<sup>96</sup> Transfers which may contribute to projects of concern

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87. MTCR Equipment and Technology Annex, *supra* note 79, at 604 (emphasis added). Category I includes most potential space technology exports from the United States. *Missile Proliferation: The Needs for Controls (Missile Technology Control Regime): Hearings Before the Subcomm. on Arms Control, International Security and Science, and on International Economic Policy and Trade of the House Comm. on Foreign Affairs*, 101st Cong., 1st Sess. 55 (1989) [hereinafter MTCR Hearings] (testimony of James M. LeMunyon, Dep. Ass't Sec. of Commerce for Export Admin.).

88. MTCR Equipment and Technology Annex, *supra* note 79, at 604.

89. *Id.* Category I "complete subsystems" include rocket stages, reentry vehicles, rocket engines, certain guidance systems, thrust vector controls, and certain warhead mechanisms. *Id.* at 604-05.

90. MTCR Guidelines, *supra* note 79, at 600. Transfers of production facilities for Category I systems are generally prohibited. *Id.*

91. *Id.* at 601.

92. *Id.*

93. *Id.* at 600. The MTCR thus places a large burden on the supplier state. "This provision—putting the burden on the supplier and not just on the recipient... has no precedent in the international nonproliferation regime." Richard H. Speier, *The Missile Technology Control Regime*, in *CHEMICAL WEAPONS & MISSILE PROLIFERATION* 115, 120 (Trevor Findlay ed., 1991).

94. MTCR Equipment and Technology Annex, *supra* note 79, at 605-13.

95. Speier, *supra* note 93, at 120.

96. MTCR Guidelines, *supra* note 79, at 600-01. See MTCR Hearings, *supra* note 87, at 32 (testimony of James M. LeMunyon, Dep. Ass't Sec. for Export Admin., U.S. Dep't of Commerce) (considerations for Category II transfers include "whether the item is within

may still be approved if the recipient state provides sufficient assurances of the end-use and end-user.<sup>97</sup>

## B. The Dual-Use Problem of Missile and Space Technologies

Although the MTCR Guidelines "are not designed to impede national space programs or international cooperation in such programs [which] could not contribute to nuclear weapons delivery systems,"<sup>98</sup> nothing in the MTCR Guidelines expressly excludes purely civilian or non-aggressive military space projects from export controls.<sup>99</sup> The MTCR's stringent Category I controls have been strictly applied, particularly by the United States, with respect to space launch vehicle projects. The dual-use nature of space launch technology ensures that virtually all national space launch vehicle programs may be found to contribute to nuclear weapons delivery systems.<sup>100</sup>

As a technical matter, there is no bright line between military "missiles" and civilian "space launch vehicles." In fact, early civilian space projects simply adopted military technologies.<sup>101</sup> The U.S. strongly argued in 1967 that military technologies were essential to all aspects of space activity.<sup>102</sup> More recently, the dual-use nature of space launch technology has generated more cautious commentary:

The only essential differences between [a civilian space launch vehicle] and a ballistic missile are its trajectory and the payload it carries. Suppliers cannot "denature" space-launch technology and be certain that it will be used only for civilian purposes. Once a nation has the ability to place a satellite in orbit it is, at most, only a few

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the technical parameters of the Annex," "whether the country of destination is actually developing its missile capability," "whether the end-user is a project of concern," and whether the transfer would "make a significant contribution to a missile development program.")

97. MTCR Guidelines, *supra* note 79, at 601. See Speier, *supra* note 93, at 120 ("there is a great deal of flexibility in the treatment of Category II exports").

98. MTCR Guidelines, *supra* note 79, at 600.

99. See Speier, *supra* note 93, at 116 ("The regime aims at the control of all devices with the defined capability. It makes no exceptions for so-called peaceful vehicles, alleged to be for military purposes other than weapons delivery, or vehicles sought by nations which do not currently have nuclear weapons programs.").

100. See Dula, *supra* note 64, at 937-38 ("The high technology components of military space systems, such as sensors, computers, and computer programs that operate remote sensing, communication, and navigation satellites constitute the critical military technology of the late 20th century. The components of launch vehicles that transport these spacecraft into orbit are the national munitions of the modern age.").

101. Jack H. McCall, Jr., "*The Inexorable Advance of Technology?*: American and International Efforts to Curb Missile Proliferation," 32 JURIMETRICS J. 387, 398 (1992) ("Historically, the nations that have taken the lead in space exploration have done so by utilizing what were essentially military missiles or military booster rockets to loft the first satellites, space probes, and manned space capsules.").

102. See *supra* notes 33-36 and accompanying text (discussing the early U.S. position that military technologies are essential to all space activities).

years from being able to launch an intermediate range ballistic missile. . . . The differences relate to intentions, not capabilities.<sup>103</sup>

Astronaut John Glenn reportedly told President Kennedy that the difference between his manned rocket and a ballistic missile was nothing more than "[a]ttitude."<sup>104</sup>

The notion that ballistic missile systems are inherently indistinguishable from civilian space launch vehicles is widely held, but not universally accepted. Differences between space launch vehicles and missiles include "trajectory, rocket size, guidance, propulsion, launch facilities and infrastructure, . . . payload,"<sup>105</sup> and the use of heat shields on missiles, which are unnecessary on most unmanned space launch vehicles.<sup>106</sup> Nonetheless, the more cautious view, that the differences between missiles and space launch vehicles are minimal, has prevailed in the formation and application of non-proliferation policy.

### C. The Strict American Interpretation

The potential for diversion of dual-use space technologies has resulted in a strict and cautious U.S. interpretation of the MTCR. Because of the dual-use problem and the perceived difficulties in ascertaining the intentions of potential recipient states, "[t]he U.S. does not export equipment and technology for space launch vehicles to countries with ballistic missile programs."<sup>107</sup> This approach ignores the purported end-use of the transferred technology. The U.S. has attributed its rigid stance, which may impede even purely civilian projects in some states, to findings that "civilian space programs have been used as a conduit for materials and equipment destined for ballistic missiles."<sup>108</sup> Thus, in practice, the U.S. has limited the scope of its international cooperation in space activities by selectively denying some states access to space launch technologies.<sup>109</sup>

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103. Karp, *supra* note 85, at 180. See generally, BRIAN CHOW, EMERGING NATIONAL SPACE LAUNCH PROGRAMS: ECONOMICS AND SAFEGUARDS (Rand Corp. R-4179-USDP, 1993).

104. Speier, *supra* note 93, at 117.

105. Lora Lumpe, *Zero Ballistic Missiles and the Third World*, 14 ARMS CONTROL: CONTEMP. SECURITY POL'Y 208, 216 (1993).

106. *Id.*

107. MTCR Hearings, *supra* note 87, at 143 (testimony of Richard A. Clarke, Ass't Sec. of State for Politico-Military Affairs).

108. U.S. GENERAL ACCOUNTING OFFICE, PUB. NO. GAO/NSIAD-90-176, ARMS CONTROL: U.S. EFFORTS TO CONTROL THE TRANSFER OF NUCLEAR-CAPABLE MISSILE TECHNOLOGY 17 (1990) [hereinafter GAO Report]. See MTCR Hearings, *supra* note 87, at 144 (testimony of Richard A. Clarke, Ass't Sec. of State for Politico-Military Affairs) ("We believe that the risk of diversion from civilian space programs to missile programs is unacceptable.").

109. See MTCR Hearings, *supra* note 87, at 184 (testimony of Norman A. Wulf, Dep. Ass't Dir., Nuclear Weapons Control, U.S. Arms Control and Disarmament Agency) ("Certainly, the U.S. supports space exploration and use, as evidenced by our extensive

In 1990, Congress codified much of the U.S. implementation of the MTCR.<sup>110</sup> The 1990 law articulated the U.S. policies of discouraging transfers of technology which "can deliver weapons of mass destruction,"<sup>111</sup> and strengthening multilateral arrangements such as the MTCR.<sup>112</sup> It also amended both the AECA and EAA to allow sanctions against U.S. or foreign persons or firms which transfer MTCR-related technologies without prior U.S. approval.<sup>113</sup> As a result, the U.S. interpretation of the MTCR may be applied extraterritorially, since foreign firms which refuse to adhere to the U.S. view can be shut out of the lucrative U.S. market.<sup>114</sup>

Congress further clarified its strict interpretation of MTCR-related export controls in the 1994 National Defense Authorization Act.<sup>115</sup> The 1994 Act included a "Sense of Congress" statement that reiterated the Congressional view that "[m]issile technology is indistinguishable from and interchangeable with space launch vehicle technology,"<sup>116</sup> and that all emerging national space programs should be unequivocally opposed.

In the 1994 Act Congress also noted that "[i]t has been United States policy since agreeing to the guidelines of the [MTCR] to treat the sale or transfer of space launch vehicle technology as restrictively as the sale or transfer of missile technology"<sup>117</sup> and that "it has been [U.S.] policy not to

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international cooperation in peaceful space programs, including making launch services available to other countries. Cooperation in the development of space launch technologies, however, is quite another matter.").

110. National Defense Authorization Act for Fiscal Year 1991, 104 Stat. 1485, 1738-50, Pub. L. No. 101-510 §§ 1701-04. This strengthening of MTCR controls was in response to a 1989 State Department report that recommended U.S. aid to emerging space programs. See 139 Cong. Rec. H7114-15 (1993).

111. Pub. L. No. 101-510 § 1701, 104 Stat. 1738-39 (1990).

112. See H.R. CONF. REP. NO. 923, 101st Cong., 1st Sess., reprinted in 1990 U.S.C.C.A.N. 3236-37 (1991 policy statement and amendments EEA and AECA would strengthen MTCR export controls).

113. See 50 U.S.C. app. § 2410b (amending EAA) and 22 U.S.C. §2797a (amending AECA).

114. The 1991 sanction provisions provide that persons or firms transferring MTCR-controlled technologies without U.S. approval are barred for two years from obtaining U.S. government contracts for missiles or missile equipment and are ineligible for U.S. technology transfer licenses for the same period. *Id.*

115. National Defense Authorization Act for Fiscal Year 1994, Pub. L. No. 103-160. The bill was signed by President Clinton on November 30, 1993. 139 Cong. Rec. S17242 (1993).

116. *Id.* § 1614(a)(2) ("Sense of Congress Relating to the Proliferation of Space Launch Vehicle Technologies"). The provision began as a Senate concurrent Resolution introduced by Sens. Bingaman, McCain, and Glenn. See S. CON. RES. 37, reprinted in 139 Cong. Rec. S10935 (1993). See also H.R. REP. NO. 252, 103rd Cong., 1st Sess. 20 (1993) (proposing to amend the House Defense Authorization bill to include the Sense of Congress resolution). The Senate resolution was prompted by Congressional fears that President Clinton would implement sweeping MTCR liberalizations recommended by the State Department in 1989. 139 Cong. Rec. H7114 (1993) and 139 Cong. Rec. S11424 (1993).

117. Pub. L. No. 103-160 § 1614(a)(4).

increase the number of nations acquiring space launch vehicles . . ."<sup>118</sup> In addition, the Act states that "[t]he United States has successfully dissuaded other MTCR adherents, and countries who have agreed to abide by MTCR guidelines, from providing assistance to emerging national space launch vehicle programs in the Third World."<sup>119</sup> However, Congress also acknowledged the need to offset the blunt U.S. refusal to cooperate in emerging space launch vehicle programs: It found that the United States has "successfully dissuaded countries from pursuing space launch vehicle programs by offering to cooperate with them in other areas of space science and technology."<sup>120</sup>

Thus, through its codification of the "strict interpretation"<sup>121</sup> of the MTCR with regard to space launch technologies, Congress has clearly stated its opposition to all emerging national space launch vehicle programs.

## V. MTCR AND THE OUTER SPACE TREATY

While the Outer Space Treaty and the MTCR are not, by their explicit terms, related, the two documents are in fact connected by the practical reality that MTCR-controlled technologies include dual-use space launch vehicles and components. But the debate concerning the future of emerging national civilian space programs cannot be limited to the question of whether space launch technologies are inherently dual-use—most technologies are. Rather, we must further ask whether dual-use potential alone justifies the selective denial of access to technologies needed by countries—including those willing to provide end-use assurances—in order to realize their rights to explore and use space under the 1967 Outer Space Treaty.

The Outer Space Treaty recognized the dual-use nature of space technology. The treaty prohibits weapons of mass destruction from space, but permits the use, for peaceful purposes, of military equipment in space and on celestial bodies.<sup>122</sup> Under the treaty, access to space may not be denied solely on the basis of the dual-use nature of the technologies sought to be used. During the treaty negotiations the U.S. took the position that military technologies are legitimate, if not essential,

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118. 139 Cong. Rec. H7114 (1993) (statement by Rep. Jon Kyl (R-Ariz.)).

119. Pub. L. No. 103-160 §1614. Some lawmakers believe that the U.S. policy should apply to MTCR members and adherents as well as Third World states. See 139 Cong. Rec. S11424 (1993) (statement by Sen. Jeff Bingaman) ("We should not be providing space launch technology even to most adherents of the MTCR.").

120. Pub. L. No. 103-160 §1614.

121. *Id.* §1614(b).

122. Outer Space Treaty, *supra* note 1, art. IV.

components of civilian space activities.<sup>123</sup> The present U.S. interpretation of the MTCR ignores this reality, and it also overlooks the caveat of the MTCR Guidelines, which provide that the MTCR is "not designed to impede national space programs . . .".<sup>124</sup>

In short, the critical question is whether, by lumping together "good" and "bad" space projects (and denying technology transfers to both), the United States has fulfilled its obligations under the 1967 Outer Space Treaty to promote open, non-discriminatory access to space, without regard to the nature of the technologies used, and to facilitate international cooperation to achieve that end.<sup>125</sup>

### A. Relative Status of the MTCR and the Outer Space Treaty

The most important feature of the MTCR's relationship to the Outer Space Treaty is that, unlike the Treaty, the MTCR does not represent international law. Even if MTCR controls are deemed to be justified under the U.N. Charter as necessary international security measures, the MTCR itself is neither a "treaty" nor even an international "agreement."<sup>126</sup> It has instead been described as a "set of identical policies . . . to be implemented in parallel."<sup>127</sup> Thus, as a matter of international law, the MTCR does not supersede either the Outer Space Treaty or the customary international law articulated by the treaty.<sup>128</sup>

The MTCR Guidelines are, however, binding U.S. domestic law. MTCR policies have been incorporated into federal law in the EAA and AECA. U.S. constitutional law dictates that treaties and statutes have equal status as enforceable domestic law.<sup>129</sup> When a U.S. statute conflicts

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123. See *supra* notes 33-37 and accompanying text (discussing long-held U.S. position that military technologies are appropriate and necessary for all aspects of its national space activities).

124. MTCR Guidelines, *supra* note 79 at 600.

125. See *supra* notes 4-37 and accompanying text.

126. Speier, *supra* note 93, at 115. See Pericles Gasparini Alves, United Nations Institute for Disarmament Research, Research Paper No. 15, *Access to Outer Space Technologies: Implications for International Security* 111 (1992) ("the MTCR is not a formal agreement").

127. Speier, *supra* note 93, at 115-16.

128. See *id.* at 120-21 ("The MTCR recognizes that, under international law, a policy cannot supersede a treaty. Therefore, the regime is subject to international treaty obligations. When there is a conflict between the MTCR and such treaty arrangements as NATO or the European Space Agency, the treaty prevails.").

129. *Tag v. Rogers*, 267 F.2d 664, 667 (D.C. Cir. 1959) (citing *The Cherokee Tobacco*, 78 U.S. (11 Wall.) 616, 620-21 (1870)), cert. denied, 362 U.S. 904 (1960). See *CARTER & TRIMBLE*, *supra* note 6, at 148 ("Treaties are made 'law of the land' by Article IV of the Constitution. By virtue of this provision, an Article II treaty therefore has status as U.S. domestic law."). Customary international law, meanwhile, is treated as part of the federal common law. See *The Paquete Habana*, 175 U.S. 677, 700 (1900) ("international law is part of our law, and must be ascertained and administered by the courts of justice of appropriate jurisdiction").

with a treaty, the later-promulgated instrument controls.<sup>130</sup> Under this last-in-time rule, MTCR-related export controls affecting emerging national space launch vehicle programs are valid U.S. law whether or not they violate the earlier Outer Space Treaty. Domestic U.S. law may, therefore, be inconsistent with its international legal commitments. The critical question is whether the MTCR is *necessarily* in conflict with U.S. obligations under the Outer Space Treaty.

### B. The U.S. Implementation of the MTCR Violates the Outer Space Treaty by Denying Free Access to Outer Space

The strict U.S. implementation of the MTCR has led to restrictive, discriminatory access to outer space and a de facto appropriation of outer space for the benefit of a few nations. This result violates the free access principles of the Outer Space Treaty and contradicts the U.S. affirmation in 1967 that "outer space . . . [is] not open just to the big powers or the first arrivals but shall be available to all, both now and in the future."<sup>131</sup>

As implemented by the U.S., the MTCR has severely limited international civilian and non-aggressive military access to outer space. Indeed, the MTCR is arguably "the most stringent barrier to the acquiring of outer space capabilities by emerging outer-space-competent states . . . despite the fact that its basic objectives are not designed to hinder national programmes and international cooperation in this field."<sup>132</sup> It has even been suggested that the MTCR has, over time, "acquired the goal of preventing developing countries from gaining access to space through independent space-launch programmes."<sup>133</sup> The detrimental effect of the MTCR on national space programs is largely a result of the strict U.S. export control laws, considered the most stringent of any MTCR member.<sup>134</sup>

The effectiveness of the MTCR in impeding national space programs is well-documented.<sup>135</sup> Argentina's Condor program, which was to develop both missiles and space launch vehicles, was cancelled in

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130. *Reid v. Covert*, 354 U.S. 1, 18, and n.34 (1957) ("[W]hen a statute which is subsequent in time is inconsistent with a treaty, the statute to the extent of the conflict renders the treaty null.").

131. Arthur J. Goldberg, U.S. representative to the U.N. General Assembly, Address Before the U.N. Gen. Assembly (Dec. 17, 1966), in 56 DEPT ST. BULL. 78, 81 (1967).

132. Alves, *supra* note 126, at 111 (emphasis added).

133. Lumpe, *supra* note 105, at 210.

134. Alves, *supra* note 126, at 112.

135. See generally *id.* at 112-15 (assessing the impact of MTCR-related restrictions on newly emerging national space programs). See also MTCR Hearings, *supra* note 87, at 105 (testimony of W. Seth Carus, fellow, Washington Institute for Near East Policy) ("There is reason to believe that the [MTCR] has worked. In several cases, the MTCR has derailed programs that otherwise might have been brought to completion. It has also restrained some countries from exporting missiles.").

1992 after MTCR members restricted technology transfers for the project.<sup>136</sup> Obstacles placed by the U.S. reportedly caused delays in Brazil's space efforts and prevented it from entering the satellite launching market.<sup>137</sup> The threat of U.S.-imposed MTCR sanctions also scuttled Indian plans to purchase a cryogenic rocket booster from Russia,<sup>138</sup> even though India had provided Russia with the end-use assurances required by the MTCR Guidelines.<sup>139</sup> South Africa and Taiwan both scrapped their space launch vehicle programs entirely in response to MTCR pressure and the specter of U.S.-imposed sanctions.<sup>140</sup>

Thus, by persuading or coercing states to cancel space launch vehicle projects, the MTCR restricts *independent* access to outer space. MTCR proponents argue that since states may still pay to have their payloads launched into outer space by one of the existing spacefaring powers, "access" to space has not been abridged.<sup>141</sup> Such a narrow, interpretation of "access" is irreconcilable with the sweeping language of the Outer Space Treaty, with its emphasis on cooperation and equity, and with U.S. policy statements regarding the treaty.<sup>142</sup>

Even assuming that "access" to space through a launch services cartel is a suitable substitute for an independent space launch capability,

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136. Alves, *supra* note 126 at 113. See also MTCR Hearings, *supra* note 87, at 105 (testimony of W. Seth Carus, fellow, Washington, Institute for Near East Policy) (risk of U.S. sanctions convinced Condor's suppliers to abandon the program in order to keep "more lucrative U.S. defense contracts") and 139 Cong. Rec. S10935 (1993) (listing the cancellation of the Condor II program among "important successes" for MTCR).

137. Alves, *supra* note 126, at 114.

138. Andrew Lawler, *Russians OK Missiles Export Control*, DEFENSE NEWS, Sept. 6, 1993, at 6; 139 Cong. Rec. S10935 (1993) (U.S. and Russia agreed, in July 1993, that Russia would freeze the proposed rocket sale to India. Russia ultimately agreed to adhere to the MTCR Guidelines). See Alves, *supra*, note 123, at 114 (discussing MTCR's impact on India's space program); Lumpe, *supra* note 105, at 210 (same).

139. Lumpe, *supra* note 105, at 210. See MTCR Guidelines, *supra* note 79, at 601 (binding end-use assurances required for Category I transfers).

140. The U.S. ultimately imposed sanctions on South Africa in 1991 for its Armscor program. Alves, *supra* note 126, at 114 n.95. Taiwan voluntarily abandoned its space launch vehicle program in response to MTCR pressures. *Taiwan Scraps Booster Plans*, AVIATION WK. & SPACE TECH. Oct. 22, 1990, at 11. See 139 Cong. Rec. S10935 (1993); 139 Cong. Rec. H7115 (1993).

141. See Speier, *supra* note 93, at 117 (MTCR permits "continued international cooperation in the peaceful uses of space (that is, satellites and the information they handle, as opposed to launch vehicles), manned aircraft, and tactical defense projects"). Brian Chow's RAND Corp. report fueled the hard-line U.S. view by endorsing this notion of a launch services cartel administered by the traditional space powers. Chow urged MTCR members to deny space launch technologies to other countries but recommended that MTCR countries "make a commitment to launch any country's payload at a reasonable price and in a timely manner." CHOW, *supra* note 103, at xiii (quoted in 139 Cong. Rec. S11424, Sept. 10, 1993 (remarks by Sen. Bingaman)).

142. See *supra* notes 10-16 and accompanying text (discussing the U.S. interpretation of the free access principle in the years preceding the Outer Space Treaty and during the treaty negotiations).

such a result would still violate the Outer Space Treaty. The exclusive launch service suppliers' cartel suggested by MTCR would constitute a de facto appropriation of space for the benefit of the launching states in violation of Article II of the treaty, which prohibits national appropriation of space "by claim of sovereignty, by use or occupation, or by *any other means*."<sup>143</sup> Indeed, it would be difficult to more effectively appropriate outer space than to exclude states by denying them the technologies they need to develop independent access and then selectively selling them the same access for a profit.<sup>144</sup> In practice, therefore, the MTCR runs afoul of the Outer Space Treaty's free access guarantee regardless of how one defines "access" to space.

### C. The MTCR Is Discriminatory

Some commentators have argued that the MTCR is discriminatory and inequitable, in violation of the Outer Space Treaty.<sup>145</sup> MTCR restrictions discriminate against specific countries and also against certain dual-use technologies. By analogy to U.S. constitutional and civil rights law, any assessment of "discrimination" under the Outer Space Treaty should consider two key indicia. First, the activity under consideration must have a discriminatory effect, or lead to disparate treatment of different countries. Second, the activity must be carried out with discriminatory intent.<sup>146</sup>

Under the U.S. implementation of the MTCR, export controls have been applied selectively to promote U.S. national security and foreign policy objectives by discriminating against countries which are not favored allies. In theory, the MTCR "is not directed towards specific countries, but is based on the control of the transfer of specific rocketry

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143. See Outer Space Treaty, *supra* note 1, art. II.

144. This result is analogous to a person blocking a public highway and charging a "toll" to passersby. The person would unquestionably have "appropriated" the highway for his benefit.

Moreover, the notion of MTCR states selling launch services to all comers at reasonable prices may be unrealistic. The rapid commercialization of space launch services in the U.S. and other countries may lead to market prices beyond the reach of developing states. Arthur L. Levine, *Commercialization of Space: Implications for U.S. Relations with Developing Countries*, in *INTERNATIONAL SPACE POLICY: LEGAL, ECONOMIC, AND STRATEGIC OPTIONS FOR THE TWENTIETH CENTURY AND BEYOND* 126, 129 (Daniel S. Papp & John R. McIntyre eds., 1987).

145. See Outer Space Treaty, *supra* note 1, art. I.

146. These two aspects of discrimination are found in U.S. constitutional and civil rights law. See, e.g., *Arlington Heights v. Metropolitan Hous. Dev. Corp.*, 439 U.S. 252 (1977); *Griggs v. Duke Power Co.*, 401 U.S. 424 (1971).

technologies.<sup>147</sup> In practice, however, the projects of favored nations are distinguished from those of non-allies.<sup>148</sup>

The problem once again lies in the U.S. interpretation of the MTCR Guidelines. It has been understood that MTCR members and non-member "adherents" are generally permitted to import controlled technologies.<sup>149</sup> The United States, however, recognizes as "adherents" only those countries which sign bilateral agreements with the U.S.<sup>150</sup> Thus, no unilateral action by one country can guarantee that it will be permitted to import the same technologies offered to an officially-recognized MTCR "adherent." The losers are typically developing countries and their nascent space programs.<sup>151</sup> The effect of the U.S. definition of "adherents" is discriminatory, and impedes the "legitimate right [of Third World nations] to develop civilian space-launch vehicles."<sup>152</sup>

Without more, a mere disparity in treatment among countries should not be considered "discrimination" under the Outer Space Treaty. Such an interpretation would imply that all countries are entitled to all space technologies, under identical terms and conditions, regardless of their malevolent plans for the technologies. Prohibiting all disparate treatment would make it impossible for an exporting country like the U.S. to implement any non-proliferation policy aimed at keeping militarily significant technologies away from undesirable ballistic missile programs. Thus, disparate treatment should not be considered discriminatory when it is merely an incidental consequence of a non-discriminatory policy decision.

The concept of "intent" distinguishes incidental disparate impact from policy decisions aimed specifically at impeding emerging civilian national space programs. The U.S. implementation of the MTCR intentionally impedes civilian national space programs by assuming that

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147. Alves, *supra* note 126, at 111. See Speier, *supra* note 93, at 117 (MTCR "is not aimed at particular nations, but at specific missile and rocket projects . . .").

148. See Paul Freedenberg, *The Commercial Perspective*, in EXPORT CONTROLS IN TRANSITION: PERSPECTIVES, PROBLEMS, & PROSPECTS 57 (Gary K. Bertsch & Steven Elliot-Gower, eds. 1992) ("North-South technology control is based more on the foreign policy goals of particular countries than on the national security of the COCOM countries as a whole.").

149. Lumpe, *supra* note 105, at 211.

150. *Id.*

151. Andrew Mack, *Beyond MTCR: Additional Responses to the Missile Proliferation Problem*, in CHEMICAL WEAPONS & MISSILE PROLIFERATION 123, 124 (Trevor Findlay ed., 1991).

152. Karp, *supra* note 85, at 189. Although Karp argues for a strong export control regime, he recognizes the legitimacy of developing states' activities in space launch technology research and deployment. Effective controls must therefore "offer incentives to Third See World nations intent upon maximizing their national capabilities." *Id.*

all such programs are inherently destabilizing.<sup>153</sup> In practice, the MTCR regime focuses almost entirely on technology transfers to developing countries.<sup>154</sup> This focus is not accidental. The U.S. and other industrialized states view their own possession of MTCR-related technologies as critical components of stability and deterrence, but consider possession of the same technologies by developing countries to be dangerous and destabilizing.<sup>155</sup> The inequity inherent in this view has not gone unnoticed in the developing countries.<sup>156</sup>

The foregoing discussion has demonstrated that the MTCR, as implemented by the United States, restricts other states' access to space in violation of the Outer Space Treaty. In practice, the MTCR is inequitable and discriminatory, and effectuates an appropriation of space by a launch services cartel composed of MTCR-member states. Of course, stemming the international proliferation of weapons of mass destruction is an important goal. However, by signing the Outer Space Treaty, the U.S. committed itself to a course of conduct which does not permit the breadth of the means it currently uses to further its legitimate non-proliferation objectives.

## VI. OTHER FLAWS IN THE MTCR

In addition to its abrogation of the free access principles of the Outer Space Treaty, the rigid U.S. interpretation of the MTCR suffers from other serious theoretical weaknesses in the areas of international security, foreign policy, and economics.

As a security matter, an MTCR implementation that restricts all dual-use space launch technology is overbroad and misdirected. The MTCR's focus on delivery systems was a major shift from prior nonproliferation efforts that concentrated on nuclear materials and

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153. See *supra* notes 107-109 and accompanying text.

154. See McCall, *supra* note 101, at 420 ("MTCR's application to focus almost entirely on developing countries has been criticized as 'insensitive,' displaying an inconsistent and hypocritical cultural bias in technology-related transactions, and may also be viewed as implicitly threatening their sovereignty.").

155. Mack, *supra* note 151, at 123.

156. See *International Cooperation in Space Activities for Enhancing Security in the Post-Cold War Era: Report of the Secretary-General* at 6, U.N. Doc. A/48/221 (1993) [hereinafter U.N. Report]. See also Lumpe, *supra* note 105, at 211-12 (discrimination between "good proliferators" and "bad proliferators" promotes opposition to the MTCR, which "is seen as another discriminatory regime in which the North is allowed a certain category of weaponry and the South is not"); U.N. Report, *supra* at 6 ("any [missile technology] controls must be non-discriminatory and generally acceptable, if they are to be effective"); Shakram Chubin, *The South and the New World Order*, 16 WASH. QTRLY. 84 (1993), (the "MTCR is hardly the stuff of worldwide consensus"); Fitzpatrick, *supra* note 80, at 147 ("real progress toward controlling the proliferation of nuclear weapons capabilities in developing states must include efforts by the developing states themselves").

weapons systems. By developing the MTCR, member nations implicitly conceded the inadequacy of then-existing controls.<sup>157</sup> However, even proponents of a strict MTCR acknowledge that delivery systems are of little concern in the absence of nuclear or chemical warheads.<sup>158</sup> The earlier weapons-based controls, in turn, implicitly acknowledged the failure of international politics and diplomacy to restrain aggressive states and defuse regional conflicts. Consequently, MTCR export controls are attenuated from the underlying international security problems. Furthermore, the MTCR is ineffective with respect to indigenous development of MTCR-related technologies,<sup>159</sup> which in fact may be encouraged by stringent export controls.<sup>160</sup> Thus, international security might be better served by measures which focus on the underlying political and diplomatic problems instead of those which attempt to prevent the inevitable spread of advanced technologies.<sup>161</sup>

Since long-term solutions to underlying international security problems are based on mutual understanding, a supplier cartel like the MTCR is unlikely to enhance long-term security. "Probably the greatest

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157. See Fitzpatrick, *supra* note 80, at 144 (discussing MTCR's new emphasis on controlling delivery systems rather than particular weapons systems).

158. See Karp, *supra* note 85, at 189 ("So long as a nation does not have nuclear weapons, it cannot effectively arm a ballistic missile. Missile and space-launch technology pose no major threat to international security if they cannot be used to deliver nuclear warheads.").

159. Speier, *supra* note 93, at 117. See McCall, *supra* note 101, at 420-21 ("[F]or many developing nations with relatively greater independent technological bases . . . , the MTCR's external constraints upon such programs may be minimal at best, as a great deal of the necessary scientific skills and technology are already extant."). Theoretically, nonproliferation controls could be further extended another step beyond delivery systems, should the MTCR prove inadequate in deterring indigenous development of MTCR-related technologies. The future could include harsh restrictions on mass communications and scholarly exchanges or may involve inducements and threats which lead non-spacefaring states to abandon high technology programs altogether.

160. See REYNOLDS & MERGES, *supra* note 47, at 239 (strict technology controls "encourage foreign nations reliant on that technology to work harder to achieve independence . . .").

161. See generally McCall, *supra* note 101, at 388 (the rapid spread of advanced technologies and the failure of existing control regimes to stop it presents "vexing" policy problems). Proponents of the MTCR simply assume that secondary delivery systems controls are essential to achieving non-proliferation goals. See CHOW, *supra* note 119, at 2 (with weapons-based controls alone, "proliferation can only be limited and slowed, not stopped"). Chow asserts that the MTCR is the key to a completely successful non-proliferation policy. But see REYNOLDS & MERGES, *supra* note 47, at 240 (MTCR cannot be completely effective in stopping technology transfers, because "seepage" is inevitable). Scholars and commentators have offered various alternative proposals. See, e.g., Lumpe, *supra* note 105, at 215 (advocating a Zero Ballistic Missile (ZBM) program of radical disarmament to promote international security and eliminate MTCR's discrimination) and U.N. Report, *supra* note 156, at 10-12 (suggesting broad "confidence-building measures," such as an international space launch monitoring agency to promote the development of new national space programs).

weakness of the MTCR is that it is only a suppliers' cartel and does nothing to address the demand for missiles, born of regional political tension and local arms races."<sup>162</sup> The discrimination and exclusiveness inherent in the MTCR may only increase these tensions, by heightening Third World resentment and encouraging indigenous development of the same controlled technologies.<sup>163</sup> Thus, as one commentator notes,

it is clear that real progress toward controlling the proliferation of nuclear weapons capabilities in developing states must include efforts by the developing states themselves. Moreover, although supplier restraint is necessary to further a nonproliferation policy, the recent trend towards indigenous production capabilities in developing states suggests that supplier restraint alone may prove insufficient for the task.<sup>164</sup>

The MTCR's launch service cartel also raises serious economic questions, particularly with regard to the international trade consequences of space-launch technology controls.<sup>165</sup> Proponents of the current U.S. interpretation of the MTCR unduly trivialize the significant trade benefits of technology exports associated with space launch vehicles.<sup>166</sup> However, exporters of such technology, such as the satellite industry, complain that the MTCR fails to recognize the economic value of lost export opportunities, and support liberalization of MTCR

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162. Lumpe, *supra* note 105, at 212. See Mack, *supra* note 151, at 125 ("Designed to check the *supply* of missile technology to Third World states, the MTCR fails to address the question of *demand*—the often powerful political and security incentives which lead Third world states to seek missiles or missile technology in the first place.") (emphasis in original). Mack likens the MTCR to the U.S. "war on drugs," another policy which illustrates that "supply-side attempts to halt the flow of goods for which there is high demand is problematic." *Id.*

163. See *supra* note 135-140 and accompanying text (on indigenous development of space launch technologies). See also Karp, *supra* note 85, at 180-81 (Third World states seek space launch and ballistic missile technologies not only for legitimate military, scientific, and economic reasons, but also for self-respect, international prestige, and political leverage). Elitist or discriminatory practices by MTCR member states may intensify the "Third World's pathological inferiority complex." *Id.* at 181 (arguing for technology controls as a means of offsetting Third World interests).

164. Fitzpatrick, *supra* note 80, at 147.

165. This prudent view had been espoused by the Office of Technology Assessment before the advent of the MTCR. See OTA Report, *supra* note 62, at 193 ("[T]he national security and foreign policy benefits of export controls need to be weighed against the loss in export competitiveness to which they may sometimes lead.").

166. See Brian Chow, *Keep Controls on Space Launch Technology*, WALL ST. J., Sept. 20, 1993, at A14 ("The economic benefits of exporting space launch technology are not anywhere near as large [as the benefits of commercial aircraft sales]. . . . The American share of space launch technology sales is unlikely to exceed \$200 million a year."). Chow apparently believes that \$200 million is insignificant merely because it pales in comparison to the commercial aircraft business, among the largest exporting industries in the U.S. By this standard, hundreds of other U.S. exporting industries would also be found unworthy of political support.

controls.<sup>167</sup> In any case, truly comprehensive dual-use technology controls are technically infeasible in the modern industrial world and would amount to "market suicide" in the international trade arena.<sup>168</sup> The MTCR effectively subsidizes space *launch service providers* at the expense of technology manufacturers and exporters by denying space launch vehicle exports that would divert launch business away from the traditional spacefaring powers.<sup>169</sup>

Thus, even by depriving states of their right of access to outer space, the U.S. implementation of the MTCR cannot fully achieve its basic national security and foreign policy objectives. In addition, it has serious negative economic consequences. A reformed MTCR, however, may be brought into compliance with the free access provisions of the Outer Space Treaty at the same time it addresses long-term U.S. policy concerns.

## VII. THE FUTURE OF THE MTCR AND THE FREE ACCESS PRINCIPLES OF THE OUTER SPACE TREATY

The U.S. and the international community have three options with regard to the relationship between the MTCR and the Outer Space Treaty. First, the status quo may be deemed acceptable despite the apparent inconsistency between the practices of the MTCR and the principle of free, nondiscriminatory access to outer space. Second, the Outer Space Treaty may be amended or superseded to reflect a new approval of limited access to space for non-MTCR members, controlled by a launch services suppliers' cartel. Third, MTCR-related policies may be modified to safeguard free access principles.

### A. Reconciling the MTCR and Outer Space Treaty

The status quo, under which the MTCR and Outer Space Treaty remain inconsistent in their treatment of national space launch vehicle programs, is unacceptable under international law. Allowing the

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167. *Satellite Industry Supports Proposed Lifting of Sanctions Against China*, COMMUNICATIONS DAILY, Nov. 15, 1993.

168. REYNOLDS & MERGES, *supra* note 47, at 240. Reynolds and Merges list indigenous technological development and the inevitability of technology transfers ("seepage") as reasons to doubt the long-term efficacy of the MTCR. *Id.*

169. The strict U.S. application of the MTCR bolsters the U.S. launch services business, which is accustomed to substantial federal assistance. Widespread international development of commercial space launch vehicles could present formidable competition for the existing space launch entities. See Chow, *supra* note 166, WALL ST. J. at A14 (quoted in 139 Cong. Rec. H7114 (1993)) ("after other countries succeed in developing their own space launch capability, they will no longer ask the U.S. for launch services"). In fact, commercial U.S. launchers have already appealed for U.S. government subsidies in order to compete against launch service providers in other MTCR countries. John Mintz, *Launching a Drive for Federal Help*, WASH. POST, Jan. 12, 1994, at F1.

inconsistency to continue undermines the legitimacy of far-reaching international agreements such as the Outer Space Treaty.

It would also be undesirable for the U.S. interpretation of the MTCR to prevail over the free access principles of the Outer Space Treaty as international law. The MTCR does not represent international law, and thus may not automatically nullify inconsistent provisions of prior treaties.<sup>170</sup> The Outer Space Treaty's free access principles may be superseded only by the emergence of a new peremptory norm of international law<sup>171</sup> or by amending the treaty. Neither course is likely. First, the policies underlying the MTCR are by no means "accepted and recognized by the international community of States as a whole as a norm from which no derogation is permitted."<sup>172</sup> Thus there is no indication that a new peremptory norm is emerging based on the MTCR. Second, the free access concept is strongly supported in the international community, making any amendment highly unlikely.<sup>173</sup> Furthermore, repudiating part of the Outer Space Treaty might well jeopardize future attempts to establish comprehensive international legal regimes in new areas.

The most desirable option is to liberalize interpretation of the MTCR, allowing free access to space while denying technological assistance to ballistic missile programs. The U.S. MTCR implementation could be brought into compliance with the Outer Space Treaty if the U.S. were more willing to accept end-use assurances from importing states. As a practical matter, the United States currently assumes that all space programs are disguised ballistic missile programs.<sup>174</sup> However, some European MTCR members, including France, "have adopted a policy to promote what they consider legitimate space programs and often do not draw a connection to military-related ballistic missile programs."<sup>175</sup>

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170. *See supra* notes 126-28 and accompanying text.

171. *See supra* notes 38-55. Vienna Convention on the Law of Treaties, May 23, 1969, entered into force Jan. 27, 1980, U.N. Doc. A/CONF.39/27, art. 64 ("If a new peremptory norm of general international law emerges, any existing treaty which is in conflict with that norm becomes void and terminates.").

172. *Id.* art. 53.

173. Indeed, there is considerable support among signatories of the Outer Space Treaty to enhance the guarantee of free, nondiscriminatory access to space. *See Report of the Legal Subcommittee, supra* note 46 at 34 (proposing a binding legal obligation on all states to promote the indigenous development of space launch capabilities in states which do not yet have such resources).

174. *See supra* notes 107-09 and accompanying text.

175. GAO Report, *supra* note 108, at 17. *See Alves, supra* note 126, at 116 (discussing interpretative disagreements among MTCR member countries).

Adoption of a similar policy by the U.S. would eliminate or significantly curtail the MTCR's detrimental effects on legitimate space programs.<sup>176</sup>

Any MTCR reform must be accompanied by several other steps, particularly the expanded involvement of Third World states in weapons non-proliferation regimes,<sup>177</sup> the commitment of substantial resources to the resolution of regional conflicts and local arms races,<sup>178</sup> and the strengthening of organizations responsible for verifying and monitoring compliance with weapons-based non-proliferation regimes.<sup>179</sup> All of these steps will decrease the need for secondary delivery systems-based controls such as the MTCR. In addition, a more effective end-use monitoring system must be established to spot and react to any diversions from civilian projects to ballistic missile programs.<sup>180</sup> The U.S. could then liberalize space launch technology controls without sacrificing national security or non-proliferation goals.

## B. Recent MTCR Developments

Despite the continuing post-Cold War escalation of North-South tensions and demonstrated weaknesses in the MTCR, the present policy remains firmly entrenched. Recent developments in the MTCR arena do not bode well for the Outer Space Treaty or its free access provisions.

Spacefaring MTCR states have continued to pursue their non-proliferation policies by denying space access to other countries, while enlarging and strengthening the present MTCR system. As previously discussed, the strict U.S. interpretation was codified in the Defense Authorization Act for 1994.<sup>181</sup> In addition, the Clinton administration has announced its continued support for the strict U.S. view of the MTCR and reaffirmed that "United States will not support

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176. States with newly-established space programs or programs of questionable legitimacy could be required to submit to intense international supervision and monitoring, which would permit free access to outer space by such states, without compromising the non-proliferation goals of the MTCR. By imposing legal rather than political standards to emerging national space programs, improper discrimination may be prevented.

177. Fitzpatrick, *supra* note 80, at 147.

178. See Lumpe, *supra* note 105, at 212.

179. A monitoring agency, the International Atomic Energy Agency, already exists for monitoring nuclear weapons-related transfers. See McCall, *supra* note 101, at 428 ("any 'internationalization' of the MTCR should be accompanied by an evaluation as to whether its purposes could be better served under the aegis of the United Nations or a U.N.-affiliated agency like the IAEA").

180. See U.N. Report, *supra* note 156, at 10-12; McCall, *supra* note 101, at 428 (favoring the creation of an international space and missile technology end-use monitoring agency). But see National Defense Authorization Act for Fiscal Year 1994, Pub. L. No. 103-160 § 1614, *supra* note 115 (end-use monitoring is deemed too late to prevent risks to international security).

181. See *supra* notes 115-120 and accompanying text.

the development or acquisition of space-launch vehicles in countries outside the MTCR.”<sup>182</sup>

In 1994 COCOM was disbanded,<sup>183</sup> with the understanding that it will eventually be replaced by a new regime which will “coexist”<sup>184</sup> with the MTCR.<sup>185</sup> The new arrangement will be aimed at preventing “certain countries of concern from receiving goods and technology that could be used in the development of . . . missile delivery systems.”<sup>186</sup> Thus, the discriminatory nature of the controls will remain. There has also been a renewed effort to expand the MTCR membership.<sup>187</sup> This expansion, especially Russia’s recent commitment to adhere to the MTCR Guidelines,<sup>188</sup> has solidified the North-South polarization promoted by the regime. Finally, the recent diplomatic crisis in North Korea over the monitoring of its nuclear weapons program has highlighted the weakness of the primary weapons-based non-proliferation regime and may further increase support for more attenuated delivery-system controls such as the MTCR.<sup>189</sup>

## VIII. CONCLUSION

The 1967 Outer Space Treaty formally articulated pre-existing principles of customary international law, including the rights of states to enter and use outer space freely, without discrimination, and to do so using both civilian and military equipment and personnel. Subsequently,

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182. White House, Office of the Press Secretary, *Fact Sheet: Nonproliferation and Export Control Policy*, Press Release, Sept. 27, 1993 at 3. The policy remains discriminatory with respect to national space launch programs: “For MTCR member countries, we will not encourage new space launch vehicle programs, which raise questions on both nonproliferation and economic viability grounds. The United States will, however, consider exports of MTCR-controlled items to MTCR member countries for peaceful space launch programs on a case-by-case basis.” *Id.*

183. *Computergram Int'l*, November 8, 1994 (“COCOM . . . was dissolved on March 31.”).

184. *U.S., Allies Agree to Dismantle Cocom by April 1, 1994, and Set Up New Regime*, 10 INT'L TRADE REP. 1960, Nov. 24, 1993.

185. Operating details of the new regime [were] to be finalized in January 1994. U.S. officials have indicated that the new regime will permit “national discretion,” so that exports may be approved by individual countries without prior approval by the entire membership. *Id.*

186. *U.S., Allies Agree to dismantle Cocom by April 1, 1994, and Set Up New Regime*, *supra* note 186.

187. Hungary joined the MTCR on November 25, 1993, becoming the twenty-fourth member state and the first from Eastern Europe. *Hungary East Europe's First to Join Missile Control Regime*, MTI ECONEWS, Nov. 26, 1993.

188. Russia agreed to adhere to the MTCR in 1993. At the time of writing, the United States is attempting to secure China’s adherence. *Christopher Warns North Korea of Sanctions over Nuclear Sites*, [Minneapolis] STAR TRIB., Nov. 18, 1993 at 2A.

189. See *Christopher warns North Korea of sanctions over nuclear sites*, *supra* note 173, at 2A (on North Korea’s refusal to cooperate with the International Atomic Energy Agency).

the Missile Technology Control Regime led to strict export controls on dual-use technologies including space launch vehicles, components, and production facilities. The MTCR has been applied by the United States, to the detriment of legitimate national space launch programs and in violation of the Outer Space Treaty, although it is clear from the text of the MTCR that the agreement was not intended to produce this result.<sup>190</sup> The U.S. implementation has led to a closed, discriminatory cartel of launch service supplier states.

The MTCR, as applied by the United States, is an inefficient and incomplete attempt to promote legitimate national security and foreign policy objectives. The U.S. implementation of the MTCR also sacrifices lucrative high-technology export markets. These same U.S. policy objectives could be better served by addressing the reasons for the growing demand for weapons of mass destruction, easing the North-South polarization of current policies, and promoting legitimate, peaceful national space programs as a means of international social and economic development. Ultimately, the most important difference between the space technology policy of today and a policy that complies with the Outer Space Treaty may be little more than "[a]ttitude."<sup>191</sup>

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190 MTCR Guidelines, *supra* note 79 at 600.

191. See Speier, *supra* note 93, at 117 (quoting John Glenn).



# **ARTICLE**

## **A CALL FOR RECONSIDERATION OF THE STRICT UTILITY STANDARD IN CHEMICAL PATENT PRACTICE**

**SALIM A. HASAN †**

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## I. INTRODUCTION

The strict utility requirement in chemical and biotechnology<sup>1</sup> patent cases has been the subject of considerable criticism and controversy.<sup>2</sup> Section 101 of the patent code provides:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.<sup>3</sup>

In addition, the first paragraph of section 112 of the patent code provides:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.<sup>4</sup>

Sections 101 and 112 combine to create two separate utility requirements under the patent statute. First, the applicant must demonstrate a practical utility for the invention under section 101. Second, the applicant's disclosure must instruct those who read the patent how to use this new invention.<sup>5</sup>

In mechanical and electrical applications, the utility requirement is usually not problematic because both the "practical utility" and the "how

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1. Unless otherwise indicated, for the purposes of this article the term "chemical" as used in phrases such as "chemical research" and "chemical invention" is intended to encompass the field of biotechnology as well. The field of biotechnology is generally considered to encompass "the use of data and techniques of engineering and technology for the study and solution of problems concerning living organisms." WEBSTER'S NEW WORLD DICTIONARY 143 (2nd college ed. 1982). The subject matter of biotechnical inventions generally includes material that is capable of direct or indirect self-replication, as well as nucleotide sequences and/or amino acid sequences. See U.S. DEPT. OF COMMERCE, PATENT AND TRADEMARK OFFICE, MANUAL OF PATENT EXAMINING PROCEDURE §§ 2401, 2403 (Rev. 16, March 1994) [hereinafter MPEP].

2. See Eric P. Mirabel, *Practical Utility is a Useless Concept*, 36 AM. U. L. REV. 811, 822-23 (1987) (summarizing the negative consequences in the chemical and biotechnology fields which flow from a strict utility requirement which denies patents to inventions with uncertain uses); G. Kenneth Smith and Denise M. Kettelberger, *Patents and the Human Genome Project*, 22 AM. INTELL. PROP. L. ASS'N Q.J. 27, 60-62 (1994) (discussing recent proposals and bills introduced to Congress requesting amendment of the U.S. patent statute for separate requirements for biotechnology protection); Comment, *Utility Requirement in Chemical Patents*, 35 GEO. WASH. L. REV. 809, 817 (1967) (the strict utility requirement for chemical inventions will work a hardship on chemical researchers).

3. 35 U.S.C. § 101 (1988).

4. 35 U.S.C. § 112 (1988).

5. 35 U.S.C. § 112. In a sense the § 101 requirement establishes a standard against which the *invention* must be measured. On the other hand, § 112 creates a standard against which the *inventor's disclosure* must be measured.

"to use" requirements are usually easily ascertainable from a description or diagram of the invention itself. Utility in chemical applications, however, is often more elusive because a mere description or diagram of a new chemical compound does not usually reveal its utility.<sup>6</sup> If an invention's utility is not revealed by mere descriptions or drawings, the applicant must assert and support a "practical utility" for the compound, as summarized in the following passage from the Manual of Patent Examining Procedure:

If the asserted utility of a compound is believable on its face to persons skilled in the art in view of the contemporary knowledge in the art, then the burden is upon the examiner to give adequate support for rejections for lack of utility under [Section 101]. On the other hand, incredible statements or statements deemed unlikely to be correct by one skilled in the art in view of contemporary knowledge in the art will require proof on the part of the applicants for patents.<sup>7</sup>

Mechanical and electrical inventions are ordinarily prospectively designed with a particular use in mind, and utility is usually evident.<sup>8</sup> Likewise, many chemical inventions are designed in response to a certain problem in a particular art, and the utility requirement is easily satisfied. For example, a propellant composition may be specifically developed to produce nontoxic combustion gases that inflate an automobile air bag in the event of a collision. Meeting the utility requirements of the patent law for such prospectively designed and specifically applied chemical inventions is routine, paralleling application procedures for mechanical and electrical inventions.

In contrast to most mechanical and electrical inventions, many chemical inventions evolve without a readily discernible utility. Instead, chemical inventions may arise out of research efforts wherein future utility is far less certain or even unknown. For example, an AIDS research foundation may synthesize a new compound during the course of developing a potential vaccine. The foundation may hope that this new compound is useful as part of the desired vaccine, but it may not know the ultimate composition of the drug and how the new compound will fit in that puzzle. Chemical inventions may also be derived from an accidental discovery, in which case the new compound does not even

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6. Indeed, it is noteworthy that the Manual of Patent Examination Procedure devotes what is essentially a one sentence passage to mechanical invention utility. MPEP, *supra* note 1, at § 608.01(p). On the other hand, the Manual devotes an extensive section to chemical utility, entitled "Guidelines for Considering Disclosures of Utility in Drug Cases." *See id.* (citations omitted).

7. *Id.*

8. *See, e.g., id.* ("A complete disclosure should include a statement of utility. This usually presents no problem in mechanical cases.")

have a hoped-for use.<sup>9</sup> In such a case, the new compound may then be the simple object of fundamental use-testing. In contrast, even though accidental uses may arise for mechanical or electrical inventions, the mechanical or electrical device itself is almost always originally created with a particular use in mind.

A chemical invention, therefore, may not have a clear utility initially, but may still be beneficial to society in one of two ways: (1) as an object of scientific research (for example, as a possible building block to a potential vaccine), or (2) as an object of use-testing (for example, as its own starting point in finding some use for somebody). Such research uses for new chemical discoveries have increasing relevance in the field of biotechnology. Currently, scientists are obtaining gene sequence fragments known as cDNA fragments.<sup>10</sup> While only complete cDNA sequences may code for specific proteins, partial fragments of these cDNA sequences also may aid biotechnology research by (1) mapping chromosomes, (2) identifying tissue types, and (3) identifying gene regions associated with diseases.<sup>11</sup>

In *Brenner v. Manson*,<sup>12</sup> the United States Supreme Court responded to a series of inconsistent cases in the area of chemical utility by strictly construing sections 101 and 112. Commentators dispute<sup>13</sup> the wisdom and rationale of the Court's holding in *Manson* that a process yielding a product which either has no known use, or is useful only in the sense that it may be an object of scientific research, is not patentable.<sup>14</sup> In dicta, the Court also suggested that the product itself is not useful if the disclosed utility merely relates to research.<sup>15</sup> The following year, the Circuit Court of Customs and Patent Appeals (CCPA), which preceded the current Court of Appeals for the Federal Circuit (CAFC), embraced *Manson* in the companion cases of *In re Kirk*<sup>16</sup> and *In re Joly*.<sup>17</sup> In *Kirk*, the CCPA expanded the narrow holding of *Manson* to rule that compounds whose

9. See Bob Gatty, *Mishaps that Mothered Invention: Products Created by Accident*, 75 NATION'S BUS. 58 (1987); *Metro Collects Scientific Cream of the Crop: 11 Nobel Winners Here to Honor U of T's Polyani*, Toronto Star, Oct. 31, 1994, at A1 (Announcing a lecture by Michael Smith, a University of British Columbia professor and the 1993 Nobel Prize winner in chemistry: "Smith says his lecture will stress the importance of funding pure academic research as the most socially and economically beneficial form of scientific activities. Most important scientific discoveries, his own included, are made by accident in the course of searching for something else, he said." (emphasis added)).

10. See generally, Smith and Kettelberger, *supra* note 2, at 39-46.

11. ROBERT P. MERGES, PATENT LAW AND POLICY 159 (1992).

12. 383 U.S. 519 (1966).

13. See *In re Kirk*, 376 F.2d 936, 955 (C.C.P.A. 1967) (Rich, J., dissenting).

14. *Manson*, 383 U.S. at 535.

15. *Id.*

16. 376 F.2d 936 (C.C.P.A. 1967).

17. 376 F.2d 906 (C.C.P.A. 1967).

sole disclosed utility lay as an intermediate for the production of other compounds, which in turn have no present known use other than as objects of chemical research, did not satisfy the practical utility requirement of section 101.<sup>18</sup> In *Joly*, the CCPA extended *Kirk* to cover process claims, holding that processes which yield chemical intermediates are also unpatentable where the intermediates are used only to create end products with no known use.<sup>19</sup>

Following these cases, the United States Patent and Trademark Office (Patent Office) adopted a rigorous practical utility policy for chemical inventions.<sup>20</sup> However, while not directly disputing or questioning *Manson*, the CCPA/CAFC apparently allowed certain cracks to appear in the wall of the strict practical utility standard in *Nelson v. Bowler*<sup>21</sup> and *Cross v. Iizuka*.<sup>22</sup> In *Bowler*, the CCPA characterized knowledge of "pharmacological activity" of any compound as being "obviously beneficial to the public"<sup>23</sup> and applied a more relaxed section 112 standard of proving an actual reduction to practice than the Patent Office had been using.<sup>24</sup> In *Iizuka*, the Federal Circuit upheld the patentability of a chemical compound shown only to inhibit certain enzymes *in vitro* (in a test tube) even though no evidence was presented to show that the claimed compound worked *in vivo* (in a living being), implicitly approving a suggestion in the Patent Office Board of Interference's opinion that tests showing pharmaceutical activity may satisfy section 101 even where no specific therapeutic use for the compounds have been established.<sup>25</sup> Thus, even if the practical utility of an invention is research-oriented in the sense that pharmacological results are produced only in a laboratory setting, the invention may nevertheless pass both utility requirements where sufficient section 112 instructions regarding how to achieve those results are included in the application.

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18. *Kirk*, 376 F.2d at 945.

19. *Joly*, 376 F.2d at 908.

20. See MPEP, *supra* note 1, at § 608.01(p) ("Utility must be definite and in currently available form; not merely for further investigation or research.").

21. 626 F.2d 853 (C.C.P.A. 1980).

22. 753 F.2d 1040 (Fed. Cir. 1985).

23. *Bowler*, 626 F.2d at 856.

24. Specifically, the court recognized an *in vivo* rat blood pressure test and an *in vitro* gerbil colon smooth muscle test as sufficiently manifesting the practical utility of substituted prostaglandins and intermediates for preparing these compounds in contradistinction to previous rigorous Patent Office reduction to practice standards. *Bowler*, 626 F.2d at 855-57. See Kenneth D. Sibley, *Practical Utility: Evolution Suspended?*, 32 IDEA 203, 219, n. 92.

25. *Cross*, 753 F.2d at 1043.

Despite these limited cracks in the strict utility requirement, *Manson's* broad dictate remains the law.<sup>26</sup> This Article calls for a reexamination of the strict utility requirement in chemical and biotechnology patent cases. Although *Manson* attempted to bring uniformity and predictability to the law of chemical utility, its demanding standard is inconsistent with the policies underlying the patent statute. These policies recognize that the public benefits from wide dissemination of information in all fields of technology. The current state of the law under *Manson* inhibits the dissemination of information in the chemistry and biotechnology fields by imposing the same rigorous utility standard required of mechanical and electrical inventions before a patent is granted: the standard of development to a point where a "specific benefit exists in currently available form."<sup>27</sup>

This Article critically examines the history of the utility requirement in American patent jurisprudence, and concludes that the strict holding in *Manson* was not inevitable in light of the patent statutes and case precedents and was certainly not necessary to achieve the Constitutional aim to "promote the progress . . . of the useful arts."<sup>28</sup> Unlike their electrical and mechanical counterparts, chemical inventions are beneficial to society in a two-step process, the first step being the discovery or development of a compound with no definitive use and the second step being the discovery or development of a definitive use for that compound. Each step is essential in producing beneficial products for society and, therefore, each step should be the subject of patent incentive and reward. In the chemical and biotechnological arts, then, the patent system should foster progress in a two-step quid pro quo.<sup>29</sup>

This Article further examines the strict chemical utility requirement in light of international patent protection and harmonization considerations.<sup>30</sup> These concerns dictate a need for a relaxed utility standard in the United States allowing scientific research and use-testing as valid utilities under section 101. Germany, Japan, and other nations do not share the stringent chemical utility requirements of the United States. Most other nations recognize research as a valid use for purposes of patentability.<sup>31</sup> Moreover, the chemical utility standard in the United States creates difficulty in obtaining meaningful international protection

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26. See *In re Ziegler*, 992 F.2d 1197, 1203 (Fed. Cir. 1993) ("The utility of a chemical compound may not reside in 'its potential role as an object of use testing.' ") (citing *Manson*, 383 U.S. at 535).

27. *Manson*, 383 U.S. at 534-35.

28. U.S. CONST. art. I, § 8, cl. 8.

29. See discussion *infra* Part III.A.

30. See discussion *infra* Part III.B.

31. See STEPHEN A. BENT, ET AL., INTELLECTUAL PROPERTY RIGHTS IN BIOTECHNOLOGY WORLDWIDE 146 (1987).

for inventors from all over the world due to the United States' inconsistent position relative to most of the world.

Finally, this Article introduces the new concept of "best utility" disclosures as a means to implement a relaxed United States patent utility standard in the chemical arts, either as a separate statutory requirement or as a section 112 "best mode" interpretation.<sup>32</sup>

## II. HISTORICAL DEVELOPMENT OF THE PRESENT CHEMICAL UTILITY STANDARD IN THE UNITED STATES

### A. Case Law Prior to *Manson*

The origins of the judicial interpretation of the utility standard in patent law can be traced to Justice Story, who construed the requirement liberally and viewed a finding of lack of utility as the exception. Justice Story's inclusive standard defined utility in contradistinction to frivolity and immorality:

All that the law requires is, that the invention should not be frivolous or injurious to the well being, good policy, or sound morals of society. The word "useful," therefore, is incorporated in the act in contradistinction to mischievous or immoral. For instance, a new invention to poison people, or to promote debauchery, or to facilitate private assassination, is not a patentable invention.<sup>33</sup>

Other early commentators also viewed utility as an insignificant hurdle.<sup>34</sup> Exemplary of the liberal construction of utility by the judiciary in the first half of the twentieth century was *Potter v. Tone*,<sup>35</sup> a case in which the patent application demonstrated a general utility for the claimed chemical compound by describing the composition's characteristics—a reducing agent and a nonconductor of electricity. The court held that a description of such characteristics was sufficient to satisfy the utility requirement.<sup>36</sup> The court refused to require a commercial application for the chemical invention, which the court felt should be the subject of a separate patent.<sup>37</sup>

Patent Office practice generally agreed with the courts' interpretation. For example, in *Ex parte Watt*<sup>38</sup> the Patent Office Board of Patent Appeals suggested that a composition whose sole use was as an

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32. See discussion *infra* Part III.C.

33. *Lowell v. Lewis*, 15 F. Cas. 1018, 1019 (C.C.D. Mass. 1817) (No. 8568).

34. See CURTIS ON PATENTS § 28 (1849) (explaining degree of utility is irrelevant).

35. 36 App. D.C. 181, 184 (D.C. Cir. 1911).

36. *Id.* at 184-85.

37. *Id.*

38. 63 U.S.P.Q. 163 (Pat. Off. Bd. of App. 1942).

intermediate in the production of other compounds satisfied the utility requirement:

Regardless of whether applicant's compounds could or could not be used in a froth flotation process we are of the opinion that they could be regarded as intermediates in the preparation of other compounds, since it is obvious that any organic compound can be so used.<sup>39</sup>

This relaxed standard in chemical utility cases remained until 1950, when a series of cases, beginning with the CCPA case *In re Bremner*, questioned this liberal standard.<sup>40</sup> The application in *Bremner* claimed compositions and processes for producing hard resins, but the specification did not assert particular uses for the inventions.<sup>41</sup> The application merely disclosed physical characteristics of the compound, just as the *Potter* application did.<sup>42</sup> Nevertheless, the *Bremner* court required some showing of actual utility for the claimed compound:

It is our view that no "hard and fast" ruling properly may be made fixing the extent of disclosure of utility necessary in an application, but we feel certain that the law requires that there be in the application an assertion of utility and an indication of the use or uses intended.<sup>43</sup>

Extending this conclusion to the process claims as well, *Bremner* held that a claimed process must also produce a useful product in order to be patentable.<sup>44</sup> The Patent Office quickly adopted the "assertion of utility" requirement as promulgated by the court in *Bremner*.<sup>45</sup>

Although ostensibly construing section 112 rather than section 101,<sup>46</sup> the Court of Appeals for the District of Columbia expanded the *Bremner* ruling in *Petrocarbon, Ltd. v. Watson*.<sup>47</sup> In this case, the applicant claimed a process for producing a new polymer compound which could form a "film" on a cool surface.<sup>48</sup> The court rejected the application because the face of the application did not teach how to use the invention as required by section 112:

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39. *Id.* at 165.

40. 182 F.2d 216 (C.C.P.A. 1950).

41. *Id.* at 217.

42. Compare *Bremner*, 182 F.2d at 217 (no patent "granted upon a . . . process producing a product, unless such product be useful.") with *Potter*, 36 App. D.C. at 185 (patent upheld even though no specific use disclosed for resulting product).

43. *Id.* at 217 (emphasis in original).

44. *Id.*

45. See, e.g., *Ex parte Tolkmith*, 102 U.S.P.Q. 464, 465-66 (Pat. Off. Bd. App. 1955).

46. *Petrocarbon* illustrates the somewhat blurry line created by the courts between the be useful requirement of section 101 and the "how to use" disclosure requirement of section 112. The court may just as well have rejected the application under section 101 on the grounds that the film did not do anything, but instead rejected the application under section 112 on the grounds that the applicant did not teach a person of ordinary skill in the art "how to use" the product of the claimed invention.

47. 247 F.2d 800 (D.C. Cir. 1957), cert. denied, 355 U.S. 955 (1958).

48. *Id.* at 801.

The examples [disclosed in the application for use of the film] do not indicate whether or not this film adheres to the object on which it forms, whether it falls off in the form of a powder, whether it is detachable in the form of a film-like substance . . . whether the film itself would have to be subjected to further processing before it could form a useful object or fluid, and so on. Some such further indication, it seems to us, should have been given to enable readers of the application to understand how the product is to be used.<sup>49</sup>

Despite the rising momentum toward a strict chemical utility standard, the CCPA reaffirmed the relaxed standard in the 1960 case of *In re Nelson*.<sup>50</sup> In *Nelson*, the applicant claimed steroid compounds asserted to be useful as intermediates in the preparation of other steroids, at least some of which had therapeutic properties.<sup>51</sup> The court held that these intermediate steroid compounds satisfied the utility requirement of section 101.<sup>52</sup> Although commentators have disputed the breadth of the holding in *Nelson*,<sup>53</sup> the court's policy-based rationale suggests that the applicant was not required to specify a use for the final product in order to demonstrate that the intermediate was useful:

We have never received a clear answer to the question "Useful to whom and for what?" Surely a new group of steroid intermediates is useful to chemists doing research on steroids, and in a "practical" sense too. Such intermediates are "useful" under section 101. They are often actually placed on the market before much, if anything, is known as to what they are "good" for, other than experimentation and the making of other compounds in the important field of research. Refusal to protect them at this stage would inhibit their wide dissemination, together with the knowledge of them which a patent disclosure conveys, which disclosure the potential protection encourages. This would tend to retard rather than promote progress.<sup>54</sup>

Thus, *Nelson* recognized that in the chemical industry, pure research often has an intrinsic utility despite no immediate use for the fruits of the

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49. *Id.*

50. 280 F.2d 172 (C.C.P.A. 1960).

51. *Id.* at 180.

52. *Id.* at 180-81.

53. Compare, Note, *Requirements for Patenting Chemical Intermediates: Do They Accomplish the Statutory Goals?*, 29 ST. LOUIS U. L.J. 191, 193 (1984) (interpreting *Nelson* as not requiring that the final product also have a use) with, Note, *Do Chemical Intermediates Have Patentable Utility?*, 29 GEO. WASH. L. REV. 87, 98 (1960) (interpreting *Nelson* narrowly as requiring the product of the subject intermediate to have a known utility). In *Manson*, the Supreme Court followed the former interpretation of *Nelson* by quoting *Nelson* as holding that "a process yielding chemical intermediates [is] 'useful to chemists doing research on steroids,' despite the absence of evidence that any of the steroids thus ultimately produced were themselves 'useful.'" *Manson*, 383 U.S. at 530.

54. 280 F.2d at 180-81.

research. As a result, the court construed utility under section 101 to include utility to the chemical researcher.<sup>55</sup>

*Nelson* also provided guidance with respect to the separate roles of sections 101 and 112 in the utility inquiry.<sup>56</sup> More specifically, it noted that a two-step inquiry is required in determining utility under these different sections:

[It is necessary to] separate the requirement of section 101 that an invention *be* useful from the section 112 requirement that a specification shall so explain "the manner and process of . . . using" the invention so as to "enable any person skilled in the art . . . to use the same."<sup>57</sup>

According to the court, section 112 "is not directed to the *existence* of usefulness but to what an inventor must disclose as a quid pro quo for patent protection."<sup>58</sup> The court explained that "in exchange for and as a condition of the patent protection, it secures a full disclosure of the invention."<sup>59</sup> Discussing section 101, the court concluded that the existence, rather than the degree, of utility was the critical inquiry.<sup>60</sup> As the court noted, "[t]he seemingly little advances are the bread and butter of progress and sometimes turn out to be of much greater importance than at first thought."<sup>61</sup>

Finally, the CCPA in *Nelson* explicitly rejected the D.C. Circuit's decision in *Petrocarbon*.<sup>62</sup> The court took exception to *Petrocarbon* primarily because the specification described a use for film that was not too broad, because one of ordinary skill in the art would understand the use described by the specification.<sup>63</sup> Thus, in addition to clarifying and differentiating the section 101 and 112 utility requirements, the *Nelson* court applied a more relaxed standard for interpreting both of these sections than did *Bremner* and *Petrocarbon*.

In addition to the confusion between sections 101 and 112, courts appeared confused over the distinction between product claims and process claims. Courts provided little clarification regarding the utility requirements and the differences between product and process claims until the 1963 case of *In re Wilke*.<sup>64</sup> *Wilke* explained that section 112

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55. *Id.*

56. *Id.* at 184.

57. *Id.*

58. *Id.*

59. *Id.* at 182.

60. *Id.* at 178.

61. *Id.* at 182.

62. *Id.* at 186. The CCPA in *Nelson* made no attempt to distinguish the *Petrocarbon* case, stating instead that one of ordinary skill in the plastics art would know how to use the disclosed film in *Petrocarbon* in light of the film's disclosed properties. *Id.*

63. *Id.*

64. 314 F.2d 558 (C.C.P.A. 1963).

imputes different requirements on product and process claims. For a process claim, the applicant is only required to teach how to use the process, and is not required to teach a use for the product of the claimed process.<sup>65</sup> On the other hand, for product claims section 112 requires a disclosure of both the manner of making the claimed product and the manner of using the claimed product.<sup>66</sup> Thus, *Wilke* and *Nelson* combined to turn back the strict holding of *Bremner*. Despite *Wilke* and *Nelson*, chemical researchers still had reason to be uncertain regarding the status of the utility requirement until 1966.

### B. The *Manson* Decision

In 1966 The United States Supreme Court entered the chemical utility debate in *Brenner v. Manson*.<sup>67</sup> *Manson* was a patent applicant who sought an interference<sup>68</sup> with a previously issued patent.<sup>69</sup> Specifically, both parties claimed a process that yielded a steroid product used in cancer research.<sup>70</sup> The original examiner refused to declare an interference, asserting that *Manson*'s application failed to disclose any utility for the chemical research compound produced by the process.<sup>71</sup> Appealing the examiner's rejection, *Manson* attempted to demonstrate utility by referring to a publication which disclosed that other steroids that were homologs<sup>72</sup> to the steroids *Manson*'s process created were

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65. *Id.* at 565-66. *Accord, In re Adams*, 316 F.2d 476 (C.C.P.A. 1963), and *In re Szwarc*, 319 F.2d 277 (C.C.P.A. 1963).

66. *Wilke*, 314 F.2d at 562.

67. 383 U.S. 519 (1966).

68. The patent office may hold an interference hearing when a current patent application overlaps in scope with a pending application or an unexpired patent. 35 U.S.C. § 135 (1988). The interference seeks to resolve the issue of priority of invention between the parties. *Id.*

In *Manson*, Howard Ringold and George Rosenkranz applied for a U.S. patent in December 1957, claiming priority as of December 1956 when they filed for a Mexican patent. *Manson*, 383 U.S. at 520-21. *Manson* filed his U.S. application in January 1960, claiming that he discovered the process before December 1956. *Id.* *Manson* requested an interference hearing to resolve the competing priority claims. *Id.*

Judges examining the *Manson* decision have disagreed about the significance of the interference setting of the case. Compare *In re Kirk*, 376 F.2d 936, 944 (for purposes of determining utility differences between ex parte hearing and interference are "highly technical procedural ones") with *Kirk*, 376 F.2d at 953 (even for utility inquiries these two situations "differ by more than 'highly procedural aspects'"') (Rich, J., dissenting).

69. *Id.* at 521.

70. *Id.* at 520-22.

71. *Id.* at 521.

72. The Applicant's "homolog utility" argument seemed sensible, especially in light of the modern test of obviousness for chemical inventions announced three years earlier in *In re Papesch*, 315 F.2d 381 (C.C.P.A. 1963). Although *Papesch* ended the era in which the Patent Office typically determined obviousness simply because of a similar structural formula to a composition disclosed in the prior art, a difference in properties was

effective in inhibiting tumors in mice.<sup>73</sup> The Patent Office Board of Patent Appeals rejected this argument, concluding that the utility of a product could not be demonstrated merely by its close relation to another useful compound.<sup>74</sup> The CCPA reversed the Patent Office Board of Appeals in view of *Nelson*, noting that for process claims utility need not also be demonstrated for the product of the process so long as the product is not "detrimental to the public interest."<sup>75</sup>

The Supreme Court not only reversed the CCPA,<sup>76</sup> but rejected the standard in *Nelson*. Instead, the Court required process patent applications to demonstrate the utility of the products produced by the process.<sup>77</sup> The product of the process patent must exhibit a practical utility itself and not simply be "an object of scientific research" or "an object of use testing."<sup>78</sup>

As a rationale for its holding, the Court skeptically portrayed the disclosure of information in patents as being of dubious quality which does not entice others to search for a use for an invention.<sup>79</sup> More importantly, the Court feared that a process whose product is not precisely delineated by a specific practical utility would effectively "block off whole areas of scientific development" because of the uncertain scope of this monopoly grant.<sup>80</sup> As a result of these concerns, the Court required a showing of "substantial"<sup>81</sup> utility as the quid pro quo for receiving a patent. Therefore, a novel process does not merit a patent monopoly unless a "specific benefit exists in currently available form" for the products of the claimed process.<sup>82</sup> Whereas *Nelson* defined utility to include utility to the chemical researcher,<sup>83</sup> *Manson* held that a process

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nevertheless required in order to demonstrate the unobviousness of the invention as a whole when the prior art was a homolog of the invention. Conversely, it follows that it might be ordinarily expected that homologs would have a similar utility, as asserted by the applicant, based on similar properties.

73. 383 U.S. at 522.

74. *Id.*

75. The Supreme Court characterized this as an "extreme proposition." *Id.* at 530.

76. *Id.* at 536.

77. *Id.* at 534-35.

78. *Id.* at 535.

79. *Id.* at 534. The Court noted the "highly developed art of drafting patents so that they disclose as little information as possible." *Id.* at 534. Furthermore, any incentives to future research created by the patent disclosure are undercut by the patent-holder's ability to enforce the patent. *Id.*

For a discussion of the "dubious quality" of disclosure in patent applications see Sibley, *supra* note 24, at 216.

80. 383 U.S. at 534 (citing *Monsanto Chemical Co. v. Coe*, 145 F.2d 18, 21-24 (D.C. Cir. 1944)).

81. *Id.* at 534.

82. *Id.* at 534-35.

83. *Nelson*, 280 F.2d at 181. See *supra* notes 50-63 and accompanying text.

whose sole utility is in research does not satisfy the utility requirement.<sup>84</sup> In dicta, the Court further suggested that a product whose sole use was in research could also not be protected by a product patent.<sup>85</sup> The Court treated products and processes alike, centering its analysis on the disclosed use; if the use is merely for research, then the invention is unpatentable, regardless of whether the invention is a product or a process.<sup>86</sup>

### C. The CCPA's Response to *Manson*: *Kirk* & *Joly*

The CCPA in the companion cases of *In re Kirk*<sup>87</sup> and *In re Joly*<sup>88</sup> extended the *Manson* holding by embracing the dicta in *Manson* which suggested that the Court's reasoning would be similarly applicable to product claims for chemical research intermediates.<sup>89</sup> *Kirk* and *Joly* both involved product claims for intermediates used to synthesize other compounds that had no known utility. Specifically, *Kirk* involved intermediate steroids used in preparing "biologically active compounds."<sup>90</sup> The CCPA held that if a process is not useful, then the claimed intermediates used in the process are not useful, and sections 101 and 112 are thus not satisfied.<sup>91</sup> In *Joly*, the CCPA also affirmed the Examiner's rejection for insufficient disclosure of utility.<sup>92</sup> The court explained that "[a] useless product does not become useful by conversion into another useless product."<sup>93</sup>

In his dissenting opinion in *Kirk*, Judge Rich criticized the wisdom of the policies enunciated in *Manson* as extended by the majority in *Kirk* and *Joly*.<sup>94</sup> He also distinguished *Manson*, viewing it as having much

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84. *Manson*, 383 U.S. at 535-36.

85. *Id.* at 535 ("these arguments . . . would apply equally to the patenting of the product produced by the process").

86. *Id.*

87. 376 F.2d 936 (C.C.P.A. 1967).

88. 376 F.2d 906 (C.C.P.A. 1967).

89. *Kirk*, 376 F.2d at 945 ("just as the practical utility of the compound produced by a chemical process 'is an essential element' . . . the practical utility of the compound, or compounds produced from a chemical 'intermediate' . . . is an essential element in establishing patentability of that intermediate"); *Joly*, 376 F.2d at 908 (quoting *Kirk*).

90. *Kirk*, 376 F.2d at 939.

91. *Id.* at 945, 942 (discussing sections 101 and 112).

92. *Joly*, 376 F.2d at 909.

93. *Id.* at 907.

94. *Kirk*, 376 F.2d at 957-59 (Rich, J., dissenting). However, the extension of the *Manson* holding to ex parte proceedings in *Kirk* and *Joly* is actually not surprising, given the broad language and strong dicta in *Manson*. A narrow interpretation of *Manson* by the CCPA—for example, by restricting the stringent utility requirement to a reduction of practice inquiry in an interference context—would not be in the spirit of the expansive policy-based reasoning of the Supreme Court.

narrower applicability.<sup>95</sup> Specifically, Rich questioned the line drawing issues surrounding the concept of practical utility.<sup>96</sup> He noted that these so called “useless” products were commonly used and sold within the chemical research industry.<sup>97</sup> According to Rich, the best rule “from the practical, administrative standpoint” was a *per se* finding of utility for new chemical compounds.<sup>98</sup> As a result of the majority decisions, Rich called for Congressional action to reverse the tide of judicial rulemaking.<sup>99</sup>

Judge Rich also criticized the Supreme Court’s disregard—that the CCPA majority in *Kirk* and *Joly* followed—for the precedential value of prior judicial and legislative interpretations of utility.<sup>100</sup> Finally, Judge Rich quotes extensively from a memorandum sent by a large chemical company to its patent counsel.<sup>101</sup> The memo indicates that the researchers often asserted artificial utilities for their newly developed products because the testing for their “true utility” was too time-consuming.<sup>102</sup>

#### D. The Chemical Utility Requirement Today: The Progeny of *Manson*, *Kirk*, and *Joly*

Although *Manson* rejected the inclusion of chemical research into the utility definition under sections 101 and 112, *Carter-Wallace v. Riverton*<sup>103</sup> held that a patent for a new compound satisfied the utility requirement by claiming potential human therapeutic value evidenced by laboratory animal tests.<sup>104</sup> While the compound was intended for human

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95. *Id.* at 949 (1967) (Rich, J., dissenting). Judge Rich distinguished *Manson* as a case where an applicant in an interference hearing produced no evidence of utility. *Id.* at 948. On the other hand, *Kirk* involved an “admitted disclosure of the compounds as intermediate to make certain steroids.” *Id.* at 949. Thus, for Rich, the difference was that between zero disclosure and some disclosure.

Rich also would limit *Manson* to an interference setting, whereas *Kirk* and *Joly* involved ex parte proceedings and thus required different rules. *Id.* at 953. In an interference, the utility requirement is arguably more challenging because of the necessity to establish actual reduction to practice in order to prove priority of invention. *Id.*

Nevertheless, the interference distinction Rich suggests may simply be a mechanism he employed to attempt to limit the scope of the questionable policy considerations created by the Supreme Court, whose decisions were binding upon the CCPA.

96. *Id.* at 957.

97. *Id.*

98. *Id.*

99. *Id.*

100. *Id.* at 950-955.

101. *Id.* at 959.

102. *Id.* at 960.

103. 433 F.2d 1034 (C.C.P.A. 1970). The claims at issue were three organic compounds in the class of 2,2-disubstituted-1, 3-propanediol, one of which was generically known as meprobamate.

104. *Id.* at 1039-40.

use, at the time of the patent application tests had been conducted only on mice and other laboratory animals.<sup>105</sup> Whether the drug could ever be used to treat humans, however, remained unproven. Thus *Carter-Wallace* refines *Manson* by essentially measuring utility by the degree of research. In effect, *Carter-Wallace* finds utility where laboratory testing indicates that the new compound has a chance of being useful.

The court further refined the quantity and quality of testing necessary to show utility in *Nelson v. Bowler*<sup>106</sup> and *Cross v. Iizuka*.<sup>107</sup> In *Bowler*, the court held that "pharmacological activity" evidence shown through testing on animals constituted a practical utility even though such testing did not establish a specific therapeutic value.<sup>108</sup> In reaching its decision, the court expressly recognized that providing incentive for disclosure of compounds yet unproven as to their usefulness to humans nonetheless benefited the public. The *Iizuka* opinion noted, "[I]t is inherently faster and easier to combat illnesses and alleviate symptoms when the medical profession is armed with an arsenal of chemicals having known pharmacological activities."<sup>109</sup>

In *Iizuka*, the court held that *in vitro* testing of a claimed compound coupled with *in vivo* testing of structurally similar compounds was sufficient evidence of pharmacological activity to meet the utility requirement.<sup>110</sup> *Iizuka* extended *Bowler*, holding that a patent applicant may show the utility of a new compound without testing the new compound on laboratory animals, thus lessening the degree of research needed to meet the utility requirement.

In biotechnology research, the utility of cDNA fragments<sup>111</sup> has recently been at issue during the course of the multinational Human Genome Project. Craig Venter, formerly affiliated with the National Institutes of Health (NIH), filed a patent application in 1991 claiming as products partial cDNA fragments sequenced at NIH.<sup>112</sup> The application claimed full length cDNA sequences as well as complementary variants thereof, all of which NIH asserted could be obtained without undue

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105. 433 F.2d at 1036.

106. 626 F.2d 853 (C.C.P.A. 1980).

107. 753 F.2d 1040 (Fed. Cir. 1985).

108. 626 F.2d at 856.

109. *Id.*

110. 753 F.2d at 1050.

111. The term "cDNA" signifies complementary DNA, which matches the genetic messenger or messenger RNA (mRNA). Of the many DNA sequences in human genetic material or the human genome, only the cDNA sequences encode operational proteins. It is estimated that only about 3% of DNA in the human genome actually codes for a useful protein. See, MERGES, *supra* note 11, at 158.

112. See, e.g., Edmund L. Andres, *U.S. Seeks Patent on Genetic Codes Setting Off Furor*, N.Y. TIMES, Oct. 21, 1991, at A1.

experimentation.<sup>113</sup> Although Venter and other advocates of the NIH application argued that allowing patents for partial cDNA sequences promotes technology, the NIH ultimately allowed the application to be abandoned in early 1994.<sup>114</sup> Thus, officially, the patentability of the cDNA fragments remains an unresolved issue.<sup>115</sup> Unless patents for the cDNA fragments are ultimately granted, the prosecution histories will remain secret.<sup>116</sup>

Commentators have noted, however, that in view of *Manson*, *Kirk*, and *Joly*, partial cDNA fragments apparently do not meet the utility standard adopted by the courts.<sup>117</sup> The ultimate utility for a cDNA sequence is to determine the protein produced by the gene. Although an inventor of a partial cDNA fragment may assert nominal utilities, such as uses as genetic markers, PCR primers, and tissue typing probes, these utilities probably would not meet the *Manson* standard of a "substantial" utility, and would instead be construed as uses for "purely research purposes."<sup>118</sup>

### III. RECONSIDERING THE STRICT UTILITY STANDARD IN CHEMICAL PATENT PRACTICE

#### A. A Criticism of *Manson*: Chemical Research Benefits Society in a Two-Step Quid pro quo, Each Step Being Crucial in Promoting the Progress of the Useful Arts

At the core of the Supreme Court's reasoning in *Brenner v. Manson* were fundamental notions of the purposes of patent law as expressed in the Constitution and in the Patent Act of 1952: "The basic quid pro quo contemplated by the Constitution and the Congress for granting a patent monopoly is the benefit derived from an invention with substantial utility."<sup>119</sup> From this axiom the Court concluded that "[u]nless and until a process is refined and developed to this point—where specific benefit exists in currently available form—there is insufficient justification for permitting an applicant to engross what may prove to be a broad field."<sup>120</sup> Inherent in this logical progression, however, is the embedded conclusion that any compound whose "specific benefit" does not "exist in currently available form" would not be beneficial to society such that it merits

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113. *Id.*

114. Smith and Kettelberger, *supra* note 2, at 51.

115. *Id.* at 63.

116. *Id.*

117. See, e.g., *id.* at 53.

118. *Id.*

119. *Manson*, 383 U.S. at 534.

120. *Id.*

patent rights. This conclusion is questionable when applied to inventive processes in the chemical arts.

The *Manson* decision is fundamentally flawed in that it assumes that all chemical research benefits society via the same one-step quid pro quo that society experiences with mechanical and electrical inventions. It is a virtual tautology that mechanical and electrical inventions are created with a use in mind: a nose cone for a jet airplane is produced with the airplane in mind; an electrical amplifier is created with the need for an amplified electrical output in mind. The creation of invention "X", and the useful application of invention "X", are inherently unified. The invention process applies technology to address a perceived need or to improve a current application. Society benefits in a one-step quid pro quo: in exchange for a patent, the inventor discloses to society an operative electrical/mechanical innovation—that innovation is almost always inherently useful/beneficial by its electrical or mechanical nature.<sup>121</sup>

On the other hand, many chemical inventions benefit society in a two-step, rather than a one-step, progression. The first step is the creation of a compound with new characteristics and the second step is the finding of a use for that compound and its properties. Professor Merges summarizes the two-step nature of chemical research in the following passage:

Because of the unique nature of chemical research, chemists often develop a chemical compound without a particular purpose in mind. Often a chemist works with a family of related compounds, trying to synthesize one which, because of the properties it shares with other compounds in the family, is thought likely to be useful for something. The chemist might have a particular goal when she sets out, such as the discovery of a compound that will treat a particular disease. Alternatively, she may be exploring a general class of compounds whose properties suggest they might eventually serve some as yet unspecified purpose. Either way, chemists often synthesize compounds which they believe might be useful someday for something.<sup>122</sup>

Following this first step comes the second step of finding a use for the synthesized compound. Under the *Manson* decision and its progeny, only inventors who achieve the second step may obtain a patent for their

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121. While it is difficult to imagine otherwise, Professor Merges puts forth the following example of a non-useful mechanical invention:

[O]ne might perhaps imagine a "machine" with working parts that did not really do anything; perhaps it just spins around, or oscillates back and forth for no particular purpose. Such a machine would fail the test of utility under § 101 of the patent code. Note that machines that serve only to amuse or entertain are deemed useful under the patent code.

MERGES, *supra* note 11, at 147.

122. *Id.* at 149.

efforts. In other words, only if a use for a newly discovered compound is known, or if a use is discovered for an existing compound which previously had no known use, can a patent be obtained for that compound.

Despite *Manson's* implications to the contrary, both the (1) "creation" step and the (2) "finding an application" step in the progress of chemical development are beneficial to society, and each should be rewarded independently of the other. Thus, the creation of a new chemical compound and its disclosure to society, even if its use is not yet known, should be encouraged and rewarded by the patent process. The premise of the above assertion is, of course, that society does benefit from the disclosure of compounds with no known use. This assertion demonstrates complete consistency with the present allowance of "method of use" claims for patented compounds reciting nominal use, or a vastly different use, in their original patent disclosures.<sup>123</sup> It is well known that if an inventor finds a novel, nonobvious use for a known compound, she may obtain a patent for that method of use. With this in mind, consider the following hypothetical.

Assume that a composition claim has been granted to inventor A on a new compound X, with the disclosed utility being to kill mosquitoes. Assume that inventor B reads the patent disclosure for compound X and decides that compound X might be useful for something other than killing mosquitoes. It is well-known under novelty and obviousness principles that if the new use was similar to killing mosquitoes (for example, killing flies), there would be a reduced chance of obtaining a method-of-use patent under sections 102 and 103.<sup>124</sup> If, however, the new use were completely unrelated to killing mosquitoes (for example, a cure for cancer), a patent on the new method-of-use would probably be granted.<sup>125</sup>

The purpose of the above hypothetical is to show that the patent laws already recognize that the disclosed use of a new compound may just be the tip of the iceberg for that compound. More importantly, the laws already recognize that it may be the tip of some *other* iceberg: the less obvious a new use is in light of the original compound patent disclosure, the more willing the patent laws are to reward the new-use

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123. 35 U.S.C § 100 includes in the definition of a patentable "process" the "new use of a known process, machine, manufacture, composition of matter, or material," establishing the basis for "method of use" claims as a "process" claim under 35 U.S.C. § 101. 35 U.S.C. §§ 100, 101 (1988).

124. See generally, MPEP, *supra* note 1, at § 706.02 (In section entitled "Rejection on Prior Art," the patent office reviews standards for anticipation rejections under 35 U.S.C. § 102 and obviousness rejections under 35 U.S.C. § 103.).

125. *Id.*

inventor.<sup>126</sup> It is the job of subsequent inventors to find uses which are as nonobvious as possible in light of the compound's original disclosure. Why, then, must the original compound have any recited use at all? Or, alternatively, why should products with nominal utilities receive patents while those with unknown, but potentially great, utilities go unrewarded? The patent law machinery is already in place to allow society to benefit from the disclosure of new compounds with no known use.

Currently, there is a large inconsistency between the benefits society receives from patented "nominal-use" compounds and those received from non-disclosed, non-patented, no-known-use compounds. In the former case, the product patent is granted even where only a nominal use is disclosed, and society fully benefits as new inventors scurry to find novel, nonobvious uses for that compound. In sad contrast, a compound with no known use will remain undisclosed, as its inventor will not disclose the compound through a patent until she finds at least a nominal use for the compound.<sup>127</sup> There is no rational reason for such an artificial distinction, created by *Manson* and its lower-court progeny, to remain. It is clear that society would benefit from step one of the two-step quid pro quo because society already benefits where only nominal uses are initially disclosed. There is no practical difference in the promotion of the useful arts between inventions with no known use and those with a mere nominal use. Therefore, each step of the two-step quid pro quo should be independently encouraged by the patent system. When a subsequent use is found for a claimed compound, a subsequent inventor may file "method-of-use" claims, and a resulting cross-licensing arrangement between the product-claim owner and the method-of-use claim owner can ensure beneficial use by all and a proportionate sharing of the rewards of creation by the two patent holders.

In light of the benefit to society of disclosing a compound with no known use or with a known use only in research, the Supreme Court's reasoning in *Manson* is questionable. The founding fathers provided Congress with the opportunity to establish a patent system in order to "promote the progress of science and the useful arts."<sup>128</sup> However, the *Manson* Court doubted the significance of a benefit to the public in receiving the applicant's disclosure of new compounds with uncertain uses, because the Court explained that in claim drafting, the applicant discloses as little information as possible.<sup>129</sup> Congress has explicitly and

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126. *Id.*

127. *Manson* disagrees on this point, claiming that inventors who cannot determine a use for their inventions will have "every incentive to make [their] invention[s] known to those able to do so." *Manson*, 383 U.S. at 534.

128. U.S. CONST. art. I, § 8, cl. 8.

129. See supra note 79 and accompanying text.

clearly promulgated disclosure requirements for an applicant for a patent.<sup>130</sup> While a claim may disclose minimal information, as clearly established by Congress in the patent statute, it must be sufficiently supported by the disclosure to merit the patent rights.<sup>131</sup> It is the role of Congress to determine what disclosure requirements an applicant must meet in exchange for the proprietary interest from the patent. Congress has clearly fulfilled this responsibility. The duty of the patent office is to zealously examine patent applications in accordance with the instructions of Congress.

Further, in *Manson* the Court asserted that fears of secrecy for unpatentable processes were "exaggerated."<sup>132</sup> The majority dismissed the idea that if an inventor cannot find a use for an invention, he would suppress or conceal the invention until such time as a suitable use is discovered. Surprisingly, the Court argued the opposite to be true—an inventor would have "every incentive" to disclose an invention with no known utility so that someone else may determine a use for the invention.<sup>133</sup> Although this may be somewhat true in the confines of academic research,<sup>134</sup> the Court's rationale is in tension with a fundamental premise behind the patent statute: rewarding inventors by granting them the chance at profit encourages dissemination of technological information. Distinct from this premise, the Court implied that research data which has no current "practical utility"<sup>135</sup> will be disseminated more readily in the absence of a proprietary reward, for two reasons. First, if an inventor does not "complete" his invention—for example, by not discovering a practical utility for it—then the inventor would fully disclose the invention in the hope that someone else will complete the invention.<sup>136</sup> Second, the Court asserts that if an inventor could receive a patent for such a product, he probably will disclose as little information as possible to the public and thus impede research efforts to find the elusive use for this product.<sup>137</sup> Although the Court claimed to analyze the "general intent of Congress,"<sup>138</sup> its decision and reasoning run contrary to some of the fundamental concepts of the patent

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130. See generally, 35 U.S.C. § 112; 37 C.F.R. §§ 1.71 - 1.85 (1994).

131. 35 U.S.C. § 112 (1988).

132. *Manson*, 383 U.S. at 534.

133. *Id.* at 534.

134. See, Lawrence R. Velvel, *A Critique of Brenner v. Manson*, 49 J. PAT. OFF. SOC'Y 5, 7 (1967). However, as academic research has taken on a much more competitive nature, notions of academic benevolence may simply be outdated.

135. However, as Judge Rich noted, "practical utility" is a slippery term which justifies conclusions more readily than it provides an analytical structure to face new problems. See *Kirk*, 376 F.2d at 857 (Rich, J., dissenting).

136. *Manson*, 383 U.S. at 534.

137. *Id.*

138. *Id.* at 533.

system. In a dissenting opinion in *Manson*, Justice Harlan highlighted the lack of empirical support for the Court's rationale.<sup>139</sup> Other commentators share this concern and criticize the majority opinion as abstract and reasoned without the necessary facts in the record.<sup>140</sup>

Unsatisfied with the utility of an inventor's mere creation of a new composition, the *Manson* Court feared that granting claims for a new composition with no known use would prevent the public from discovering end uses for such a composition,<sup>141</sup> which the Court presumably found to be the greater contribution to technology. The Court's stringent definition of utility results in a requirement of "substantial" utility, assuring the public of a tangible benefit in exchange for the applicant's proprietary monopoly.<sup>142</sup> Specifically, Justice Fortas concluded that a process which is only useful as an object of scientific research is important, but does not merit a patent.<sup>143</sup> He explained that "a patent is not a hunting license," and is "not a reward for the search, but compensation for its successful conclusion."<sup>144</sup> Once again, however, this assertion simply begs the question because it does not explain why the production of an object of scientific research is not in itself a successful conclusion.

## B. International Considerations Further Compel Abandonment of a Stringent Chemical Utility Requirement

In addition to the questionable policies justifying *Manson*, the evolving international climate also favors relaxing the rigorous utility requirement in the United States. Many key foreign competitors of the United States have not adopted similar stringent chemical utility requirements. Both the European Patent Convention and the Japanese Patent Statute label utility under the alternative concept of "industrial

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139. *Id.* at 538 (Harlan, J., dissenting). Harlan also questioned, in the absence of empirical data to the contrary, the majority's assertion that "useless" new compounds will be readily disclosed by inventors. *Id.* Harlan believed that a first chemist should be encouraged to disseminate his invention by rewarding him with a patent, in the interests of progress, even without a "utility" as defined by the majority. *Id.* at 539. Thereafter, someone else could then take the "further but less difficult step" leading to a commercially useful item. *Id.*

140. See, e.g., Velvel, *supra* note 134, at 56 (encouraging Congress to investigate the facts that are assumed by the Court).

141. 383 U.S. at 534-35.

142. *Id.* at 534. Thus, the strict definition of utility was judicially created; the legislature simply used the broad term "utility" with no indication of a special meaning. A special meaning was implemented by the Court. See, e.g., Mirabel, *supra* note 2, at 814 (arguing that dictionary meaning of "utility" is mandated in the absence of a specific instruction by the legislature and thus "utility" must also encompass any chemical research investigations).

143. *Manson*, 383 at 535-36.

144. *Id.* at 536.

applicability.<sup>145</sup> In these nations, "industrial applicability" includes the use of an invention for pure research purposes.<sup>146</sup> In the United States, chemical research is only a valid utility under narrow circumstances.<sup>147</sup>

The United States' stricter position with respect to chemical utility creates confusion when an inventor seeks international protection. If, for example, an inventor initially files a patent application in a foreign country with a lower utility standard, the inventor may not necessarily secure a priority date in the United States under section 119 of the United States patent code<sup>148</sup> if the rigorous utility standards of *Manson, Kirk, and Joly* are not met at the time of foreign filing.<sup>149</sup> However, this rule is not surprising and naturally follows from the policy considerations underlying section 119, once the utility standard is established.<sup>150</sup>

An inventor who expects to file an application in the United States based upon a prior foreign application date must meet what may essentially be a much stricter standard than required by the initial foreign application, creating confusion in securing patent protection in multiple countries. *In re Ziegler*<sup>151</sup> exemplifies this uncertainty. In *Ziegler*, the applicant originally filed an application in Germany in 1954 for a process pertaining to propylene. Within twelve months of the German application's filing date, Ziegler filed an application in the United States Patent Office in accordance with section 119. Subsequently, the United States application became involved in an interference, and eventually a continuation application was filed in 1987. The CAFC affirmed the PTO's ruling that the original German application which the applicant relied upon for priority did not explicitly disclose a practical utility under section 112.<sup>152</sup> The CAFC's decision in *Ziegler* was not surprising; it merely prohibited an applicant from circumventing the strict practical

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145. See BENT ET AL, *supra* note 31, at 146 (citing Article 52(1) if the European Patent Convention and Section 29(1) of the Japanese Patent Law).

146. *Id.*

147. See *supra* note 52.

148. 35 U.S.C. § 119 (1988).

149. See generally, *Kawai v. Metlesics*, 480 F.2d 880 (C.C.P.A. 1973). The CCPA held in *Kawai* that a foreign application itself must meet the requirements found in § 112 in order to achieve priority status. *Id.* at 886. The court felt that the statute mandated that in exchange for a right to priority, the foreign application must be treated as if it were filed in the United States on the date that the foreign application is filed. *Id.*

150. *Id.* In *Kawai*, the CCPA analyzed priority in the context of a constructive reduction to practice, which requires proof in the specification of a disclosure of a practical utility. *Id.*

151. 992 F.2d 1197 (Fed. Cir. 1993).

152. *Id.* at 1203. The applicant attempted to assert that a practical utility was in fact asserted, but the court rejected the applicant's argument following reasoning similar to that of *Petrocarbon*. See *supra* note 23. See also, *Application of Hafner*, 410 F.2d 1403 (1969) (application was rejected in the United States because of a lack of disclosure of utility, while such disclosure was not required in Germany).

utility requirement of *Manson* by filing abroad prior to filing in the United States and then using the interim period to discover a practical utility to satisfy U.S. law while also retaining the prior foreign filing date.

As foreign competition continues to become more challenging, patent harmonization<sup>153</sup> is an ever-increasing possibility that could result from negotiations under the General Agreement of Tariffs and Trade (GATT),<sup>154</sup> through an independent effort by the World Intellectual Property Organization (WIPO), or, less likely, through direct legislation in Congress.

The increasing momentum toward uniformity between patent systems should be extended to lessen the strict chemical utility standard in the United States. This unnecessarily strict standard hampers the development of chemical and biotechnological research in the United States by discouraging the exchange of information about new compositions until a substantial use (as defined in *Manson*, *Kirk*, and *Joly*) has been disclosed. While inventors in the United States are certainly free to read patents from other countries, American inventors may not have practical access to these disclosures until an English translation is available through a U.S. patent application.<sup>155</sup> Thus the actual exchange of information through disclosure will be more active in nations with the lower utility standard.

### C. Introducing "Best Utility" as a Means for Implementing a Relaxed Chemical Utility Standard

An alternative to the strict utility requirement under *Manson* would be to allow research as a viable practical utility while requiring the inventor to disclose her "best utility" at the time of filing a patent claim. "Best utility" is the best use for a new compound known or suspected by an inventor at the time of application. Disclosure of the "best utility" for chemical patents is analogous to the "best mode" requirement for mechanical and electrical inventions under Section 112. A "best utility" requirement would prevent an applicant from asserting mere research utility while concealing a better utility from the public. The present "how to use" requirement of section 112 would be insufficient to prevent concealment because the enablement inquiry is commensurate with the asserted utility. Therefore, under *Iizuka*, if a mere research utility were

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153. See generally, HAROLD WEGNER, PATENT HARMONIZATION (1993).

154. See generally, Bruce A. Lehman, *Intellectual Property Under the Clinton Administration*, 27 GEO. WASH. J. INT'L L. & ECON. 395 (1993).

155. Such concerns motivated Sen. Dennis DeConcini (D-Ariz.) to introduce on September 30, 1994 a new bill (S.2488) providing for the publication of patent applications eighteen months after their filing. 140 CONG. REC. S13,863 (daily ed. Sept. 30, 1994) (statement of Sen. DeConcini), described in *Legislation: Administration Bill on 18-Month Publication of Patents is Introduced*, 48 PAT., TRADEMARK & COPYRIGHT J. 599 (1994).

disclosed, the enablement requirement would be satisfied by simply explaining "how to use" the research while a "better" utility could be suppressed.

The "best utility" requirement would be most effectively implemented if it were codified as a specific requirement for chemical and biochemical patent applications. Codification would clearly distinguish the "best utility" requirement for chemical patents from the "best mode" requirement for mechanical and electrical patents. It would also eliminate any confusion by requiring that an inventor not only state the best embodiments of a claimed compound, but also share the status of her research.

#### IV. CONCLUSION

Congress should reject the policies outlined in *Manson*, *Kirk*, and *Joly* by implementing legislation to the contrary. In view of the disadvantage to chemical and biotechnological researchers in the United States on an increasingly competitive international playing field, Congress should explicitly include research as a satisfactory utility under section 101.

Chemical and biotechnological research are inherently different from electrical and mechanical inventions because discovering a new composition and finding a use for the composition should be the subject of two separate patents with the final commercial product brought to the marketplace through a cross-licensing agreement. Electrical and mechanical cases do not ordinarily create this potential for separate patents because a new invention is inherently connected to its practical utility. Since new chemical or biotechnological creations have potential use in research, these research possibilities should be explicitly codified as sufficient uses in the Patent Statute. The disclosed research utility should meet an analysis similar to the "best mode" requirement of section 112. The applicant would be required to disclose his "best utility" at the time of filing in order to obtain a valid patent.

Although the Supreme Court in *Manson* suggested that obtaining a use for a compound is a greater contribution than actually discovering the compound,<sup>156</sup> obtaining the use is obviously not possible without knowledge of the existence of the compound. Without a proprietary interest, an inventor of a compound has little incentive to provide information about the compound to potential competitors. The Supreme Court's fear that large areas of technology would be blocked off by

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156. See *supra* note 38. The Supreme Court's suggestion may further be attacked because composition claims are clearly the premium form of protection and are unquestionably preferred over method claims, such as those claiming a "method for making" or a "method for using."

granting claims to inventors with no known utility should be alleviated by the concept of "method of use" claims.

Alternatively, federal courts may choose to re-adopt the basic *Nelson* holdings, either by the unlikely avenue of an outright Supreme Court reversal of *Manson*, or, more likely, by a Federal Circuit ruling which confines *Manson* to its facts, as Judge Rich suggests in *Kirk*.<sup>157</sup> In *Nelson*, the Federal Circuit's predecessor court created a compromise wherein research is deemed to fulfill practical utility under section 101 while the inventor must teach someone skilled in the art "how to use" the invention under section 112.<sup>158</sup> *Nelson* struck a proper balance by allowing research to be a viable utility and requiring the applicant to properly disclose and teach the invention in view of the aforementioned fundamental patent law principles. *Nelson* was not as liberal as the earlier chemical utility cases, which essentially disregarded the utility requirement of both sections 101 and 112.

Simply reestablishing *Nelson* as the law would not necessarily be a panacea. An applicant should also be required to disclose the "best utility" in order to preclude the inventor from suppressing an actual use while simply disclosing a research use, and thus gaining the patent monopoly with an incomplete or fraudulent disclosure. One solution to this problem, of course, would be to judicially subsume the "best utility" requirement under the "best mode" requirement. In other words, the section 112 requirement of demonstrating to a person of ordinary skill in the industry how to use the product would require a showing of the best use for the product, including the best avenues of future research.

In conclusion, the *Nelson* approach better encourages the public to invent and also requires the applicant to teach and disclose research utility in accordance with the policies that drive the patent system. The stricter policies announced in *Manson* do not encourage an inventor of a new chemical or biochemical composition or process to disclose the discovery to other researchers who may then further attempt to put the invention to a more commercially practical use. The *Nelson* approach also invites further research and progress by allowing later inventors to file patent applications for novel uses of the products created by their peers. The more liberal interpretation of chemical utility would also aid researchers in the United States by removing the disadvantage in international competition created by the United States' strict position. In view of the foregoing considerations, the current rigorous chemical utility standard in the United States should be relaxed and the *Nelson* approach to the utility requirement for chemical inventions should be reinstated.

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157. See *Kirk*, 376 F.2d at 948-49.

158. *Nelson*, 280 F.2d at 184.

either judicially or legislatively, with the proviso that an applicant must disclose a "best utility" in order to obtain a valid patent.

# **COMMENT**

## **COPYRIGHT MISUSE AND TYING: WILL COURTS STOP MISUSING MISUSE?**

**TROY PAREDES †**

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### **I. INTRODUCTION**

Should a copyright infringer be able to argue, as an affirmative defense, that the copyright holder has misused his copyright by undermining innovation and creativity, the public policy concerns of copyright law?

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The misuse doctrine, a permutation of the equitable doctrine of unclean hands, originally developed as a defense to patent infringement claims. The doctrine provides that whenever a copyright holder uses his copyright in a way that undermines copyright policy, the court may deny him relief against infringement. Although the general doctrine is simple, courts and scholars nonetheless disagree over how to define the type of conduct that constitutes misuse. There are two fundamentally different views. The traditional "scope of the grant" view argues that a copyright holder's misconduct need not rise to the level of an antitrust violation to constitute misuse. Adherents to this view argue that a copyright holder's conduct may undermine copyright policy even though it does not violate the Sherman or Clayton Acts. The "antitrust" view, on the other hand, argues that a copyright holder's misconduct must rise to the level of an antitrust violation to constitute misuse.

The issue of copyright misuse in today's economy is of special concern. Many defendants asserting the misuse defense are alleged infringers of copyrighted computer programs and software. Given the vital role of computer technology in our economy, it is essential that courts maintain incentives to create new software programs by adequately enforcing the exclusive rights attendant to a copyright grant.

Licitors of copyrighted computer software programs often "tie"<sup>1</sup> their works to hardware and servicing.<sup>2</sup> Ties are the quintessential example of misuse. Therefore, this Comment focuses on whether courts, which are currently split over how to define misuse, should adopt the traditional or antitrust view when the copyright holder's alleged misconduct is a tie.

Part II discusses the public policy implications of copyright law, and the economic incentives copyrights provide to innovation and creation. Part III begins with a historical overview of the development of the misuse doctrine in patent law, emphasizing conflicting interpretations of *Morton Salt*, the Supreme Court's first formal articulation of the misuse doctrine. Part III concludes with a discussion of the misuse defense. The analysis highlights the arguments supporting the traditional and antitrust views of copyright misuse. It also focuses on the antitrust view's criticisms of the traditional view. Part IV addresses the question of which view of misuse courts should adopt when the copyright holder's alleged misconduct is a tie. After analyzing tying theory within the context of the

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1. In a tying arrangement, the seller refuses to sell a product (tying product) unless the buyer agrees to purchase a second product (tied product). A tie-in, however, is not anticompetitive unless the seller has market power in the tying product market. Tie-ins are addressed in detail in Part IV.

2. See *infra* Part IV.C for examples of tie-ins involving computer software programs.

misuse doctrine, this commentator concludes that when plaintiff's alleged misconduct is a tie, courts should adopt the antitrust view.

Through Part IV, this commentator assumes arguendo that courts should recognize copyright misuse as a valid affirmative defense to allegations of infringement. However, in Part V, this commentator challenges this assumption. Part V thus asks whether the misuse defense should exist at all in copyright law and answers with this commentator's bifurcation theory. That is, when the copyright holder's alleged misconduct is a tie, courts should bifurcate issues of antitrust law from issues of infringement and reject the misuse defense completely for two reasons. First, the misuse defense weakens copyright policy by undermining incentives to innovate and creating incentives to infringe. Second, antitrust laws, bifurcated from issues of infringement and misuse, deter and root out illegal tying arrangements that threaten copyright policy, without displacing incentives to innovate with incentives to infringe. Bifurcation is the optimal approach because it holds both infringers and antitrust violators independently accountable for their behavior.

## II. COPYRIGHT PUBLIC POLICY

Article I, Section 8 of the United States Constitution gives Congress the "Power . . . To Promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."<sup>3</sup> To the extent that the exclusive rights accompanying a copyright grant create opportunities for innovators and creators to capture monopoly profits from the sale and licensing of their works, copyrights create incentives to innovate and create.<sup>4</sup>

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3. U.S. CONST. art. I, § 8.

4. Copyrights usually confer limited, if any, market power; rather, it is the potential for carving out a profitable, monopolistic niche that provides the incentive to innovate, regardless of the actual market power that results, given actual or potential competitive entry. Thus, even though copyrights usually do not create economic monopolies, the author's creative effort is spurred by his *ex ante* expectation that his creation will create an economic monopoly. For a general discussion of the market room factor (i.e., the stimulant effect that the potential for monopoly profits has on creativity and innovation), see F.M. SCHERER & DAVID ROSS, INDUSTRIAL MARKET STRUCTURE AND ECONOMIC PERFORMANCE 630-637 (1990). For a mathematical model of copyright incentives, see William M. Landes & Richard A. Posner, *An Economic Analysis of Copyright Law*, 18 J. LEG. STUDIES 325, 333-35 (1989). For purposes of semantics, "innovate" and "create" will be used interchangeably to refer to the creative efforts of copyright holders and patentees. Likewise, the words "innovator" and "creator" will be used interchangeably to refer to copyright holders and patentees.

Not only does the Copyright Act<sup>5</sup> create economic incentives for innovators by allowing them to establish a market niche from which they may derive monopoly profits; but by making it unlawful to infringe the copyright holder's exclusive rights,<sup>6</sup> the Act deters free-riding. The remedies accorded copyright holders against infringers under the Act create a disincentive to infringe for those wanting free access to the copyrighted good.<sup>7</sup> As an alternative to the unlawful appropriation of the copyrighted good for personal consumption or to compete in the marketplace, a potential infringer has an incentive to create a substitute.

Inherent in a copyright grant is a tradeoff between the public interest against restraints of trade and the Constitutional charge to Congress to create economic rewards that promote progress.<sup>8</sup> That Congress adopted the Copyright Act demonstrates that under certain conditions, congressional concern for innovation supersedes its desire to protect unfettered competition. Because the ultimate objective of both antitrust and copyright policy is to promote consumer welfare through a combination of free competition and innovation, Congress is willing to allow limited restraints of trade in the form of copyright grants, if these restraints promote innovation. Presumably, the market power conferred by a copyright represents the maximum restraint of trade which Congress is willing to condone.<sup>9</sup> In the long run, efficiency and productivity gains resulting from innovation overwhelm allocative efficiency losses resulting from copyrights' monopoly power:

[T]echnological progress contributes far more to consumer welfare than does the elimination of allocative inefficiency caused by noncompetitive pricing. The grant of statutory monopoly rights in the form of patent or copyright . . . reflects that a primary goal of competitive policy—namely an efficient innovative economy—will be served by protecting, for a period of time, innovations meeting

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5. 17 U.S.C. §§ 101-1010 (1988).

6. 17 U.S.C. § 501 (1988).

7. 17 U.S.C. § 502-11 (1988). Remedies available to copyright holders against infringers include monetary and punitive damages, injunctive relief, the infringer's profits, costs and attorney's fees. For an exhaustive discussion of remedies, see 3 M. NIMMER & D. NIMMER, *NIMMER ON COPYRIGHT* §§ 14.01-14.10 (1994).

8. Legislative history of the 1909 Copyright Act demonstrates this balance of interests:

In enacting a copyright law Congress must consider . . . two questions: First, how much will the legislation stimulate the producer and so benefit the public; and second, how much will the monopoly granted be detrimental to the public? The granting of such exclusive right, under the proper terms and conditions, confers a benefit upon the public that outweighs the evils of the temporary monopoly.

H.R. Rep. No. 2222, 60th Cong., 2d Sess. 7 (1909).

9. This commentator assumes, for the sake of argument, that the market power and incentives to innovate which inhere in a copyright grant represent the optimal tradeoff between restraint of trade and innovation.

specified standards from the competition of those who have not incurred the expenses of innovation, thus encouraging innovative competition.<sup>10</sup>

Copyright policy therefore suggests that temporary and limited restraints of trade that spur dynamic efficiency are preferable to perfect competition and static efficiency, because without the incentive to innovate that is created by the potential for monopoly profits, long-run consumer welfare may be undermined.<sup>11</sup> In Federalist No. 43, James Madison captured the essence of this argument; namely that the potential to earn economic profit promotes innovation, whose ultimate beneficiary is the public:

The utility of this power will scarcely be questioned. The copyright of authors has been solemnly adjudged in Great Britain to be a right of common law. The right of useful inventions seems with equal reason to belong to the inventors. The public good fully coincides in both cases with the claims of individuals.<sup>12</sup>

Copyrights only create incentives to innovate if courts enforce the copyright holder's exclusive rights.<sup>13</sup> If a copyright holder cannot rely on the courts to ensure his control over the market by disciplining infringers, his opportunity for monopoly profits decreases.<sup>14</sup> To the extent that the incentives to innovate are proportional to the innovator's ex ante valuation of the copyright grant—which is contingent upon the innovator's expected opportunity to earn monopoly profits—lack of

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10. Donald Turner, *Basic Principles in Formulating Antitrust and Misuse Constraints on the Exploitation of Intellectual Property Rights*, 53 ANTITRUST L.J. 485, 485 (1984). See also Jesse Markham, *Concentration: A Stimulant or Retardant to Innovation?*, in INDUSTRIAL CONCENTRATION: THE NEW LEARNING 247, 252-54 (H. Goldsmith, H. Mann & J. Weston eds., 1974).

11. Cf. *Picard v. United Aircraft Corp.*, 128 F.2d 632, 643 (1942) ("[T]o denounce patents merely because they create monopolies is to indulge in superficial thinking.") (Frank, J., concurring), cert. denied, 317 U.S. 651 (1942).

12. THE FEDERALIST NO. 43 (James Madison). See also *Mazer v. Stein*, 374 U.S. 201, 219 (1954) ("The economic philosophy behind the clause empowering Congress to grant patents and copyrights is the conviction that encouragement of individual effort by personal gain is the best way to advance public welfare through the talents of authors and inventors in 'Science and the useful Arts.'").

13. The broader the scope of the exclusive rights conferred by a copyright, and the more strictly these rights are enforced, the greater is the copyright holder's market power and ability to earn monopoly profits, and hence the greater the incentives to innovate. However, as mentioned above, see *supra* notes 8-11 and accompanying text, the benefits of dynamic efficiency only overwhelm the short-run welfare loss from restraints of trade if the anticompetitive effect is limited. Finding the optimal tradeoff between dynamic and static efficiency is critical but difficult.

14. See *Quinto v. Legal Times of Washington*, 511 F. Supp. 579, 581 (D.D.C. 1981); William J. Nicoson, *Misuse of the Misuse Doctrine in Infringement Suits*, 9 UCLA L. REV. 76, 106 (1962).

enforcement of the copyright holder's exclusive rights erodes the economic incentives to create a copyrightable work.

Furthermore, a potential infringer's incentive to innovate rather than infringe is a function of the likelihood that the infringer will be held liable for infringement. By definition, lack of enforcement of a copyright means that infringers are permitted to freely appropriate another's work without payment or permission. Thus, the incentive to free-ride increases when copyright enforcement decreases.

### III. COPYRIGHT MISUSE: ITS HISTORY AND ITS MEANING

#### A. An Overview of the Misuse Defense

The misuse doctrine is a permutation of the doctrine of unclean hands.<sup>15</sup> According to the unclean hands doctrine, a plaintiff seeking equitable relief should be denied such relief if he does not come into court with "clean hands."<sup>16</sup> The unclean hands defense consists of two requirements: first, that the plaintiff's misconduct directly and immediately relates to the litigated transaction; second, that the plaintiff's misconduct has harmed the defendant.<sup>17</sup>

In *Morton Salt Co. v. G.S. Superego Co.*,<sup>18</sup> a patent infringement case, the Supreme Court formally created the misuse defense as an application of the doctrine of unclean hands:

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15. For an overview of patent misuse doctrine see 5 D. CHISUM, PATENTS § 19.04 (1993). For a discussion of copyright misuse doctrine, see 9 E. LIPSCOMB, LIPSCOMB'S WALKER ON PATENTS §§ 28.32-28.36 (3d ed. 1988); 3 NIMMER, *supra* note 7, § 13.09[B].

16. Justice Story notes, "It is one of the fundamental principles upon which equity jurisprudence is founded, that before a complainant can have a standing in court he must first show that not only has he a good and meritorious cause of action, but he must come into court with clean hands." STORY, EQUITY JURISPRUDENCE 98 (14th ed. 1918).

17. In 1933 the Court described the test as follows:

But courts of equity do not make the quality of suitors the test. They apply the maxim requiring clean hands only where some unconscionable act of one coming for relief has immediate and necessary relation to the equity that he seeks in respect of the matter in litigation. They do not close their doors because of plaintiff's misconduct, whatever its character, that has no relation to anything involved in the suit, but only for such violations of conscience as in some measure affects the equitable relation between the parties in respect of something brought before the court of adjudication.

*Keystone Driller Co. v. General Excavator Co.*, 290 U.S. 240, 245 (1933). See also Note, *The Misuse Defense in Copyright Actions*, 37 N.Y.U. L. REV. 916, 917 (1962). In copyright cases, the unclean hands doctrine has been extended to actions at law, but courts rarely recognize the defense. See 3 NIMMER, *supra* note 7, § 13.09[A].

18. 314 U.S. 488 (1942).

It is said that the equitable maxim that a party seeking the aid of a court of equity must come into court with clean hands applies only to the plaintiff's wrongful conduct in the particular transaction which raises the equity, enforcement of which is sought. . . . Undoubtedly, 'equity does not demand that its suitors have led blameless lives,' but additional considerations must be taken into account where maintenance of the suit concerns the public interest as well as the private interest of the suitors.<sup>19</sup>

The misuse doctrine represents the maxim that whenever a copyright or patent holder uses his monopoly grant in a way that undermines the grant's underlying public policy, the court may and should deny the copyright holder relief when his exclusive rights are infringed.<sup>20</sup> Infringers can invoke the misuse doctrine as an affirmative defense. If the defendant successfully invokes the misuse defense, the court will deny the copyright holder relief until he purges himself of his misuse and thereby harmonizes the use of his copyright grant with public policy.<sup>21</sup>

While stemming from the unclean hands doctrine, the misuse doctrine is broader in scope than the unclean hands doctrine and is recognized as a separate defense.<sup>22</sup> An infringer may invoke the misuse doctrine as a recognizable and meritorious defense even though plaintiff's alleged misconduct is collateral to the litigated transaction and

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19. *Id.* at 491-93 (citations omitted).

20. "[T]he constitutionality of an attempt to compel the owner of a patent to share with others the title, use, and avail of his property" has been questioned, since the Constitution charges Congress with promoting innovation by rewarding creators with certain exclusive rights in the results of their efforts. Conway P. Coe, Commissioner of Patents of the United States 1933-45, before the Temporary National Economic Committee in 1939, *quoted in* *United States v. Line Material Co.*, 333 U.S. 287, 334 (1948) (dissenting opinion). This constitutional concern applies to the misuse doctrine, because a successful misuse defense effectively divests the intellectual property owner (if only temporarily) of his exclusive rights. However, the constitutionality of the misuse defense is supported by a comprehensive reading of Article I, Section 8. See Nicoson, *supra* note 17, at 101. The exclusive rights of a patent or copyright are granted pursuant to the specific constitutional objective to promote innovation. See, e.g., *Bobbs-Merrill Co. v. Isador Straus*, 210 U.S. 339, 346 (1908) ("[C]opyright property under the Federal law is wholly statutory, and depends upon the right created under the acts of Congress passed in pursuance of the authority conferred under article I, § 8 of the Federal Constitution: to promote the Progress of Science and the useful Arts."). When an intellectual property owner uses his patent or copyright to undermine the constitutional purpose pursuant to which his exclusive rights were granted, any constitutional objections to the suspension of the owner's exclusive rights in his creation are tenuous at best. The conditional nature of intellectual property rights, therefore, distinguishes them from other forms of property rights.

21. See *Morton Salt*, 314 U.S. at 493. For a general discussion of purging, see 9 LIPSCOMB, *supra* note 15, § 28.35.

22. The unclean hands doctrine may be conceptualized as a special instance of misuse where the copyright holder's misconduct relates directly to the litigated transaction and where the defendant's conduct harmed the infringer.

does not directly relate to the issue before the court. In fact, to bring the defense, the defendant is not required to have been a party to the plaintiff's transaction creating the alleged misconduct, or to have been injured by the transaction.<sup>23</sup> Thus, the misuse defense represents a more potent shield against piracy charges than the unclean hands doctrine.

The development of the misuse doctrine represents the Court's effort to ensure that the public policy underlying intellectual property is preserved and furthered. It creates incentives for copyright infringers to plead misuse, and therefore creates incentives for copyright holders to protect their ability to enforce their rights by harmonizing their conduct with copyright policy.<sup>24</sup> Because the Court's concern is the public interest in innovation, it is not surprising that the misuse doctrine extends to cases where the plaintiff's misuse is not directly related to the defendant's infringement; even though the requirements of the unclean hands doctrine are not met, the copyright holder's misconduct has nevertheless eroded industry-wide incentives to innovate.<sup>25</sup>

## B. The Historical Development of the Misuse Doctrine in Patent Law

### 1. OVER 150 YEARS OF A "MISUSE NOTION"

Commentators and judges usually reference *Morton Salt* as the first case establishing the patent misuse doctrine.<sup>26</sup> However, the Supreme Court has invoked reasoning similar to that of the *Morton Salt* Court for

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23. See *Lasercomb America, Inc. v. Reynolds*, 911 F.2d 970, 979 (4th Cir. 1990) (explaining that infringer in *Morton Salt* was not injured by patentee's tie); 3 NIMMER, *supra* note 7, § 13.09[A]. Requiring that plaintiff's conduct injure defendant would be inconsistent with the concern of the misuse defense, which is not the equities between defendant and plaintiff, but between the public interest and a plaintiff. A plaintiff's misconduct may undermine the public interest without injuring the infringer. Moreover, since the ultimate beneficiary of copyright law is the public, "[t]he public is a silent but an important party in interest in all patent litigation." *Long v. Arkansas Foundry Co.*, 247 F.2d 366, 369 (1957), *cert. denied*, 361 U.S. 915 (1959). To the extent that the public is effectively a party to all infringement litigation, plaintiff's alleged misconduct has harmed a party to the litigation, even if not the named defendant.

24. The misuse defense is consistent with the discussion *supra* notes 8-11 and accompanying text regarding the acceptable tradeoff between the restraint of trade inherent in copyrights and the incentives they create to innovate. By misusing his copyright, a copyright holder not only garners more monopoly power than Congress presumably finds optimal, but also subverts innovation. As a result, the social cost of the copyright grant exceeds the social benefits. The misuse defense, by creating incentives for the plaintiff to purge his misconduct, therefore shifts the balance between monopoly power and innovation back to that which inheres in the copyright grant and which, by assumption, is optimal.

25. See *supra* note 23.

26. *Lasercomb*, 911 F.2d at 975.

more than 150 years to refuse infringed patentees relief.<sup>27</sup> The Court in these early cases reasoned that when a patentee extends his patent rights beyond their limited scope, he loses his right to relief from infringement in favor of the public's interest in these unprotected areas.

In *Pennock v. Dialogue*,<sup>28</sup> Pennock and Sellers had invented a hose in 1811 for which they filed for and received a patent in 1818. From 1811 to 1818, Dialogue, with Pennock and Sellers's permission, made and sold this hose to several Philadelphia companies.<sup>29</sup> After receiving their patent, Pennock and Sellers sued defendant for infringement.<sup>30</sup> The Supreme Court affirmed the lower court's denial of the plaintiff's request for relief.<sup>31</sup> Justice Story reasoned that if a patentee were allowed to withhold a patent request until competitors challenged his monopoly position with substitutes, the patentee could effectively extend the length of his monopoly power beyond the fourteen year duration of a patent grant.<sup>32</sup> Since the plaintiff-patentee's attempt to secure an excessively long monopoly offended the public policy of patents, the plaintiff relinquished his right to protection from infringement.<sup>33</sup>

Citing *Pennock*, the Court in *Kendall v. Winsor*,<sup>34</sup> which was also concerned with a delayed patent request, adopted and clarified the reasoning underlying Justice Story's opinion and more clearly foreshadowed the Court's reasoning in *Morton Salt*:

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27. See, e.g., *Pennock v. Dialogue*, 27 U.S. 1, 19 (1829); see also, *Kendall v. Winsor*, 62 U.S. 322, 328 (1958); *Motion Picture Patents Co. v. Universal Film Mfg Co.*, 243 U.S. 502, 519 (1917).

28. 27 U.S. 1 (1829).

29. *Id.* at 3.

30. *Id.*

31. *Id.* at 24.

32. The *Pennock* Court explained:

If an inventor should be permitted to hold back from the knowledge of the public the secrets of his invention; if he should for a long period of years retain the monopoly, and make, and sell his invention publicly, and thus gather the whole profits of it, relying upon his superior skill and knowledge of the structure; and then, and then only, when the danger of competition should force him to secure the exclusive right, he should be allowed to take out a patent, and thus exclude the public from any farther use than what should be derived under it during the fourteen years; it would materially retard the progress of science and useful arts, and give a premium to those who should least prompt to communicate their discoveries. A provision, therefore, that should withhold from an inventor the privilege of an exclusive right, unless he should, as early as he should allow the public use, put the public in possession of his secret, and commence the running of the period, that should limit that right; would not be deemed unreasonable.

*Id.* at 19.

33. *Id.*

34. 62 U.S. 322 (1858).

[T]he inventor who designedly, and with the view of applying it indefinitely and exclusively for his own profit, withholds his invention from the public, comes not within the policy or objects of the Constitution or acts of Congress. He does not promote, and, if aided in his design, would impede the progress of science and the useful arts. And with a very bad grace could he appeal for favor or protection to that society which, if he had not injured, he certainly had neither benefited nor intended to benefit.<sup>35</sup>

The 1917 case, *Motion Picture Patents Co. v. Universal Film Manufacturing*<sup>36</sup> is the most recognized predecessor to *Morton Salt*, probably because like *Morton Salt*, *Motion Picture Patents* concerned a tying arrangement.<sup>37</sup> In *Motion Picture Patents*, the patentee had conditioned the licensing of its patented movie projector on the condition that the licensee would only purchase film used in the machine from the patentee.<sup>38</sup> One of the defendants, Universal Film Exchange, had sold film made by defendant Universal Film Manufacturing for use in the patented machine to a third defendant, the Prague Amusement Company.<sup>39</sup> *Motion Picture Patents* sued for contributory infringement.<sup>40</sup> The Court denied the plaintiff relief, explaining that its licensing restrictions were invalid as an attempt to extend the scope of the valid movie projector patent into tied markets that were unpatented.<sup>41</sup> Because film was outside the scope of *Motion Picture Patents*' patent claims, the Court refused to condone plaintiff's attempt to bring film within the scope of the projector patent with a tie.<sup>42</sup> The Court justified its decision by its concern for the public's interest:

A restriction which would give to the plaintiff such a potential power for evil over an industry . . . is plainly void, because [it is] wholly without the scope and purpose of our patent laws and because, if sustained, it would be gravely injurious to that public interest, which we have seen is a more favorite of the law than is the promotion of private fortunes.<sup>43</sup>

Two patent contributory infringement cases following *Motion Picture Patents*, *Carbice Corp. of America v. American Patents Development*

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35. *Id.* at 328.

36. 243 U.S. 502 (1917).

37. *Motion Picture Patents* overruled *Sidney Henry v. A.B. Dick*, 224 U.S. 1 (1912).

38. 243 U.S. at 506.

39. *Id.* at 507.

40. *Id.* at 508. For a complete discussion of the history of misuse and contributory negligence, see James B. Kobak, Jr., *A Sensible Doctrine of Misuse for Intellectual Property Cases*, 2 ALB. L.J. SCI. & TECH. 1 (1992).

41. *Motion Picture*, 243 U.S. at 512-13.

42. *Id.* at 513.

43. *Id.* at 519.

*Corp.*<sup>44</sup> and *Leitch Manufacturing Co. v. Barber Co.*<sup>45</sup> were to have the most immediate effect on the Court's decision in *Morton Salt*. However, the importance of these earlier cases in establishing the notion of misuse, which the Court more clearly developed over time into the formal misuse doctrine, should not be ignored.

## 2. SETTING THE TABLE FOR MORTON SALT

*Carbice* and *Leitch* set the table for *Morton Salt*. In *Carbice*, the plaintiff-patentee had patented a refrigerated transportation package which he licensed only on condition that the licensee use plaintiff's solid carbon dioxide (dry ice) with the package.<sup>46</sup> The defendant sold dry ice to the plaintiff's licensees and the plaintiff sued for contributory infringement.<sup>47</sup> Because the plaintiff tried to expand his legal monopoly into unpatented goods through his licensing agreement (which constituted a tie-in), the Court denied relief.<sup>48</sup> Summarizing the essence of *Pennock*, *Kendall*, and *Motion Picture Patents* and foreshadowing later misuse cases including *Morton Salt*, Justice Brandeis stated: "[C]ourts deny relief against those who disregard the limitations sought to be imposed by the patentee beyond the legitimate scope of its monopoly."<sup>49</sup> Underlying Justice Brandeis' opinion is the Court's concern that attempts to extend monopoly power into other markets through ties and other restrictive licensing arrangements undermine the public interest in innovation and competition.

In *Leitch*, the Barber Company had patented a process for laying bituminous emulsion on cement roads to retard evaporation during curing.<sup>50</sup> Barber did not charge users of this process a royalty, but only permitted them to use this process if they purchased its emulsion.<sup>51</sup> Leitch Manufacturing sold emulsion to a contractor using Barber's process, and Barber sued for contributory infringement.<sup>52</sup> The Court ruled for Leitch.<sup>53</sup> Justice Brandeis, again writing for the Court, reasoned that whenever a patentee extends the limited monopoly of his patent into unpatented goods and ignores the limitations "inherent in the patent

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44. 283 U.S. 27 (1931).

45. 302 U.S. 458 (1938).

46. 283 U.S. at 30.

47. *Id.*

48. *Id.* at 33-34 (relief denied because of plaintiff's attempt, "without sanction of law, to employ the patent to secure a limited monopoly of unpatented material").

49. *Id.* at 32.

50. *Leitch*, 302 U.S. at 460.

51. *Id.*

52. *Id.* at 461.

53. *Id.* at 463.

grant,"<sup>54</sup> the Court will deny him relief. Justice Brandeis firmly restated the rule which *Carbice* first established: "[E]very use of a patent as a means of obtaining a limited monopoly of unpatented material is prohibited."<sup>55</sup>

Because the patents in *Carbice* and *Leitch*, as well as *Motion Picture Patents*, did not legally extend to the tied good, there was effectively no infringement by defendant. Nevertheless, the Court did not limit its holdings to this ground. Given the *Morton* Court's reliance upon the reasoning of *Carbice* and *Leitch*,<sup>56</sup> one can only speculate that had *Carbice* and *Leitch* ruled against plaintiffs then *Morton Salt* might have turned out differently.

### 3. MORTON SALT: THE MODERN MISUSE DOCTRINE

In *Morton Salt*, Chief Justice Stone firmly articulated the patent misuse defense in direct infringement actions.<sup>57</sup> In *Morton Salt*, the respondent had patented a salt depositing machine.<sup>58</sup> A condition of the respondent's licensing agreement was that it required licensees to purchase salt tablets for the machine exclusively from the respondent.<sup>59</sup> Like the arrangements in *Carbice* and *Leitch*, the respondent's alleged misconduct was a tying arrangement.<sup>60</sup> The respondent sued when the petitioner, a competitor, copied, produced, and sold the patented machines in direct competition with the respondent.<sup>61</sup> The petitioner answered that respondent had misused his patent, and thus should be denied relief.<sup>62</sup> The issue before the Court, therefore, was "not necessarily whether respondent has violated the Clayton Act, but whether a court of equity will lend its aid to protect the patent monopoly when respondent is using it as the effective means of restraining competition with its sale of an unpatented article."<sup>63</sup> The Supreme Court reversed the Court of Appeals for the Seventh Circuit and held that the respondent could not recover against its competitor for direct infringement.<sup>64</sup>

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54. *Id.* at 462.

55. *Id.* at 463.

56. See *Morton Salt*, 314 U.S. at 491.

57. *Morton Salt's* companion case, *B.B. Chemical Co. v. Elmer A. Ellis*, 314 U.S. 495 (1942), adopted part and parcel the holding and reasoning of *Morton Salt*.

58. *Morton Salt*, 314 U.S. at 490.

59. *Id.* at 491.

60. *Id.*

61. *Id.* at 490-91.

62. *Id.* at 492.

63. *Id.* at 490.

64. *Id.* at 494.

Although the Court declined to rule on whether respondent's tying arrangement violated the Clayton Act,<sup>65</sup> the Court's language implies that the substantive standard is that of anticompetitiveness, namely, whether respondent had restrained trade. Moreover, the Court's broad holding expressly illustrates its reliance upon antitrust standards to define misuse:

Where the patent is used as a means of restraining competition with the patentee's sale of an unpatented product, the successful prosecution of an infringement suit even against one who is a competitor in such sale is a powerful aid to the maintenance of the attempted monopoly of the unpatented article, and is thus a contributing factor in thwarting the public policy underlying the grant of the patent. . . . Equity may rightly withhold its assistance from such a use of the patent by declining to entertain a suit for infringement, and should do so at least until it is made to appear that the improper practice has been abandoned and that the consequences of the misuse of the patent have been dissipated.<sup>66</sup>

After explaining the tying arrangement, the Court concluded, with no apparent economic or market analysis, "that respondent is making use of its patent monopoly to restrain competition in the marketing of unpatented articles . . . and is aiding in the creation of a limited monopoly in the tablets not within that granted by the patent."<sup>67</sup> This conclusion reflected the Court's contemporaneous hostility toward patent tie-ins and its presumption in antitrust cases that when a patentee used his patent to effect a tie, the result was an anticompetitive restraint of trade.<sup>68</sup> In light of these antitrust decisions, it is nearly certain that, had *Morton Salt* been a Clayton Act case, the Court would have held that respondent's tie violated the antitrust laws.

Presuming that the respondent's tie-in illegally extended the monopoly power of its patent into the tied market for salt, the Court

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65. *Id.*

66. *Id.* at 493.

67. *Id.* at 491.

68. See *Times-Picayune Publishing Co. v. United States*, 345 U.S. 594, 605 (1953); *International Salt Co. v. United States*, 332 U.S. 392, 396 (1947); *International Business Mach. Corp. v. United States*, 298 U.S. 131, 135-38 (1936); *United Shoe Mach. Corp. v. United States*, 258 U.S. 451, 457-60 (1922). See also George H. Schueler, *The New Antitrust Illegality Per Se: Forestalling and Patent Misuse*, 50 COLUM. L. REV. 170, 190-92 (1950); Toshiko Takenaka, *Extending the New Patent Misuse Limitation to Copyright: Lasercomb America, Inc. v. Reynolds*, 5 SOFTWARE L.J. 739, 755 (1992).

The Court's specific hostility toward patent tie-ins was an extension of its general hostility toward ties. See, e.g., *Standard Oil Co. of Cal. v. United States*, 337 U.S. 293, 305 (1949) ("Tying agreements serve hardly any purpose beyond the suppression of competition."). Eventually the Court focused its hostility on copyright tie-ins. See *United States v. Loew's Incorporated*, 371 U.S. 38, 45-52 (1962); *United States v. Paramount Pictures*, 334 U.S. 131, 157-58 (1948). For the Clayton Act and Sherman Act provisions relevant for the purposes of intellectual property misuse involving ties, see 15 U.S.C. § 14 (1988) (Clayton Act) and 15 U.S.C. §§ 1, 2 (1988) (Sherman Act).

concluded that the patentee's licensing agreement undermined the public interest in patents, and thereby constituted misuse, because it restrained trade.<sup>69</sup> The Court reasoned that a "patentee, like . . . other holders of an exclusive privilege granted in the furtherance of a public policy, may not claim protection of his grant by the courts where it is being used to subvert that policy."<sup>70</sup> The Court viewed the policy subverted the constitutional charge of Congress "to promote the Progress of Science and Useful Arts."<sup>71</sup>

By implicitly defining misuse as conduct that restrains competition, the Court suggested that misuse and antitrust analyses are coextensive. Support for this reading is found in the Court's statement that "the public policy which includes inventions within the granted monopoly excludes from it all that is not embraced in the invention."<sup>72</sup> In other words, any use of a patent that offends antitrust policy by extending monopoly power into a market outside the scope of the patent grant subverts patent policy and thus constitutes misuse. Since the Court seemingly conceptualized misuse as conduct that undermines patent policy by restraining competition, the Court presumably would have rejected petitioner's misuse defense had it found that the patentee's tie did not restrain trade.

#### 4. DOES MORTON SALT REQUIRE AN ANTITRUST VIOLATION?

While deciding whether there was a Clayton Act violation, the *Morton* Court applied antitrust policy to define the type of misconduct that constitutes misuse. The Court's language and reasoning suggest that it viewed antitrust violations and patent misuse as coextensive because a patentee who undermined antitrust policy by restraining trade was considered to have likewise undermined patent policy.<sup>73</sup> Although the Court's opinion suggests that antitrust and misuse concerns are coterminous, the Court did not explicitly answer the question whether the patentee's misconduct must violate an antitrust law to constitute misuse. Most commentators and judges read *Morton Salt* to answer this

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69. The *Morton Salt* Court's reasoning is consistent with the discussion above regarding the optimal tradeoff between monopoly power and incentives to innovate. See *supra* notes 8-11 and accompanying text.

70. *Morton Salt*, 314 U.S. at 494.

71. *Id.*

72. *Id.*

73. See, e.g., *supra* notes 65-72 and accompanying text.

question in the negative,<sup>74</sup> relying on *Morton Salt's* comment that "[i]t is unnecessary to decide whether respondent has violated the Clayton Act, for we conclude that in any event the maintenance of the present suit to restrain petitioner's manufacture or sale of the alleged infringing machines is contrary to public policy."<sup>75</sup>

The Court's presumption that respondent's tie restrained trade, its hostility at the time toward patent tie-ins, and its presumption that tie-ins *per se* violated the antitrust laws suggests that the Court did apply substantive antitrust standards to determine whether the licensing agreement constituted misuse. It was unnecessary to rule directly on a Clayton Act violation because the Court was hearing an infringement case and not a Clayton Act case.<sup>76</sup> Other than the above-quoted sentence, nothing in the Court's opinion suggests that conduct could undermine antitrust policy against restraints of trade, and thereby patent policy, without violating the antitrust laws.

Although the Supreme Court has asserted that *Morton Salt* does not require that a patent-holder's conduct rise to the level of an antitrust violation to constitute misuse,<sup>77</sup> this commentator believes that the language and reasoning of *Morton Salt* demand that the opinion be reinterpreted.

## C. From Patents to Copyright

### 1. THE MISUSE DOCTRINE IN COPYRIGHT LAW

Although the misuse doctrine developed in patent infringement cases, it has been extended to copyright law. The first case to uphold the

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74. See, e.g., Joel R. Bennett, *Patent Misuse: Must an Alleged Infringer Prove an Antitrust Violation?*, 17 AM. INTELL. PROP. L. ASS'N Q.J. 1 (1989) (arguing that patent misuse does not require an antitrust violation). See generally 9 LIPSCOMB, *supra* note 15, § 28:33.

75. *Morton Salt*, 314 U.S. at 494.

76. Nicoson, *supra* note 14, at 91.

77. The Court's view that conduct may constitute misuse while falling short of an antitrust violation apparently originated with Justice Douglas' opinion in *Transparent-Wrap Machine Corp. v. Stokes & Smith Co.*, 329 U.S. 637 (1947). Citing *Morton Salt*, Justice Douglas reasoned, "[t]hough control of the unpatented article or device falls short of a prohibited restraint of trade or monopoly, it will not be sanctioned." *Id.* at 641. Twenty-two years later, the Court affirmed *Transparent-Wrap* in *Zenith Radio Corp. v. Hazeltine Research, Inc.* 395 U.S. 100, 140 (1969) ("If there was . . . patent misuse, it does not necessarily follow that the misuse embodies the ingredients of a violation of either § 1 or § 2 of the Sherman Act, or that Zenith was threatened by a violation so as to entitle it to an injunction under § 16 of the Clayton Act."). However, prior to *Transparent-Wrap*, the Court hinted that misuse required that the patentee's misconduct rise to the level of an antitrust violation. See *Mercoid Corp. v. Minneapolis-Honeywell Regulator Co.*, 320 U.S. 680, 684 (1944) ("The legality of any attempt to bring unpatented goods within the protection of the patent is measured by the anti-trust laws not by the patent law.").

misuse defense in a copyright infringement action was *M. Whitmark & Sons v. Jensen*.<sup>78</sup> Plaintiffs, members of the American Society of Composers, Authors, and Publishers (ASCAP), sued defendants, operators of a movie theater, for copyright infringement. They alleged that defendants had shown movies accompanied by plaintiffs' music without obtaining from plaintiffs a license permitting defendants to publicly perform the music. Defendants argued that the court should deny plaintiffs relief because plaintiffs had misused their copyrights to fix prices and restrain competition by a policy of issuing only blanket licenses for music performances. The court ruled for defendants, reasoning that plaintiffs' licenses constituted misuse because they illegally extended plaintiffs' statutory monopolies in violation of the Sherman Act:

It is the collective acts and agreements of plaintiffs and their associate members which have diverted their copyrights from their "statutory purpose and become a ready instrument for economic control in domains where anti-trust acts or other laws not the patent statutes define the public policy." Refuge cannot be sought in the copyright monopoly which was not granted to enable plaintiffs to set up another monopoly, nor to enable the copyright owners to tie a lawful monopoly with an unlawful monopoly and thus reap the benefits of both.<sup>79</sup>

This court's misuse analysis, focusing on the copyright holder's use of its copyrights to restrain trade, suggests that the court defined misuse only in terms of an actual antitrust violation.<sup>80</sup>

After *Whitmark*, no court denied relief for copyright infringement on the basis of a misuse defense until the Ninth Circuit decided *Lasercomb America, Inc. v. Reynolds*<sup>81</sup> in 1990. In *Lasercomb*, the court adopted the conventional interpretation of *Morton Salt*: a misuse defense does not require an antitrust violation.<sup>82</sup> Lasercomb had developed a copyrighted software program, Interact, which it used in the manufacture of steel rule

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78. *M. Witmark & Sons v. Jensen*, 80 F. Supp. 843 (D. Minn. 1948).

79. *Id.* at 848-49 (citations omitted).

80. In the following passage, the court implied that an explicit antitrust violation was necessary:

One who unlawfully exceeds his copyright monopoly and violates the anti-trust laws is not outside the pale of the law, but where the Court's aid is requested . . . and the granting thereof would tend to serve the plaintiffs in their plan and scheme with other members of ASCAP to extend their copyrights in a monopolist control beyond their proper scope, it should be denied.

*Id.* at 850.

81. 911 F.2d 970 (4th Cir. 1990).

82. *Id.* at 973 ("We are persuaded that the rationale of *Morton Salt* in establishing the misuse defense applied to copyrights.").

dyes.<sup>83</sup> Before Lasercomb licensed Interact on a wide scale, it licensed four prerelease copies to Holiday Steel.<sup>84</sup> Holiday Steel circumvented a protective device on Interact and made three unauthorized copies.<sup>85</sup> Holiday Steel then created its own software program that was almost identical to Interact and marketed it as its own.<sup>86</sup> Holiday Steel did not deny direct infringement, but argued that the noncompete clause of plaintiff's license constituted misuse.<sup>87</sup> The court found that plaintiff's noncompete clause restrained competition outside the scope of the copyright.<sup>88</sup> Ruling for the defendant, the court noted that "a misuse of copyright defense is inherent in the law of copyright just as a misuse of patent defense is inherent in patent law."<sup>89</sup> Since patents and copyrights both serve the public policy of promoting innovation, they both must recognize the misuse defense in infringement actions.<sup>90</sup> The *Lasercomb* court explicitly stated that plaintiff's conduct need not rise to the level of an antitrust violation to constitute misuse.<sup>91</sup>

*Lasercomb* represents the broadest application of copyright misuse. Since *Lasercomb* the copyright misuse defense has been widely recognized in the courts. Although not necessarily ruling for defendant, the Fourth, Eleventh, and Federal Circuits, as well as district courts in the Second, Fourth, Fifth, Sixth, Ninth, Eleventh, and D.C. Circuits, have recognized the copyright misuse defense in the last three years.<sup>92</sup>

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83. *Id.* at 971.

84. *Id.*

85. *Id.*

86. *Id.*

87. *Id.* at 972. For an exhaustive discussion of *Lasercomb*'s noncompete clause, see Philip Abromats, Comment, *Copyright Misuse and Anticompetitive Software Licensing Restrictions: Lasercomb America, Inc. v. Reynolds*, 52 U. PIT. L. REV. 629, 643-45 (1992). The primary offending clause required the licensee to agree not to "permit or suffer" any of its directors, officers, and employees to directly or indirectly write, develop, produce, or sell software that competed with Interact for a period of ninety-nine years. *Lasercomb*, 911 F.2d at 973.

88. *Lasercomb*, 911 F.2d at 978.

89. *Id.* at 973.

90. *Id.* at 974. However, the *Lasercomb* court never explains why similar policy objectives necessitate the same affirmative defenses. Assuming arguendo that the misuse doctrine should be applied to copyright law as well as patent law, a case can be made that even if the traditional view is appropriate for patent misuse, it is inappropriate for copyright misuse. See, discussion *infra* Part IV.C.5.

91. *Lasercomb*, 911 F.2d at 978 ("So while it is true that the attempted use of a copyright to violate antitrust law probably would give rise to a misuse of copyright defense, the converse is not necessarily true—a misuse need not be a violation of antitrust law in order to comprise an equitable defense to an infringement action.").

92. See *Atari Games Corp. v. Nintendo of America, Inc.*, 975 F.2d 832, 845-47 (Fed. Cir. 1992); *Service & Training, Inc. v. Data General Corp.*, 963 F.2d 680, 690 (4th Cir. 1992); *Bellsouth Advertising & Publishing Corp. v. Donnelley Info. Publishing, Inc.*, 933 F.2d 952, 960-61 (11th Cir. 1991); *National Cable Television Ass'n, Inc. v. Broadcast Music, Inc.*, 772

The Supreme Court has yet to provide lower courts any definite guidance regarding how to define copyright misuse. The closest the Court has come to ruling on copyright misuse is its acknowledgment that such a defense exists in a few cases.

The Court first recognized copyright misuse implicitly in *United States v. Paramount Pictures, Inc.*<sup>93</sup> Although the Court never mentioned the term copyright misuse, it relied on patent misuse cases, including *Morton Salt*, to affirm the lower court's condemnation of *Paramount's* block-booking as an antitrust violation.<sup>94</sup> The Court stated, "[e]nlargement of the monopoly of the copyright was condemned below in reliance on the principle which forbids the owner of a patent to condition its use on the purchase or use of patented or unpatented materials."<sup>95</sup> Effectively, the Court found that *Paramount's* tie-in was a misuse of its copyright. In *United States v. Loew's Inc.*,<sup>96</sup> the Supreme Court again implicitly recognized copyright misuse in a block-booking case. The *Loew's* Court relied on *Paramount* and patent misuse cases to find that defendant's block-booking was an antitrust violation.<sup>97</sup> In dicta, the Court indicated that misuse may apply to copyright law as well as patent law.<sup>98</sup> Most recently, the Court explicitly recognized copyright

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F. Supp. 614, 651-52 (D.D.C. 1991); Advanced Computer Serv. of Mich., Inc. v. MAI Sys. Corp., 845 F. Supp. 356, 366-67 (E.D. Va. 1994); Triad Sys. Corp. v. Southeastern Express Co., 1994 WL 446049, \*14 (N.D. Cal. 1994); Atari Games Corp. v. Nintendo of America, 1993 WL 207548, \*9 n.2 (N.D. Cal. 1993); Lucasarts Entertainment Co. v. Humongous Entertainment Co., 1993 WL 341281, \*4 (N.D. Cal. 1993); National Football League, Cleveland Browns, Inc. v. Rondor, Inc., 840 F. Supp. 1160, 1168 (N.D. Ohio 1993); Mastercraft Fabrics Corp. v. Dickson Elberton Mills, Inc., 821 F. Supp. 1503, 1511 (M.D. Ga. 1993); Reliability Research Inc. v. Computer Associates Int'l, 793 F. Supp. 68, 69 (E.D.N.Y. 1992); Microsoft Corp. v. BEC Computer Co., 818 F. Supp. 1313, 1316-17 (C.D. Cal. 1992); Sega Enter. Ltd. v. Accolade, 785 F. Supp. 1392, 1399 (N.D. Cal. 1992), *rev'd on other grounds*, 977 F.2d 1510 (9th Cir. 1992); Electronic Data Sys. Corp. v. Computer Associates Int'l, Inc., 802 F. Supp. 1463, 1465-66 (N.D. Tex. 1992); Michael Anthony Jewelers, Inc. v. Peacock Jewelry, Inc., 795 F. Supp. 639, 655 (S.D.N.Y. 1992); Budish v. Gordon, 784 F. Supp. 1320, 1336-37 (N.D. Ohio 1992); Basic Books, Inc. v. Kinko's Graphics Corp., 758 F. Supp. 1522, 1537-39 (S.D.N.Y. 1991); Coleman v. ESPN, 764 F. Supp. 290, 295 (S.D.N.Y. 1991).

93. 334 U.S. 131 (1948).

94. *Id.* at 157.

95. *Id.* (citations omitted).

96. 371 U.S. 38 (1962).

97. *Id.* at 46.

98. *Id.* at 45-52. As Professor Nimmer explains,

[t]he United States Supreme Court's decision in *United States v. Loew's, Inc.* seemed to hint that in the view of our highest tribunal, the doctrine of the patent cases is fully applicable in copyright actions. In *Loew's*, the Court made explicit reference to the principle that a patentee who utilizes unlawful tying arrangements should be denied relief in an infringement action, and then proceeded to apply with reference to copyrights the same antitrust restrictions on tie-in of sales as were applicable in the patent context.

misuse in *Broadcast Music, Inc. v. Columbia Broadcasting System, Inc.*,<sup>99</sup> a blanket-licensing case in which the Court reversed the Second Circuit's finding of copyright misuse based upon a per se antitrust violation by finding that there had been no antitrust violation.<sup>100</sup> The Court did not independently address the validity of the copyright misuse doctrine.

The collective result of *Paramount*, *Loew's*, and *Broadcast Music* is that the Court has recognized the doctrine of copyright misuse and has suggested that misuse requires an antitrust violation.<sup>101</sup> However, as discussed in the following section, lower courts, lacking clear precedent from the Court, disagree over how to define misuse. Thus, it is critical that the Supreme Court, when given the opportunity, clearly articulate a definition of misuse.

## 2. HOW TO DEFINE COPYRIGHT MISUSE

The emphasis in *Whitmark* on plaintiffs' antitrust violation contrasts sharply with *Lasercomb*'s statement that plaintiff does not need to violate the antitrust laws for his conduct to constitute misuse. This tension, which embodies the tension between the above conflicting interpretations of *Morton Salt*, has manifested itself in courts hearing copyright misuse cases. Courts disagree whether an antitrust violation is required for copyright misuse.<sup>102</sup> This disagreement among courts demonstrates

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3 NIMMER, *supra* note 7, § 13.09[A].

99. 441 U.S. 1 (1979).

100. *Id.* at 24. *See also id.* at 6 n.9.

101. For example, the *Loew's* Court stated, "[a]ccommodation between the statutorily dispensed monopoly in the combination of contents in the patented or copyrighted product and the statutory principles of free competition demands that extension of the patent or copyright monopoly by the use of tying agreements be strictly confined." *Loew's*, 371 U.S. at 49. *See also* 3 NIMMER, *supra* note 7, § 13.09[A] (asserting that *Loew's* tacitly approved "an analogy between patents and copyrights with respect to an antitrust misuse defense").

102. For courts that have either explicitly or implicitly defined misuse as conduct that violates the antitrust laws see *Bellsouth Advertising & Publishing Corp. v. Donnelley Info. Publishing, Inc.*, 933 F.2d 952, 960-61 (11th Cir. 1991) (copyright holder's enforcement of its compilation copyright in original format of "Yellow Pages" did not constitute misuse because such enforcement is sanctioned by copyright laws); *United Telephone Co. of Mo. v. Johnson Publishing Co.*, 855 F.2d 604, 612 (8th Cir. 1988) (copyright holder's effort to require infringer to purchase license in its entire white pages listings at 500% price increase did not constitute misuse); *Saturday Evening Post Co. v. Rumbleseat Press, Inc.*, 816 F.2d 1191, 1200 (1987) (copyright holder's "no-contest" clause did not constitute misuse); *Electronic Data Sys. Corp. v. Computer Associates Int'l., Inc.*, 802 F. Supp. 1463, 1466 (N.D. Tex. 1992) (denying copyright holder's motion to dismiss licensee's misuse claim where licensee sufficiently alleged that copyright holder's licenses constituted illegal tie-in); *Basic Books, Inc. v. Kinko's Graphics Corp.*, 758 F. Supp. 1522, 1538-39 (S.D.N.Y. 1991) (copyright holder's infringement action did not constitute misuse because action was reasonable under copyright laws and not illegal monopoly extension).

today's two dominant views<sup>103</sup> of the misuse doctrine in intellectual property law: the traditional "scope of the grant" view that does not require an antitrust violation, and the more recent "antitrust view" which does.<sup>104</sup> Both views have their proponents in scholarly circles.<sup>105</sup>

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For courts that have either explicitly or implicitly defined misuse in terms of public policy standards that go beyond the antitrust laws see *Atari Games Corp. v. Nintendo of America, Inc.*, 975 F.2d 832, 846 (Fed. Cir. 1992) (upholding district court's preliminary injunction where copyright holder's license did not restrain licensee's creativity); *Lasercomb America, Inc. v. Reynolds*, 911 F.2d 970, 978 (4th Cir. 1990) (copyright holder's incorporation of "noncompete" clause into software license constituted misuse, regardless of whether it violated antitrust laws); *Advanced Computer Serv. of Mich., Inc. v. MAI Sys. Corp.*, 845 F. Supp. 356, 366-67 (E.D. Va. 1994) (owner of copyrighted software program did not misuse copyright where license neither violated antitrust laws nor restricted licensees from developing competing software); *Microsoft Corp. v. BEC Computer Co., Inc.*, 818 F. Supp. 1313, 1316 (C.D. Cal. 1992) (software license prohibiting licensee from selling licensed software unaccompanied by licensee's computers did not offend copyright policy because license did not prohibit licensee from independently implementing program similar to copyrighted software or selling computers without accompanying software); *National Cable Television Ass'n, Inc. v. Broadcast Music, Inc.*, 772 F. Supp. 614, 652 (D.D.C. 1991) (blanket licenses did not constitute misuse because licenses did not violate antitrust laws or otherwise undermine copyright policy); *Broadcast Music, Inc. v. Moor-Law, Inc.*, 527 F. Supp. 758, 772-73 (D. Del. 1981), *aff'd per curiam*, 691 F.2d 390 (3rd Cir. 1982) (performing rights organization's practice of basing license fee for small establishments providing live music on percentage of entertainment expenses did not constitute misuse).

103. There is a third view grounded in contract theory that failed to gather strong support. See Nicoson, *supra* note 14, at 100; Note, *Mandatory Package Licensing: A New Patent Misuse*, 44 VA. L. REV. 727, 734-35 (1958). The contract view of misuse conceptualizes patents and copyrights as contracts between the public and the innovator. The public promises the innovator the exclusive rights in the product of his creative efforts; the innovator implicitly promises to limit his monopoly to the parameters of these exclusive rights. Any use by the innovator of his patent or copyright to extend his monopoly power beyond the scope of his exclusive rights, therefore, constitutes a "breach" of his "contract" with the public. As a result, when the innovator misuses his intellectual property, the public is no longer obligated to enforce the innovator's exclusive rights in the courts. The innovator's breach frees the public from fulfilling its duties under the parties' bargain. Since the innovator has broken his promise, he is in no position to complain when the public does not respect his statutory monopoly, which was conditioned upon the innovator's upholding his end of the agreement. Among those who have framed intellectual property as a contract between the public and the innovator is Chief Justice Marshall. See *Grant v. Raymond*, 31 U.S. (6 Pet.) 218, 241-242 (1832).

104. The 1988 Patent Misuse Reform Act (PMRA) adopted the antitrust view of misuse when the alleged misconduct is a patent tie-in. 35 U.S.C. § 271(d)(5) (1988). No congressional action has been taken with regard to copyright misuse. For a more extensive discussion of PMRA, see *infra* Part IV.C.7.

105. For commentators supporting the traditional view see Timothy H. Fine, *Misuse and Antitrust Defenses to Copyright Infringement Actions*, HASTINGS L.J. 315 (1965); Richard Slitt, *Copyright Self-help Protection as Copyright Misuse: Finally the Other Shoe Drops*, UMKC L. REV. 899 (1989); David Scher, Note, *The Viability of the Copyright Misuse Defense*, 20 FORDHAM URB. L.J. 89 (1992). For commentators supporting the antitrust view, see, e.g., Byron A. Bilicki, *Standard Antitrust Analysis and the Doctrine of Patent Misuse: A Unification Under the Rule of Reason*, 46 U. PITTS. L. REV. 209 (1984); J. Dianne Brinson, *Patent Misuse: Time for a Change*, 16 RUTGERS COMPUTER & TECH. L.J. 357 (1990); Scott A. Miskimon,

The traditional view contends that licensing arrangements, even without violating antitrust laws, may undermine copyright policy and constitute misuse. The premise of this position is that the copyright grant is limited in scope to explicit exclusive rights. Thus, any attempt to secure market power beyond these limits is misuse—even if the attempt to accrue monopoly power does not violate the Clayton or Sherman Acts—because it creates monopolies broader than those sanctioned by copyright policy.<sup>106</sup>

Effectively, the traditional view imposes a lower threshold of monopoly extension for conduct to undermine copyright policy than that which is required to violate the Clayton or Sherman Acts. For example, a tie-in may constitute misuse under the traditional view even if scrutiny under the antitrust laws would indicate that the tie was not anticompetitive.

According to the antitrust view, only conduct that undermines antitrust policy undermines copyright policy. Thus, only anticompetitive conduct violating antitrust law constitutes misuse. Therefore, Clayton and Sherman Act violations define copyright misuse.

Proponents of the antitrust view of misuse have four primary criticisms of the traditional view: (a) courts have historically relied on antitrust policy to define misuse; (b) by not requiring an antitrust violation, the traditional view risks condemning procompetitive licensing practices that do not undermine copyright policy; (c) the traditional view causes uncertainty for innovators and business; and (d) the legal presumption should be against recognizing the misuse defense.

a. Courts have historically relied on antitrust policy to define misuse

Courts have relied on antitrust policy against restraints of trade to define misconduct constituting misuse.<sup>107</sup> Because courts apply antitrust policy when adjudicating the misuse defense, judicial antitrust and

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*Divorcing Public Policy From Economic Reality*, 69 N.C. L. REV. 1672 (1991); Philip Abromats, Comment, *Copyright Misuse and Anticompetitive Software Licensing Restrictions: Lasercomb America, Inc. v. Reynolds*, 52 U. PITTS. L. REV. 629 (1991).

106. See, e.g., Robert P. Merges, *Reflections on Current Legislation*, J. PAT. & TRADEMARK OFF. SOC'Y 793, 795 (1988).

107. See, e.g., Morton Salt Co. v. G.S. Suppiger Co., 314 U.S. 488, 493 (1942). Even those courts expressly adopting the traditional view discuss misuse in terms of antitrust policy. See, e.g., *Lasercomb America, Inc. v. Reynolds*, 911 F.2d 970, 978-79 (4th Cir. 1990).

In a related argument, one commentator contends that since the Copyright Act creates economic incentives to innovate, courts should conduct their misuse analysis within an economic framework defined by the antitrust laws, rather than implement general notions of public policy that may be inconsistent with economic and antitrust analysis. Roger Arar, Note, *Redefining Copyright Misuse*, 81 COLUM. L. REV. 1291, 1311 (1981).

misuse analyses are effectively coextensive: a plaintiff's misconduct only undermines copyright policy if it violates antitrust policy. Since an antitrust violation is the best indication of conduct contravening antitrust policy, courts should rely on antitrust standards and require that a plaintiff's conduct rise to the level of an antitrust violation to constitute misuse.<sup>108</sup> As Judge Posner explains, "If misuse claims are not tested by conventional antitrust principles, by what principle shall they be tested? Our law is not rich in alternative concepts of monopolistic abuse; and it is rather late in the day to try to develop one."<sup>109</sup>

Furthermore, there is no justification for treating copyright owners more harshly than other property owners. Owners of intellectual property should face the same standards of anticompetitiveness as any other property owner. Intellectual property owners should not be held liable for contravening antitrust policy when their conduct is too benign for the government or a private party to successfully challenge under the Clayton or Sherman Acts.<sup>110</sup>

The traditional view follows a strand of common law independent of and less demanding than the antitrust laws. This uncodified law of anticompetitive conduct has no place in the judicial system.<sup>111</sup> Moreover, it is unnecessary for courts to usurp the role of antitrust legislation and common law by imparting in infringement cases their own standards of the type of conduct that undermines antitrust policy. The antitrust laws have evolved over time, both through statutory amendment and case law developments, to be more responsive to anticompetitive concerns and to more accurately ascertain what types of conduct raise an anticompetitive concern. As the legal embodiment of public policy against restraints of trade, antitrust statutes and case law extend to all anticompetitive practices. There is no reason to believe that this well-developed body of antitrust law is an inadequate basis, requiring a supplemental body of common law, upon which to adjudicate the misuse defense.<sup>112</sup> The fact

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108. See, e.g., Roger B. Andewelt, "Competition Policy and the Patent Misuse Doctrine," remarks before the Bar Association for the District of Columbia, Patent, Trademark, and Copyright Section (Nov. 3, 1982) ("Since the antitrust laws are the appropriate vehicle for evaluating competitive effect, conduct should not be condemned as patent misuse on economic grounds unless the conduct is inconsistent with the antitrust laws."). See also Brinson, *supra* note 105, at 371 (arguing that it is logical to require antitrust violation for misuse since policy underlying misuse is antitrust policy); Nicoson, *supra* note 14, at 88.

109. USM Corp. v. SPS Technologies, Inc., 694 F.2d 505, 511 (7th Cir. 1982), *cert. denied*, 482 U.S. 1107 (1983).

110. See Turner, *supra* note 10, at 486.

111. Nicoson, *supra* note 14, at 91.

112. For example, Judge Posner explains,

[t]he [misuse] doctrine arose before there was any significant body of federal antitrust law, and reached maturity long before that law (a product very

that the court is hearing an infringement case does not, or at least should not, give it license to follow a strand of anticompetitive standards and case law with separate from current statutory and judicial standards that have developed through litigation of the Sherman and Clayton Acts. At least one circuit, the Seventh Circuit, has exercised the proper restraint: "We decline to create a federal common law rule that would jostle uncomfortably with the Sherman Act."<sup>113</sup>

- b. By not requiring an antitrust violation, the traditional view risks condemning procompetitive licensing practices that do not undermine copyright policy

The traditional view does not require an antitrust violation. There is thus a proof gap<sup>114</sup> between what a defendant has to show under the traditional and antitrust views of misuse. Under the antitrust view, "unless the defendant can make a 'definite factual showing of illegality' arising from plaintiff's agreement with its license, it is not entitled to judgment of dismissal."<sup>115</sup> Under the traditional view, the defendant may

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largely of free interpretation of unclear statutory language) attained its present broad scope. Since the antitrust laws as currently interpreted reach every practice that could impair competition substantially, it is not easy to define a separate role for a doctrine also designed to prevent an anticompetitive practice—the abuse of a patent monopoly.

USM, 694 F.2d at 510.

One commentator, supporting the traditional view, challenges Judge Posner's assessment:

The enactment of the copyright law itself embodied the existing federal policies generally opposing monopolies or restraints of trade. . . . Analysis of allegedly anticompetitive conduct from the standpoint of copyright policy alone is absolutely proper, for federal copyright protection existed for 100 years before the Sherman Act became law. And today, even if there had never existed antitrust laws with government sanctions and treble-damage liability, the analysis of a misuse defense in a copyright infringement action would proceed on the basis of the general public policy forbidding anticompetitive conduct incorporated in the copyright laws.

Frank Gibbs, *Copyright Misuse: Thirty Years Waiting for the Other Shoe*, Copyright L. Symp. (ASCAP) (No. 23) 31, 36 (1973). This commentator ignores that with the enactment of the Sherman and Clayton Acts, the antitrust laws became the standard by which courts determine whether a seller restrains trade in contravention of antitrust policy. The antitrust laws' role as the proper monitor of anticompetitive practices is not usurped by copyright law simply because copyright law embodies the public policy against anticompetitive practices and could (and perhaps did) monitor such practices involving copyrights in the absence of the Sherman and Clayton Acts.

113. *Saturday Evening Post Co. v. Rumbleseat Press, Inc.*, 816 F.2d 1191, 1200 (7th Cir. 1987) (Posner, J.).

114. Brinson, *supra* note 105, at 375.

115. *G.S. Suppiger Co. v. Morton Salt Co.*, 117 F.2d 968, 972 (1941), *overruled by* *Morton Salt Co. v. G.S. Suppiger Co.*, 314 U.S. 488 (1942). Depending on the licensing arrangement, the "factual showing of illegality" may be analyzed either under the per se

simply point to the licensing contract, without the economic analysis required to show an antitrust violation, to show that plaintiff has used his intellectual property to restrain trade in contravention of public policy.<sup>116</sup> Essentially, the traditional view presumes that certain licensing arrangements, while not violating the antitrust laws, nonetheless restrain trade enough to violate copyright policy.

*Senza-Gel Corp. v. Seiffhart*<sup>117</sup> is the most striking example of the effects of this gap. In *Senza-Gel*, the Federal Circuit found that "the district court's grant of summary judgment on the defense of [patent] misuse was not in conflict with its denial of summary judgment on the counterclaim for antitrust violation."<sup>118</sup> Although the court found that there were genuine issues of material fact relating to the tying counterclaim, it granted summary judgment on misuse merely on a showing that plaintiff had tied its patent license to other goods.<sup>119</sup> The court required no further evidence of anticompetitive effect.<sup>120</sup> To justify its decision, the Federal Circuit reasoned, "[T]he patentee's act may constitute patent misuse without rising to the level of an antitrust violation."<sup>121</sup> One commentator has dubbed this extreme form of the traditional view, in which tying is sufficient to establish a misuse, a "super *per se*" rule.<sup>122</sup>

The proof gap threatens the ultimate objective that the traditional view purports to support: increased consumer welfare. First, licensing arrangements that are condemned under the traditional view, but that do not violate antitrust laws, often reflect and promote competitive markets and are, therefore, in the best interest of the consumer. The traditional view forces the copyright holder to purge these procompetitive practices to avoid entering procompetitive agreements that could subject them to the risk of falling under the misuse doctrine. Second, licensing arrangements that do not implicate the antitrust laws, but do constitute

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rule or the rule of reason. For a general discussion of the *per se* rule and rule of reason, see 7 PHILLIP E. AREEDA, ANTITRUST LAW: AN ANALYSIS OF ANTITRUST PRINCIPLES AND THEIR APPLICATION §§ 1500-11 (1986). The proof gap is wider under the rule of reason since it requires plaintiff to affirmatively prove that defendant's conduct is anticompetitive, whereas the *per se* rule presumes the requisite illegal restraint of trade when certain practices are engaged in under certain circumstances. That is, under the *per se* rule, the court presumes that certain practices are inherently anticompetitive and thus violate the antitrust laws.

116. See, e.g., *Lasercomb America, Inc. v. Reynolds*, 911 F.2d 970 (4th Cir. 1990).

117. 803 F.2d 661 (Fed. Cir. 1986).

118. *Id.* at 668.

119. *Id.* at 669.

120. *Id.* at 668.

121. *Id.*

122. Brinson, *supra* note 105, at 390.

misuse under the traditional view, may be the most efficient mechanism for copyright holders or patentees to maximize profits or recoup investment costs. Prohibiting these licensing practices threatens to undermine the economic incentives driving innovation.

It is not worth preventing the downside risk that some illegal monopoly extension will slip through the cracks of the antitrust view by enforcing a harsh super per se rule. It is preferable for judges in an infringement action to err on the side of permitting illegal restraints of trade than to purge procompetitive licenses from the market. After the infringement litigation, the antitrust laws remain available to curb anticompetitive practices in antitrust cases, but there is no safety mechanism to remedy the harms that occur when judges root out procompetitive licensing arrangements from the marketplace. Moreover, to the extent that courts are loyal to precedent, even bad precedent, once courts, and especially the Supreme Court, condemn a practice as misuse, it will likely remain condemned, regardless of how much it benefits the public.<sup>123</sup> As then-Professor Easterbrook explains, "If judges condemn efficient practices, they will disappear, their benefits lost. . . . The costs of judicial error are borne by consumers, who lose the efficient practice and get nothing in return."<sup>124</sup>

c. Traditional view causes uncertainty for innovators and business

The traditional view, except in its super per se formulation, does not articulate clear standards for misuse. One commentator, criticizing the subjective nature of the traditional view, argues that it "presupposes some transcendent notion of what constitutes 'natural' or 'proper' patent or copyright exploitation and thus fails to identify any legal rules or standards for fixing the boundaries of legitimate conduct."<sup>125</sup> The traditional view, which results in different standards being applied by different judges, leaves ambiguous and uncertain what standards a court will apply to determine whether a plaintiff's conduct has an anticompetitive effect. Even if a licensor is relatively certain that his license does not violate the antitrust laws, he is uncertain whether his license violates the traditional view's vague public policy standards.<sup>126</sup> Given this uncertainty, copyright holders may hesitate before entering

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123. See Frank H. Easterbrook, *The Limits of Antitrust*, 63 TEX. L. REV. 1, 15 (1984).

124. *Id.* at 21.

125. Note, *Clarifying the Copyright Misuse Defense: The Role of Antitrust Standards and First Amendment Values*, 104 HARV. L. REV. 1289, 1295 (1991).

126. See USM Corp. v. SPS Technologies, Inc., 694 F.2d 505, 511 (7th Cir. 1982), cert. denied, 482 U.S. 1107 (1983).

certain licensing arrangements that, while not violating the antitrust laws, may nonetheless violate some judicially created standard of anticompetitiveness.<sup>127</sup> To the extent that uncertainty deters licensing practices that might survive scrutiny even under traditional misuse doctrine, and that are, in fact, procompetitive,<sup>128</sup> otherwise valuable goods and information are made unavailable for public enjoyment. Moreover, those licensing agreements that are entered into may not allow intellectual property owners to maximize profits, thus attenuating the incentives to innovate. Furthermore, without a well-defined legal framework within which to operate, potential licensors cannot easily assess their licensing opportunities and practices and must expend resources that could have been used for further innovation to determine if their licensing agreements constitute misuse. Finally, if a licensor is unsure whether his license constitutes misuse, he may hesitate to incur the costs associated with bringing an infringement suit, since the benefits of litigation are suspect. By deterring intellectual property owners from enforcing their exclusive rights, the traditional view undermines the public policy against piracy. The antitrust laws instead provide the misuse doctrine with needed certainty and stability.

d. The legal presumption should be against recognizing the misuse defense

Because the Constitution charges Congress to create intellectual property rights, there should be a legal presumption against the misuse defense. An infringer who himself has undermined copyright policy by infringing a plaintiff's exclusive rights should be required to affirmatively prove that the plaintiff's licensing arrangement undermines the public welfare. The presumption of misuse should not weigh in favor of infringers as it does under the traditional view.<sup>129</sup> Rather, the presumption should weigh toward protecting intellectual property rights, as it does under the antitrust view. The constitutional purpose motivating copyrights is realized only if courts discipline infringers, so courts should respect copyright holders' exclusive rights. Courts should grant an intellectual property owner relief against infringement unless the defendant rebuts the presumption against misuse by proving that the plaintiff's conduct rises to the level of an antitrust violation. The plaintiff

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127. See Arar, *supra* note 108, at 1310-11.

128. For a general discussion of the potential competitive effects of licensing arrangements involving tie-ins, see *infra* Parts IV.A and IV.B

129. Under the traditional view, courts effectively presume an anticompetitive effect to justify their finding of misuse, even though an antitrust analysis may reveal that the licensing practice is of no anticompetitive concern.

should not be denied relief simply by the defendant's pointing to the plaintiff's licensing contract.

Aside from its assertion that conduct can undermine copyright policy without violating the antitrust laws, the traditional view has one primary rebuttal to the antitrust criticism: infringers will be deterred from using the misuse defense if they have to prove an antitrust violation.<sup>130</sup> As the proof gap discussion illustrates, it is more difficult for an infringer to successfully invoke a misuse defense if he must prove a violation of the antitrust laws. Proving an antitrust violation is more costly and time-consuming than simply examining a licensing contract. Litigating antitrust issues requires expert testimony, extensive discovery, and intricate analysis. As the cost of bringing the defense increases and the likelihood of its success decreases, the expected net benefit of arguing misuse decreases. Thus requiring an antitrust violation decreases the incentive for infringers to argue misuse. The result, according to proponents of the traditional view, is that too few acts of misuse will be purged under the antitrust view, because too few infringers will allege misuse, and of those, too few will sustain the defense. It is true that it is cheaper and easier for an infringer to sustain the misuse defense under the traditional view than under the antitrust view. Yet the reason for antitrust standards, after all, is to discriminate activities that actually undermine public policy from those too innocuous for competitive concern. Parts IV and V further address this issue.

#### IV. COPYRIGHT MISUSE AND TIE-INS: THE RISK OF APPLYING THE TRADITIONAL VIEW

Infringers usually predicate their misuse defense on tying arrangements in copyright holders' licenses, in part because copyright holders' licenses frequently involve tie-ins.<sup>131</sup> Thus, how courts approach misuse when the copyright holder's alleged misconduct is a tie is critical, because tying arrangements often promote competition, copyright policy,<sup>132</sup> and technological progress.

That misuse may undermine competition and copyright policy is reason enough to be concerned over how courts define misuse. However, the issue is particularly critical to copyrighted computer software, where infringers disproportionately argue the misuse defense and

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130. See, e.g., Miskimon, *supra* note 105, at 1695.

131. See, e.g., *United States v. Loew's Inc.*, 371 U.S. 38 (1962); *United States v. Paramount Pictures*, 334 U.S. 131 (1948); *F.E.L. Publications Ltd. v. Catholic Bishops of Chicago*, 506 F.Supp. 1127 (N.D. Ill. 1981), *rev'd on other grounds*, 739 F.2d 284 (7th Cir. 1984), *cert. denied*, 459 U.S. 859 (1982).

132. See *infra* Part IV.B.3.

disproportionately allege a copyright tie-in as misconduct.<sup>133</sup> Creators of copyrighted computer software programs, for whom research and development costs are higher than for other types of works receiving copyright protection and for whom technological goodwill and reputation are critically important, are notorious for tying hardware, maintenance, and servicing to their software.<sup>134</sup> The tumultuous computer market heightens the need of software developers to recoup investment costs, maximize profits, and protect their technological goodwill and reputation. Software copyright holders' opportunity to tie, and thereby increase their profits and protect their competitive status in the marketplace, mitigates the investment risks inherent in their rapidly changing industry, where new technology is constantly replacing its predecessors.<sup>135</sup> By mitigating investment risks, tie-ins encourage investment in research and development, which ultimately culminates in an increased rate of technological advancement that promotes economic growth and productivity.

#### A. Anticompetitive Effects of Tie-ins and Copyright Policy

"In the paradigm of a tie, a seller refuses to sell one product, which a buyer desires, unless the buyer also agrees to purchase a second product, which is not otherwise desired from this seller on the offered terms."<sup>136</sup> Or as the Supreme Court has framed them, ties are "an agreement by a party to sell one product but only on the condition that the buyer also purchases a different (or tied) product, or at least agrees that he will not purchase that product from any other supplier."<sup>137</sup> The fundamental anticompetitive concern of tie-ins is foreclosure<sup>138</sup> resulting

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133. See cases cited *infra* notes 242-244.

134. For cases where an owner of a copyrighted software allegedly tied sales or licensing of its software (tying product) to hardware or maintenance and servicing (tied product) see *Service & Training, Inc. v. Data General Corp.*, 963 F.2d 680 (4th Cir. 1992); *Virtual Maintenance, Inc. v. Prime Computer, Inc.*, 957 F.2d 1318 (6th Cir. 1992), *vacated and remanded*, 61 USLW 3061 (1992), *aff'd on reh'g*, 995 F.2d 1324 (6th Cir. 1993); *Digidyne Corp. v. Data General Corp.*, 734 F.2d 1336 (9th Cir. 1984), *cert. denied*, 473 U.S. 926 (1985); *Advanced Computer Serv. of Mich., Inc. v. MAI Sys. Corp.*, 845 F. Supp. 356 (E.D. Va. 1994); *Electronic Data Sys. Corp. v. Computer Associates Int'l.*, 802 F. Supp. 1463 (N.D. Tex. 1992); *Microsoft Corp. v. BEC Computer Co., Inc.*, 818 F. Supp. 1313 (C.D. Cal. 1992); *Sega Enter. Ltd. v. Accolade, Inc.*, 785 F. Supp. 1392 (N.D. Cal. 1992), *rev'd on other grounds*, 977 F.2d 1510 (9th Cir. 1992); *Data General Corp. v. Grumman Sys. Support Corp.*, 1988 WL 159936 (D. Mass. 1988).

135. See Ramsey Hanna, Note, *Misusing Antitrust: The Search for Functional Copyright Misuse Standards*, 46 STAN. L. REV. 401, 426 (1994).

136. 9 AREEDA, *supra* note 116, § 1700a. Tie-ins implicate sections of both the Clayton Act and the Sherman Act. 15 U.S.C. §§ 1, 2, 14.

137. *Northern Pacific Ry. Co. v. United States*, 356 U.S. 1, 5-6 (1958).

138. See 9 AREEDA, *supra* note 116, § 1704.

from leverage.<sup>139</sup> Leverage is "a supplier's power to induce his customer for one product to buy a second product from him that would not otherwise be purchased solely on the merit of that second product."<sup>140</sup> Thus, leverage is the means by which a seller effects its tying arrangement and extends monopoly power into the tied market. By using his leverage to coerce customers to accept a tie, the seller can foreclose the tied market to competitors and thereby insulate himself from competition in the tied market. Tying, therefore, restrains competition (on the merits) in the tied market, and, by leaving insufficient demand to support rivals, threatens to worsen the market structure of the tied market by creating either a monopoly or oligopoly.<sup>141</sup>

However, a seller has no leverage and hence cannot force his customers to accept the tied with the tying product, if he lacks market power in the tying product market.<sup>142</sup> For example, if numerous substitutes are available for the tying product, competitive pressures will force the tying seller to abandon his arrangement or lose market share to his competitors. The seller in a competitive market may also lower the price of the package so that it is acceptable to buyers. But in this situation the relation is not coercive, and there is no monopoly in either the tying or the tied market. Rather, the seller has competed on the merits of the bundled package by setting a price that customers willingly accept.

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139. See *id.* § 1700d.

140. 5 P. AREEDA & D. TURNER, ANTITRUST LAW: AN ANALYSIS OF ANTITRUST PRINCIPLES AND THEIR APPLICATION § 1134a (1980).

141. See *Times-Picayune Publishing Co. v. United States*, 345 U.S. 594 (1953). In *Times* the Court stated:

Tying arrangements . . . flout the Sherman Act's policy that competition rules the marts of trade. Basic to the faith that a free economy best promotes the public weal is that goods must stand the cold test of competition. . . . By conditioning his sale of one commodity on the purchase of another, a seller coerces the abdication of buyers' independent judgment as to the "tied" product's merits and insulates it from the competitive stresses of the open market. . . . Conversely, the effect on competing sellers attempting to rival the "tied" product is drastic: to the extent the enforcer of the tying arrangement enjoys market control, other existing or potential sellers are foreclosed from offering up their goods to a free competitive judgment; they are effectively excluded from the marketplace.

*Id.* at 605. For a general discussion of foreclosure, see 9 AREEDA, *supra* note 116, § 1703d.

142. Justice Black explained, "[I]f one of a dozen food stores in a community were to refuse to sell flour unless the buyer also took sugar it would hardly tend to restrain competition in sugar if its competitors were ready and able to sell flour by itself." *Northern Pacific*, 356 U.S. at 7. See also *Jefferson Parish*, 466 U.S. at 37-38; *Fortner Enter. v. United States Steel Corp.*, 394 U.S. 495, 519 (1969) (hereinafter *Fortner I*); *USM Corp. v. SPS Technologies, Inc.*, 694 F.2d 505, 511 (7th Cir. 1982), cert. denied, 482 U.S. 1107 (1983); 9 AREEDA, *supra* note 116, §§ 1703d3, 1704c; Ward Bowman, *Tying Arrangements and the Leverage Problem*, YALE L.J. 19, 31 (1957); Easterbrook, *supra* note 123, at 20.

Courts have primarily relied on the anticompetitive effect of foreclosure when finding that tie-ins violate antitrust law.<sup>143</sup> However, there are additional anticompetitive concerns of ties, including: (1) the evasion of price controls;<sup>144</sup> (2) the facilitation of price discrimination;<sup>145</sup> and (3) the creation of entry barriers.<sup>146</sup> Like foreclosure, these anticompetitive risks also depend upon the seller having market power in the tying market. Justice White's dissent in *Fortner I* captures the various anticompetitive concerns of tie-ins.<sup>147</sup>

Because the Court believes that "[t]ying arrangements serve hardly any purpose beyond the suppression of competition,"<sup>148</sup> ties are scrutinized under the *per se* analysis of antitrust illegality,<sup>149</sup> usually.<sup>150</sup> The Court first outlined the *per se* rule in *Northern Pacific Railway Co. v.*

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143. See, e.g., *Jefferson Parish*, 446 U.S. at 16; 9 AREEDA, *supra* note 116, §§ 1700d, 1704.

144. See 9 AREEDA, *supra* note 116, § 1703e3; *Bowman*, *supra* note 143, at 21.

145. 9 AREEDA, *supra* note 116, § 1703e1.

146. *Id.* § 1705e.

147. Justice White wrote:

There is general agreement in the cases and among commentators that the fundamental restraint against which the tying proscription is meant to guard is the use of power over one product to attain power over another, or otherwise distort freedom of trade and competition in the second product. This distortion injures the buyers in the second product, who because of their preference for the seller's brand of the first are artificially forced to make a less than optimal choice in the second. And even if the customer is indifferent among brands of the second product and therefore loses nothing by agreeing to use the seller's brand of the second in order to get his brand of the first, such tying agreements may work significant restraints on competition in the tied product. The tying seller may be working toward a monopoly position in the tied product and, even if he is not, the practice of tying forecloses other sellers of the tied product and makes it more difficult for new firms to enter that market. They must be prepared not only to match existing sellers of the tied product in price and quality, but to offset the attraction of the tying product itself. Even if this is possible through simultaneous entry into production of the tying product, entry into both markets is significantly more expensive than simply entry into the tied market, and shifting buying habits in the tied product is considerably more cumbersome and less responsive to variations of competitive offers. In addition to these anticompetitive effects in the tied product, tying arrangements may be used to evade price control in the tying product through clandestine transfer of the profit to the tied product; they may be used as a counting device to effect price discrimination; and they may be used to force a full line of products on the customer so as to extract more easily from him a monopoly return on one unique product in the line. All of these distortions depend upon the existence of some market power in the tying product.

*Fortner I*, 394 U.S. at 512-14.

148. *Standard Oil Co. of Cal. v. United States*, 337 U.S. 293, 305 (1949).

149. See 9 AREEDA, *supra* note 116, §§ 1720-21.

150. *Id.* §§ 1728-29.

*United States*, explaining that ties are "unreasonable in and of themselves whenever a party has sufficient economic power with respect to the tying product to appreciably restrain free competition in the market for the tied product and a 'not insubstantial' amount of interstate commerce is affected."<sup>151</sup> More recently, courts<sup>152</sup> require a plaintiff to establish four elements before condemning a tie-in under the *per se* rule: (1) the existence of separate products; (2) an agreement conditioning the purchase of the tying product upon purchase of the tied product (or at least upon a condition not to purchase the tied product from another seller); (3) sufficient market power<sup>153</sup> with respect to the tying product to restrain competition appreciably in the tied product; and (4) an effect upon a substantial amount of commerce in the tied product.<sup>154</sup>

Illegal ties undermine copyright policy by reducing competition in the tied product market. First, the possessor of a copyright to a tying product has little incentive to innovate because he does not have to compete to gain market share in the tied market. Neither does he have to maintain his market share because entry barriers erected by the tie, coupled with the copyright holder's guaranteed pool of customers comprising individuals accepting the tied package, ensure him a fixed

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151. Northern Pacific Ry. Co. v. United States, 356 U.S. 1, 6 (1958).

152. See, e.g., Service & Training, Inc. v. Data General Corp., 963 F.2d 680, 683 (4th Cir. 1992).

153. For examples of how the Court has defined market power, see *Eastman Kodak Co. v. Image Technical Serv., Inc.*, 112 S. Ct. 2072, 2080 (1992) ("Market power is the power 'to force a purchaser to do something that he would not do in a competitive market.' " (quoting *Jefferson Parish Hosp. Dist. No. 2 v. Hyde*, 466 U.S. 2, 14 (1984))) and *Fortner I*, 394 U.S. at 503 ("Market power is usually stated to be the ability of a single seller to raise price or restrict output . . . [T]he proper focus of concern is whether the seller has the power to raise prices, or impose other burdensome terms such as a tie-in, with respect to any appreciable number of buyers within the market."). Economists usually define firm market power in terms of the Lerner Index. For a discussion of the Lerner Index, which measures the extent to which a seller can raise price over marginal cost, see SCHERER & ROSS, *supra* note 4, at 70-71. Recently, *Jefferson Parish* defined monopoly power by relying more on the economic theory underlying the Lerner Index. The Court stated, "As an economic matter, market power exists whenever prices can be raised above the level that would be charged in a competitive market." *Jefferson Parish*, 466 U.S. at 28 n.46. The Court has also historically relied heavily on the "uniqueness" of a good to infer market power. See, e.g., *United States Steel v. Fortner Enter.*, 429 U.S. 610, 619-22 (1977) (hereinafter *Fortner II*). The presumption of market power when a good is sufficiently unique is especially pertinent to a discussion of copyrights, since by definition copyrighted works are unique. Regardless of the slight nuances among the different ways the Court has defined market power, the Court has maintained the position of *Fortner I* that the "standard of 'sufficient economic power' does not . . . require that the defendant have a monopoly or even a dominant position throughout the market for the tying product." *Fortner I*, 394 U.S. at 502-03.

154. Unless the tying arrangement forecloses a substantial amount of commerce, it does not threaten to restrain trade enough in the tied market to create an anticompetitive concern. See, e.g., 9 AREEDA, *supra* note 116, §§ 1703, 1704.

share of the tied market.<sup>155</sup> Second, the copyright holder's actual and potential competitors in the tied market have less of an incentive to innovate since foreclosure and entry barriers reduce (and may eliminate) their opportunity to recoup investment costs or earn profits from their creative efforts.<sup>156</sup> By restraining trade and undermining innovation, illegal copyright ties upset the acceptable tradeoff between monopoly power and the dynamic efficiency of copyrights.<sup>157</sup>

## B. Should Copyright Ties Be Presumptively Anticompetitive?

The Court has historically treated tie-ins involving intellectual property more harshly than ties involving other goods or services.<sup>158</sup> The Court's hostility toward these ties began primarily with the early patent misuse cases in which the Court held, without formal economic analysis, that patent tie-ins were anticompetitive.<sup>159</sup> To justify its hostility to ties, the Court presumed that patents and copyrights provided the seller with sufficient economic power over the tying product to foreclose competition in the tied market.<sup>160</sup> The Court's presumption of market power and an illegal restraint of trade when the tying product was a

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155. For example, Areeda notes:

The disappearance of rival firms in the tied market . . . eliminates competitive spurs toward cost reduction, innovation, and improvements in the production and distribution of that product. Although a monopolist can usually increase profits by cutting costs and innovating, he is under less pressure to do so than the firm that needs such improvements to keep up with or get ahead of rivals. As usual, therefore, we fear that a monopolist will choose "the quiet life" rather than aggressive progress.

*Id.* § 1705b The positive influence of competition on innovation is called the stimulus factor. See generally SCHERER & ROSS, *supra* note 4, at 630-37, 644-60.

156. See *supra* note 4.

157. See *supra* note 24.

158. 9 AREEDA, *supra* note 116, § 1701.

159. See *United States v. Loew's Inc.*, 371 U.S. 38, 45-46 (1962); *United States v. Paramount Pictures*, 334 U.S. 131, 157 (1948).

160. See, e.g., *Fortner I*, 394 U.S. at 505 n.2 ("Uniqueness confers economic power only when other competitors are in some way prevented from offering the distinctive product themselves. Such barriers may be legal, as in the case of patents and copyrighted products."); *Jefferson Parish*, 466 U.S. at 16 ("[I]f the government has granted the seller a patent or similar monopoly over a product, it is fair to presume that the inability to buy the product elsewhere gives the seller market power."); *Loew's*, 371 U.S. at 45 ("The requisite economic power is presumed when the tying product is patented or copyrighted."); *Times-Picayune Publishing Co. v. United States*, 345 U.S. 594, 611 (1953) (patents and copyrights supply the "requisite market control"). At least one circuit has held that the Court's historical presumption of market power from intellectual property is rebuttable. *Digidyne Corp. v. Data General Corp.*, 734 F.2d 1336, 1344 (9th Cir. 1984), *cert. denied*, 473 U.S. 926 (1985). For a general discussion of *Digidyne* and whether the Court's presumption of market power is rebuttable or conclusive, see J. Dianne Brinson, *Proof of Economic Power in a Sherman Act Tying Arrangement Case*, 48 LA. L. REV. 29, 45-58 (1987).

patented or copyrighted good resulted in discriminatory treatment of these grants in antitrust cases: If a patent or copyright was involved, the Court condemned selling arrangements it otherwise permitted for non patented or non copyrighted other goods.<sup>161</sup> Because the Court presumed an antitrust violation, it found no reason to undertake extensive economic and market analyses and did not hesitate to find misuse.<sup>162</sup> With regard to copyrights, this presumption of anticompetitive effects was not justified.

### 1. THE QUESTION OF MARKET POWER, COPYRIGHTS, AND PATENTS

Market power is the "ability of a single seller to raise price and restrict output."<sup>163</sup> Intellectual property law potentially confers market power because it creates barriers to competitors' entry into the relevant market with the same good and, to a certain extent, with substitute goods.<sup>164</sup> Furthermore, even with entry into the market by competitors, the copyright holder would retain market power, albeit of no real anticompetitive concern in the long run, as intellectual property rights ensure product differentiation and a monopolistically competitive market.<sup>165</sup> Thus, the degree of market power is a function not only of how unique or socially desirable the new product is, but also of how effective the property right is in erecting entry barriers that keep substitutes out of the market.

As the analysis below suggests, neither patents nor copyrights confer much market power. Of the two, copyrights confer less.<sup>166</sup>

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161. See Schueller, *supra* note 68, at 192.

162. As the Court explained in *Loew's*:

Since the requisite economic power may be found on the basis of either uniqueness or consumer appeal, and since market dominance in the present context does not necessitate a demonstration of market power in the sense of § 2 of the Sherman Act, it should seldom be necessary in a tie-in sale case to embark upon a full-scale factual inquiry into the scope of the relevant market for the tying product and into the corollary problem of the seller's percentage share in that market. This is even more obviously true when the tying product is patented or copyrighted, in which case . . . sufficiency of economic power is presumed.

*Loew's*, 371 U.S. at 45 n.4.

163. *Fortner I*, 394 U.S. at 503.

164. See generally SCHERER & ROSS, *supra* note 4, at 624-26.

165. For an overview of product differentiation and monopolistic competition, see *id.* at 600-10. For an exhaustive discussion of monopolistic competition, see E.H. CHAMBERLAIN, THE THEORY OF MONOPOLISTIC COMPETITION (1933).

166. See, e.g., *Alfred Bell & Co. v. Catalda Fine Arts, Inc.*, 191 F.2d 99, 103 (2d Cir. 1951) (explaining that the protection granted patent owners is greater than that accorded copyright holders).

Four factors contribute to the minimal market power inherent in copyright grants: (a) the requirements of a copyright; (b) the idea/expression dichotomy and merger doctrine; (c) the exclusive rights that accompany a copyright; and (d) the fair use doctrine.

a. Originality requirement of copyrights

Copyrights protect "original works of authorship fixed in any tangible medium of expression."<sup>167</sup> For purposes of a copyright, originality requires only that the work "was independently created by the authors (as opposed to copied from other works)."<sup>168</sup> Thus, to receive copyright protection, a work does not need to be novel and can in fact be identical to previous works.<sup>169</sup> Judge Learned Hand explains:

Borrowed the work must indeed not be, for a plagiarist is not himself pro tanto an "author"; but if by some magic a man who had never known it were to compose anew Keats's Ode on a Grecian Urn, he would be an "author," and if he copyrighted it, others might not copy that poem, though they might of course copy Keats's.<sup>170</sup>

The copyright originality standard, and its implications, contrasts sharply with the standards required for a patent.<sup>171</sup> First, to obtain a patent, an inventor must establish the novelty of his invention by demonstrating that it is unlike any prior useful art.<sup>172</sup> Second, he must establish that his invention is useful.<sup>173</sup> Third, the inventor must establish that the differences between his invention and prior art would not "have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains."<sup>174</sup>

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167. 17 U.S.C. § 102 (1988).

168. *Feist Publications, Inc. v. Rural Telephone Serv. Co.*, 499 U.S. 340, 345 (1991). See also *Alfred Bell*, 191 F.2d at 99-102 (comparing requirements of "a high degree of uniqueness ingenuity, and inventiveness" for patents with originality requirement of copyrights); 1 NIMMER, *supra* note 7, § 2.01.

169. See *Feist*, 499 U.S. at 345 ("Originality does not signify novelty; a work may be original even though it closely resembles other works so long as the similarity is fortuitous and not the result of copying."); *Alfred Bell*, 191 F.2d at 103 ("The 'author' is entitled to a copyright if he independently contrived a work completely identical with what went before; similarly, although he obtains a valid copyright, he has no right to prevent another from publishing a work identical with his, if not copied from his."); 1 NIMMER, *supra* note 7, § 2.01.

170. *Sheldon v. Metro-Goldwyn Pictures Corp.*, 81 F.2d 49, 54 (2d Cir. 1936).

171. *Alfred Bell*, 191 F.2d at 101-102 ("[The] Constitution . . . recognizes that the standards for patents and copyrights are basically different.").

172. See 35 U.S.C. § 102 (1988) (novelty requirement); 35 U.S.C. § 101 (invention must be "new"); 35 U.S.C. § 115 (1988) (patentee must be the first inventor or discoverer).

173. 35 U.S.C. § 101 (1988).

174. 35 U.S.C. § 103. See *Feist*, 499 U.S. at 345; *Alfred Bell*, 91 F.2d at 102 (explaining that copyrights do not have a non-obviousness requirement).

Since the requirements for a patent are more demanding than for copyrights, patents confer more market power than copyrights. Because an author only has to meet the relatively lax standard of originality while an inventor has to meet the standards of novelty, utility, and non-obviousness, copyrights are easier to attain than patents.<sup>175</sup> It is easier, however, to create more perfect substitutes for copyrighted goods than to invent an acceptable substitute that does not infringe a patent.<sup>176</sup> In fact, because of the novelty requirement of patents, it is likely that a patented good is substantially unlike prior arts, which suggests a low degree of substitutability between patented inventions.

b. Idea/expression dichotomy.

An author may only copyright his expressions, not his ideas.<sup>177</sup> The Supreme Court explained in *Baker v. Seldon*<sup>178</sup> how the idea/expression dichotomy distinguishes copyrights from patents:

The difference between the two things, letters-patent and copyright, may be illustrated by reference to the subjects just enumerated. Take the case of medicines. Certain mixtures are found to be of great value in the healing art. If the discoverer writes and publishes a book on the subject (as regular physicians generally do), he gains no exclusive right to the manufacture and sale of the medicine; he gives that to the public. If he desires to acquire such exclusive right, he must obtain a patent for the mixture as a new art, manufacture, or composition of matter. He may copyright his book, if he pleases; but that only secures to him the exclusive right of printing and publishing his book. So of all other inventions or discoveries. . . . But the principal is the same in all. The description of the art in a book, though entitled to the benefit of copyright, lays no foundation for an exclusive claim to the art itself. The object of the one is explanation; the object of the other is use. The former can be secured, if at all, by letters-patent.<sup>179</sup>

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175. See 1 NIMMER, *supra* note 7, § 2.01.

176. The *Alfred Bell* court explained: "A patentee, unlike a copyrightee, must not merely produce something original, he must also be 'the first inventor or discoverer.' Hence it is possible to have a plurality of valid copyrights directed to closely identical or even identical works." *Alfred Bell*, 191 F.2d at 103 (citations omitted).

177. 17 U.S.C. § 102 (1988). For an overview of the idea/expression dichotomy, see 1 NIMMER, *supra* note 7, § 2.03[D]. For an economic justification of the idea/expression dichotomy, see Landes & Posner, *supra* note 4, at 347-49 (arguing that if ideas were copyrightable, the cost of expression would increase, which would decrease the proliferation of works upon which social welfare depends).

178. 101 U.S. 99 (1879).

179. *Id.* at 102-03, 105. See also *Mazer v. Stein*, 347 U.S. 201, 217 (1954) ("Unlike a patent, a copyright gives no exclusive rights to the art disclosed; protection is given only to the expression of the ideas—not the idea itself.").

A classic example illustrates the effect of *Baker*: While Shakespeare could have copyrighted the text of *Romeo and Juliet*, he could not have copyrighted its love theme. Thus, *West Side Story* would not infringe Shakespeare's copyright.<sup>180</sup>

The author's personal expression of an idea defines the scope of his copyright, whereas the inventor's patent claim defines the scope of his patent.<sup>181</sup> In his claim, the patentee may express his broad conception of an idea and how his invention captures part of that idea. The patent's scope, then, is not limited to the particular specifications of his invention but may also encompass the inventor's broader personal expression of the idea behind the invention.<sup>182</sup> The broader the patentee defines his claim, the broader is the scope of his patent; thus, the patent claim effectively allows a patentee to define the range of goods over which he will exert his exclusive rights. A patentee's broadly defined claim will exclude potential competitors by preempting alternative expressions of the idea embodied by the patentee's invention. The copyright holder, on the other hand, has no control over alternative expressions of the idea embodied by his work since his exclusive rights only protect his personal expression.<sup>183</sup> Since patent grants are often broader in scope than copyrights, a greater variety of substitutes may fall within the broad protective ambit of a patent claim than falls within the relatively narrow protective ambit of a copyright. Patents therefore often confer more market power than copyrights.

The merger doctrine is an extension of the idea/expression dichotomy. In order to prevent the monopolization of ideas, if a particular expression represents one of a limited number of ways of expressing an idea, or in the extreme the only way, the author cannot obtain a copyright for his expression.<sup>184</sup> Since the monopoly power conferred by a copyright increases as the number of ways available for expressing an idea decreases, an innovator cannot protect his creation when circumstances are such that a copyright would confer substantial monopoly power by effectively allowing him to monopolize a field without the threat of substitutes taking away market share. The merger doctrine requires the potential for competing innovators to create substitutes as a condition precedent to the granting of a copyright. In

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180. Glen P. Belvis, *Computers, Copyright & Tying Agreements: An Argument for the Abandonment of the Presumption of Market Power*, 28 B.C. L. REV. 265, 286 n.131 (1987).

181. 35 U.S.C. § 112 (1988). For an in-depth analysis of this point, see Belvis, *supra* note 180, at 283-87.

182. See Belvis, *supra* note 180, at 287.

183. See, e.g., *Alfred Bell*, 191 F.2d at 103.

184. See, e.g., *Herbert Rosenthal Jewelry Corp. v. Kalpakian*, 446 F.2d 738, 740-41 (9th Cir. 1971); *Morrisey v. Proctor & Gamble Co.*, 379 F.2d 675, 678-79 (1st Cir. 1967).

other words, if a copyright would confer substantial market power, the merger doctrine precludes the grant. The critical question for copyrights and market power, therefore, is not whether substitutes and potential entry provide a competitive stimulus, but how effective this threat of competition is in ensuring a competitive outcome. The answer depends on the facts of each case, and can be determined only on an ad hoc basis.

#### c. Exclusive rights and infringement

The exclusive rights that accompany a copyright most notably include the right "to reproduce the copyrighted work in copies."<sup>185</sup> The exclusive rights of a patent, however, are relatively broad and include the right to make, use, or sell the patented invention.<sup>186</sup> Since patents confer greater control over the relevant product, the market power inherent in a patent exceeds that inherent in a copyright.<sup>187</sup>

Not only are the exclusive rights of a patent broader than those of a copyright, they are accorded more protection, which bolsters the patentee's market power in comparison to the copyright holder's. First, inadvertent duplication constitutes patent infringement,<sup>188</sup> but not copyright infringement if the originality requirement is met.<sup>189</sup> Second, whereas substantial similarity between a patented good and an alleged infringer's invention may be sufficient for actionable infringement, similarity between a copyrighted work and an alleged infringer's work constitutes infringement only if the substantial similarity is the result of copying.<sup>190</sup>

#### d. Fair use doctrine

The Copyright Act allows copying of copyrighted works for certain purposes, which under the Act constitutes "fair use."<sup>191</sup> A defendant who successfully argues the fair use defense is exonerated from liability,

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185. 17 U.S.C. § 106 (1988).

186. 35 U.S.C. § 271(a). (1988)

187. For an entertaining example of this point, see Belvis, *supra* note 180, at 285-87.

188. See 4 CHISUM, *supra* note 15, § 16.02[2].

189. See, e.g., *Alfred Bell*, 191 F.2d at 103. This distinction is consistent with the difference between the novelty requirement of patents and the originality requirement of copyrights. An inventor is charged with full knowledge of prior patented inventions, even if he does not have such knowledge. *Id.*

190. See, e. g., 1 NIMMER, *supra* note 7, § 2.01[A]. For a comprehensive discussion of substantial similarity and copyrights, see *id.* § 13.03[A].

191. 17 U.S.C. § 107 (1988). For a general discussion of fair use, see 13 NIMMER, *supra* note 7, § 3.05; *see also* Bilicki, *supra* note 105, at 235-37. For an economic analysis of fair use, see Landes & Posner, *supra* note 4, at 357-60.

because "fair use of a copyrighted work . . . is not an infringement."<sup>192</sup> There is no fair use defense for patent infringement.

e. In sum copyrights confer less market power than patents

As the above analysis suggests, copyrights and patents are fundamentally different. The statutory requirements for a patent are more demanding than for a copyright, the exclusive rights of a patent are broader than those of a copyright, and patents preempt competition from a broader field than do copyrights.<sup>193</sup> Hence, patents are a stronger shield against competition, since they erect a higher barrier to entry by potential competitors into the market. One therefore expects to find more copyrighted goods that satisfy consumer demand for a particular end use than patented goods that would satisfy such a demand.<sup>194</sup>

Not all patents confer enough market power for patent holders to successfully effect a monopolistic tie. This implies that copyrights, which offer less protection than patents, also fail to confer the requisite market power for such a tie.<sup>195</sup> Notwithstanding earlier cases presuming monopoly power from intellectual property grants, courts have begun to recognize that monopoly power should not be presumed from patents or copyrights. The judicial trend is toward requiring affirmative proof of market power before condemning an intellectual property tie.<sup>196</sup>

In conclusion, given the relatively lax requirements and less exclusive rights of copyrights, courts should not presume that they confer the requisite monopoly power to effect a tie that is anticompetitive. Copyrights erect minimal entry barriers, and potential innovators should not find it difficult to create around the copyright. Thus, even if there are no substitutes today for the copyrighted good, potential entry helps ensure competitive pricing and licensing arrangements. If the copyright holder does have market power, it is likely a function of factors other

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192. 17 U.S.C. § 107 (1988).

193. See *Bobbs-Merrill Co. v. Isador Straus*, 210 U.S. 339, 345 (1908); *Saturday Evening Post Co. v. Rumbleseat Press, Inc.*, 816 F.2d 1191, 1198 (7th Cir. 1987).

194. See Richard Stitt, Comment, *Copyright Self-Help Protection as Copyright Misuse: Finally, the Other Shoe Drops*, 57 UMKC L. REV. 899, 904 (1989).

195. See, e.g., F.M. Scherer, Panel Discussion, *The Value of Patents and Other Legally Protected Commercial Rights*, 53 ANTITRUST L.J. 535, 547 (1985).

196. See *Jefferson Parish Hosp. Dist. No. 2 v. Hyde*, 466 U.S. 2, 36 n.7 (1984) (O'Connor, J., concurring); *Virtual Maintenance, Inc. v. Prime Computer, Inc.*, 957 F.2d 1318 (6th Cir. 1992), *vacated and remanded*, 61 U.S.L.W. 3061 (1992), *aff'd on reh'g*, 995 F.2d 1324 (6th Cir. 1993); *Abbott Lab. v. Brennan*, 952 F.2d 1346 (Fed. Cir. 1991); *A.I. Root Co. v. Computer/Dynamics, Inc.*, 806 F.2d 673 (6th Cir. 1986); *Alcon Lab., Inc. v. Allergan, Inc.*, 17 U.S.P.Q. 2d 1365 (N.D. Tex. 1990); *Allen-Myland, Inc. v. IBM Corp.*, 693 F. Supp. 262 (E.D. Pa. 1988); *Klo-zik Co. v. General Motors Corp.*, 677 F. Supp. 499 (E.D. Tex. 1987); *3 P.M., Inc. v. Basic Four Corp.*, 591 F. Supp. 1350 (E.D. Mich. 1984).

than the copyright, such as reputation, start-up costs, economies of scale, marketing and advertising, distribution and servicing networks, and first-mover advantages. The existence of a copyright is only one factor determining market structure, and, contrary to several older court opinions, but consistent with recent judicial trends, it is not dispositive as to whether the copyright holder actually has the market power to effect a monopolistic tie.

## 2. CRITICISM OF LEVERAGE THEORY

The Chicago School of Economics,<sup>197</sup> among others, has been an outspoken critic of the Supreme Court's reliance on leverage theory in tying cases.<sup>198</sup> The Chicago School argues that leverage theory is untenable, and that monopolists' use of tie-ins to maximize profits does not harm competition.

The Chicago School's fundamental criticism is the "fixed sum argument . . . which is simply that a firm with market power may be able to gain its profit all from its own market, all from another, or from any combination thereof, but the total amount of restriction that the monopolist will profitably be able to impose is fixed regardless of the practice that is used."<sup>199</sup> Thus, a copyright holder cannot extract more monopoly power from his grant than that received from its exclusive rights. Professor Stigler explains:

One film Justice Goldberg cited, *Gone With the Wind*, is worth \$10,000 to the buyer, while a second film the Justice cited, *Getting Gertie's Garter*, is worthless to him. The seller could sell the one for \$10,000, and throw away the second, for no matter what its cost, bygones are forever bygones. Instead, the seller compels the buyer to take both. But surely he can obtain no more than \$10,000, since by hypothesis this is the value of both films to the buyer. Why not, in short, use his monopoly power directly on the desirable film? It seems no more sensible, on this logic, to blockbook the two films

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197. The Chicago School analyzes anticompetitive behavior in terms of consumer welfare and efficiency.

198. For example, Judge Robert Bork, one of the leaders of the Chicago School, writes, The law's theory of tying arrangements is merely another example of the discredited transfer-of-power theory, and perhaps no other variety of that theory has been so thoroughly and repeatedly demolished in the legal and economic literature. That the law's course remained utterly undeflected for so long casts an illuminating and, if you are of a sardonic turn of mind, amusing sidelight upon the relation of scholarship to judicial lawmaking.

ROBERT BORK, THE ANTITRUST PARADOX 372 (1978). See also RICHARD POSNER, ANTITRUST LAW: AN ECONOMIC PERSPECTIVE (1976). See generally Aaron Director & Edward Levi, *Law and the Future: Trade Regulation*, 51 NW. U. L. REV. 281 (1956).

199. Louis Kaplow, *Extension of Monopoly Power Through Leverage*, 85 COLUM. L. REV. 515, 518 (1985).

than it would to compel the exhibitor to buy *Gone With the Wind* and seven ouiji boards, again for \$10,000.<sup>200</sup>

Stigler suggests that the copyright holder cannot extend his monopoly profit potential, because he must compensate licensees for accepting the tie—which to consumers is equivalent to a price increase—by, for example, lowering prices.<sup>201</sup> Thus, according to then-Professor Posner, “[a] . . . fatal weakness of the leverage theory is its inability to explain why a firm with a monopoly of one product would want to monopolize complementary products as well.”<sup>202</sup>

Although the Chicago School rejects leverage theory, it concedes that a copyright holder may tie in order to price discriminate, the effect of which may or may not be anticompetitive.<sup>203</sup> For example, when goods are sold in variable proportions, price discrimination through metering enables the seller to maximize monopoly profit.<sup>204</sup> However, metering “creates no new and additional monopoly power over the tied product.”<sup>205</sup> In fact, if the copyright holder meters, the tie-in may actually increase allocative efficiency, output, and thus consumer welfare.<sup>206</sup> Not surprisingly, the Chicago School concludes that a copyright holder’s attempt to maximize profits with a tie should not be per se illegal.<sup>207</sup>

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200. George Stigler, *United States v. Inc.: A Note on Block-Booking*, 1963 SUP. CT. REV. 152, *quoted in* BORK, *supra* note 198, at 374. Although the Supreme Court has accepted leverage as a viable economic theory in tying cases, members of the Court have recognized the Chicago School rationale. Justice White explained in his *Fortner I* dissent: “The monopolist can exact the maximum price which people are willing to pay for his product. By definition, if his price went up he would lose customers. If he then refuses to sell the tying product without the tied product, and raises the price of the tied product above the market, he will also lose customers. The tying link works no magic.” 394 U.S. at 514.

201. See USM Corp. v. SPS Technologies, Inc., 694 F.2d 505, 510 (7th Cir. 1982), *cert. denied*, 482 U.S. 1107 (1983); BORK, *supra* note 198, at 373; POSNER, *supra* note 198, at 173; Bowman, *supra* note 142, at 21.

202. POSNER, *supra* note 198, at 173.

203. See, e.g., BORK, *supra* note 198, at 376-78; Bowman, *supra* note 142, at 23. The welfare effects of price discrimination are uncertain and depend on the circumstances at hand. For a general discussion of the indeterminate nature of the welfare effects of price discrimination, see SCHERER & ROSS, *supra* note 4, at 494-508. Recognizing the indeterminate effect of price discrimination on competition and consumer welfare, the Court, for example, explained in *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 113 S. Ct. 2578, 2586 (1988), that price discrimination does not violate the Robinson-Patman Price Discrimination Act, 15 U.S.C. § 13(a), when the price differentials “result from or further the forces of competition.”

204. For a discussion of price discrimination through metering, see Part IV.2.c(5). Copyright holders may also have an incentive to price discriminate when goods are used in fixed proportions. See, e.g., BORK, *supra* note 198, at 377.

205. Bowman, *supra* note 142, at 24.

206. See *infra* Part IV.B.3(e).

207. Cf. USM Corp. v. SPS Tech., Inc., 694 F.2d 505, 510 (7th Cir. 1982), *cert. denied*, 482 U.S. 1107 (1983) (“[T]here is nothing wrong with trying to make as much money as you can from a [copyright]. True, a tie-in can be a method of price discrimination. . . . But

Despite the Chicago School's criticisms, which themselves have been criticized,<sup>208</sup> leverage theory still is supported by the Supreme Court and some legal commentators.<sup>209</sup>

### 3. BUSINESS JUSTIFICATION AND PROCOMPETITIVE EFFECTS OF TIES

The Supreme Court has recognized that tie-ins may be procompetitive and serve legitimate business needs that overwhelm the risks of leverage and foreclosure:

Tie-ins may also at times be beneficial to the economy. . . . They may facilitate new entry into fields where established sellers have wedded their customers to them by ties of habit and custom. They may permit clandestine price cutting in products which otherwise would have no price competition at all because of fear of retaliation from the few other producers dealing in the market. They may protect the reputation of the tying product if failure to use the tied product in conjunction with it may cause it to malfunction. And, if the tied and tying products are functionally related, they may reduce costs through economies of joint production and distribution.<sup>210</sup>

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since . . . there is no principle that [copyright] owners may not engage in price discrimination, it is unclear why one form of discrimination, the tie-in, alone is forbidden."). For a general discussion of price discrimination, see SCHERER & ROSS, *supra* note 4, at 489-517. For a discussion of price discrimination and ties, see 9 AREEDA, *supra* note 116, § 1711.

208. See, e.g., Kaplow, *supra* note 199, at 520-38. A primary criticism of the Chicago School is that it ignores the possibility that tying sellers may effect predatory pricing schemes by cross-subsidizing losses in the tied market with profits from the tying market, and thereby drive competitors from the tied market and establish their own monopoly position. Justice White recognized this possibility in his *Fortner I* dissent:

If the monopolist uses his monopoly profit in the first market to underwrite sales below market price in the second, his monopoly business becomes less profitable. There remains an incentive to do so nonetheless when he thinks he can obtain a monopoly in the tied product as well, permitting him later to raise prices without fear of entry to recoup the monopoly profit he has foregone.

*Fortner I*, 394 U.S. at 513 n.4.

209. See, e.g., *Eastman Kodak Co. v. Image Technical Serv., Inc.*, 112 S. Ct. 2072 (1992); *Jefferson Parish Hosp. Dist. No. 2 v. Hyde*, 466 U.S. 2 (1984); Kaplow, *supra* note 199; Slawson, *A New Concept of Competition: Reanalyzing Tie-in Doctrine after Hyde*, 27 ANTITRUST BULL 257 (1982).

210. *Fortner I*, 394 U.S. at 514 n.9. See also *Eastman Kodak*, 112 S. Ct. at 2091; *National Collegiate Athletic Ass'n. v. Board of Regents of Univ. of Okla.*, 468 U.S. 85, 104 n.26 (1984); *Jefferson Parish*, 466 U.S. at 11-14; *International Salt Co. v. United States*, 332 U.S. 392, 397 (1947). Although procompetitive and business justifications have been recognized as viable defenses to allegations of tying in antitrust cases, these defenses have generally been rejected in misuse cases, including those involving ties. See, e.g., *Mercoid v. Mid-Continent Inv. Co.*, 320 U.S. 661, 666 (1944); *B.B. Chem. Co. v. Ellis*, 314 U.S. 495, 498 (1942); *M. Whitmark & Sons v. Jenson*, 80 F. Supp. 843, 848 (D. Minn. 1948). But see

There are five primary potential business and procompetitive justifications for tie-ins: the four Justice White mentions (technological interdependence and goodwill; facilitating new entry; indirect price cuts; and economies of joint production and distribution) and price discrimination by metering.

a. Technological interdependence and goodwill

Professor Bowman explains, "The usefulness of a particular product or device may depend not only upon its own adaptability but equally upon the adaptability of some essential component. If the essential component did not conform to exact specifications, it might impair the operation or usefulness of the principal product."<sup>211</sup> A seller may be justified in tying a good to specific supplies, accessories, or services that complement that good if there is a substantial risk that the tying product will not work optimally unless used in conjunction with the seller's supplies, accessories, or services. By using the tying product with inferior goods that undermine the tying product's performance, purchasers threaten the seller's reputation.<sup>212</sup> Given that a seller's strength as a competitor in the marketplace decreases when its reputation as a supplier of high quality, dependable goods is eroded, rooting out ties undertaken to protect goodwill threatens competition.<sup>213</sup> Several courts have recognized a defense based on technological interdependence and business goodwill.<sup>214</sup>

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Duplan Corp. v. Deering Milliken, Inc., 444 F. Supp. 648, 697 (D. S.C. 1977), *aff'd*, 594 F.2d 979 (4th Cir. 1979).

. 211. Bowman, *supra* note 142, at 27.

212. Some have questioned whether technological interdependence and goodwill is a valid justification for ties because buyers and sellers have consistent incentives to ensure the optimal performance of the tying product. Thus, to the extent that buyers will follow sellers' recommendations regarding how to best use the principal product, the seller may be able to ensure his reputation without tying, by supplying purchasers with detailed specifications of complementary goods and services and a recommended list of alternative sources. However, compiling and disseminating this information may be costly, and it may be costly for the seller to effectively police his buyers' decisions. In any case, to prevail, defendants relying on the defense of technological interdependence and goodwill usually must establish that there is no less anticompetitive alternative.

213. It is not surprising that computer software and program developers, to preserve their reputation and goodwill, often tie the licensing or sale of their copyrighted works with hardware or servicing and maintenance.

214. See *Standard Oil Co. v. United States*, 337 U.S. 293, 306 (1949); *Siegel v. Chicken Delight, Inc.*, 448 F.2d 43, 51 (9th Cir. 1971), *cert. denied*, 405 U.S. 955 (1972); *Susser v. Carvel Corp.*, 332 F.2d 505, 514-15, 519-20 (2d. Cir. 1964), *cert. dismissed*, 381 U.S. 125 (1965); *Dennison Mattress Factory v. Spring-Air Co.*, 308 F.2d 403 (5th Cir. 1962). For a general discussion of technological interdependence and goodwill, see 9 AREEDA, *supra* note 116, § 1703g1; BORK, *supra* note 198, at 379-81; Joseph Bauer, *A Simplified Approach to Tying Arrangements: A Legal and Economic Analysis*, 33 VAND. L. REV. 283, 324-25 (1980); Bowman,

b. Facilitating new entry

Because a tying arrangement guarantees the seller a certain market share of the tied product for which he does not have to compete, the tie may facilitate the seller's entry into the tied market. If the tie does not foreclose an appreciable share of the market, the net effect of the tie may be to promote competition in the tied market. For as the entrant gains a reputation and experience in the tied market, he will likely begin to compete for customers in that share of the market not guaranteed by his tie as well, which will force other competitors to compete in price and quality.<sup>215</sup>

c. Indirect price cuts

It may not be profitable for a tying seller who is part of an oligopoly to cheat by lowering prices, because rivals may respond with their own price cuts so that everybody is worse off.<sup>216</sup> However, a seller may be able to use a tie to disguise his price cuts so that other members of the oligopoly have a more difficult time detecting and responding to the seller's lower prices and increased market share.<sup>217</sup> With a tie, the seller may continue to sell the tying and tied products separately at the market price, while also selling them as a package at a price that is less than the sum of the two individual prices. This clandestine cheating is competitive in that it leads to increased output at lower prices.

d. Economies of joint production and distribution

By tying two goods, the seller may capture otherwise unavailable economies of scale and thereby decrease costs of production, distribution, advertising, and administration. These savings may be passed onto consumers through increased output and lower prices that approach the outcome in a perfectly competitive market.<sup>218</sup> Professor Bowman suggests that when a tie generates efficiencies, the two goods should be

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*supra* note 142, at 27-28; Kenneth J. Burchfiel, *Patent Misuse and Antitrust Reform: Blessed Be the Tie?*, 4 HARV. J.L. & TECH 1, 65-66 (1991); Gary Myers, Note, *Tying Arrangements and the Computer Industry*, 1985 DUKE L.J. 1027, 1049-53 (1985).

215. For courts recognizing the new entry defense, see Jefferson Parish Hosp. Dist. No. 2 v. Hyde, 466 U.S. 2, 23 n.39 (1984); Continental T.V. Inc. v. GTE Sylvania Inc., 433 U.S. 36, 55 (1977); Grappone, Inc. v. Subaru of New England, Inc., 858 F.2d 792, 799 (1st Cir. 1988); Northern v. McGraw-Edison Co., 542 F.2d 1336, 1347 (8th Cir. 1976); United States v. Jerrold Elecs. Corp., 187 F. Supp. 545, 555-60 (E.D. Pa. 1960), *aff'd per curiam*, 365 U.S. 567 (1961). For a general discussion of new entry, see 9 AREEDA, *supra* note 116, § 1703g4; Bauer, *supra* note 214, at 326.

216. For a discussion of oligopoly cheating, see SCHERER & ROSS, *supra* note 4, at 277-79.

217. For a general discussion of indirect price cuts, see 9 AREEDA, *supra* note 116, § 1703g3.

218. See BORK, *supra* note 198, at 378-79.

conceptualized as a single product. With a single product, there is by definition no tie and thus no anticompetitive concern: "Still, when the cost of producing and selling the combination is less than the cost of producing and selling the parts separately, no tie can be said to exist.... No coercion is required when a cost advantage exists, for these lower costs will be reflected in lower prices."<sup>219</sup>

#### e. Price discrimination by metering

Restraints in an intellectual property license can help ensure that new technology realizes its maximum return and benefits consumers as quickly and efficiently as possible.<sup>220</sup> For example, Justice Department antitrust enforcement guidelines note that

license restrictions such as tie-ins . . . can be used to differentiate among licensees that value technology differently, allowing the licensor to charge prices that more closely approximate the value that individual licensees place on the technology. . . . In addition to increasing the return to the technology owner, metering can also lead to greater dissemination of the technology by reducing the price to licensees that would have been unable or unwilling to pay the higher uniform price that the technology owner would have charged in the absence of metering.<sup>221</sup>

Price discrimination by metering allows a copyright holder to charge each licensee a price that more closely reflects his individual valuation of the copyrighted good. If a copyright holder can tie the sale of a necessary item to the licensing of the copyright, he can discriminate among consumers according to the intensity of their demand for the copyrighted good (i.e., their elasticity of demand), by metering the intensity of their use of the tied commodity. Professor Bowman explains:

If the first commodity is worth more to the intensive users than to the less intensive users—in economic terms, if the former's demand is less elastic—tying the second commodity to the first can in effect achieve the goal of discriminatory pricing for the first. In this situation, the tied product serves as a counting device to measure how intensively the first product is being used.<sup>222</sup>

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219. Bowman, *supra* note 142, at 29. Concurring in *Jefferson Parish*, Justice O'Connor echoed Prof. Bowman's analysis: "When the economic advantages of joint packaging are substantial the package is not appropriately viewed as two products, and that should be the end of the tying inquiry." *Jefferson Parish*, 466 U.S. at 40 (O'Connor, J., concurring).

220. See BORK, *supra* note 198, at 376-78; Bilicki, *supra* note 105, at 235-37; Bowman, *supra* note 142, at 23-25. Price discrimination by metering is effectively part of the Chicago School criticism of leverage theory. See *supra* notes 198-207 and accompanying text.

221. U.S. Department of Justice Antitrust Enforcement Guidelines for International Operations, 55 Antitrust & Trade Reg. Rep. (BNA) No. 1391, at S-16 (November 17, 1988) [hereinafter *Guidelines*].

222. Bowman, *supra* note 142, at 23.

A typical metering arrangement works as follows: The copyright holder licenses the copyright at cost, or just above cost, on the condition of the tie. The copyright holder can meter the intensity of the licensees' use through their purchases of the tied product. By charging a supra-competitive price for the tied goods, the copyright holder earns what effectively is a royalty from the copyrighted goods. The royalty paid by high-intensity users is greater than that paid by low-intensity users, reflecting the high-intensity users' greater valuation of the license. Under a system of metering, the copyright holder has an incentive to lower the marginal cost of producing and supplying the tied product. By driving down costs, the copyright holder can capture increased producer surplus and profits. More importantly for consumers, the copyright holder's increased efficiency promotes competition in the tied market, and permits the copyright holder to charge lower royalties to low-intensity users.

In sum, the potential procompetitive benefits of metering include: stimulating competition in the tied market; increasing access to the copyrighted good for low-intensity users whose valuation of the copyright is lower than the licensing fee that would prevail in the absence of price discrimination; and maintaining, and possibly enhancing, economic incentives to innovate by providing copyright holders with a way to recoup investment costs and maximize the monopoly profits of their products, thereby contributing to long-run efficiency and productivity gains.<sup>223</sup>

### C. Applying Copyright Misuse to Ties

What standard should courts apply when evaluating the copyright misuse defense when the copyright holder's alleged misconduct is a tie-in? As explained above, this issue is critical, real, and timely, because of its impact on the computer software industry.

Typical copyright tying arrangements are found in *Digidyne Corp. v. Data General Corp.*<sup>224</sup> and *Virtual Maintenance, Inc. v. Prime Computer, Inc.*,<sup>225</sup> antitrust cases that did not involve allegations of infringement. In *Digidyne*, defendant Data General (DG) manufactured NOVA, a computer

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223. Expectations are an important and often determinative aspect of research and development, or of any technological undertaking. If innovators expect that the probability of recouping costs and capturing monopoly profits is higher with metering, the ability to meter bolsters incentives to innovate. Metering, therefore, is consistent with copyright policy, especially if, as the Chicago School suggests, metering does not extend the copyright holder's monopoly power.

224. 734 F.2d 1336 (9th Cir. 1984), cert. denied, 473 U.S. 926 (1985).

225. 957 F.2d 1318 (6th Cir. 1992), vacated and remanded, 61 USLW 3061 (1992), aff'd on reh'g, 995 F.2d 1324 (6th Cir. 1993).

system consisting of a central processing unit (CPU) and a copyrighted operating system, RDOS.<sup>226</sup> Digidyne manufactured "emulator" CPUs designed to be compatible with DG's RDOS software.<sup>227</sup> Digidyne claimed that DG's RDOS licensing arrangement violated Section 1 of the Sherman Act<sup>228</sup> and Section 3 of the Clayton Act<sup>229</sup> because DG tied licenses of its copyrighted RDOS software (tying product) with purchases of its NOVA CPUs (tied product)<sup>230</sup> and thereby foreclosed Digidyne from competing with DG in the CPU market. Rejecting DG's defense that it "must bundle its software together with its CPU in order to recover its substantial investment in software research and development,"<sup>231</sup> the Ninth Circuit found that DG's licenses violated the antitrust laws under the per se standard of illegality, since DG could not prove that its tying arrangement was the least anticompetitive method available for recouping investment costs.<sup>232</sup>

In *Virtual Maintenance, Inc. v. Prime Computer, Inc.*, Prime Computer (Prime) manufactured and marketed computer systems, for which it also provided hardware maintenance and software programs.<sup>233</sup> PDGS, created by Ford Motor Company for automotive design, was one of the software design programs supplied exclusively by Prime for use on its 50 Series minicomputers.<sup>234</sup> Along with PDGS, Prime distributed PDGS software support, which included software revisions, modifications, updates, and support services.<sup>235</sup> Prime charged only \$16,000 per year for the software support when bundled in a package with Prime's hardware maintenance.<sup>236</sup> Yet Prime charged \$80,000 to \$160,000 per year for software support untied to maintenance.<sup>237</sup> Virtual Maintenance, Incorporated (VMI), a competing provider of hardware maintenance of Prime's 50 Series computers, sued Prime.<sup>238</sup> VMI alleged that Prime had foreclosed the market for hardware maintenance by tying the maintenance (tied product) with support for the copyrighted software (tying product).<sup>239</sup> Although Prime's package constituted a copyright

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226. *Digidyne*, 734 F.2d at 1338.

227. *Id.*

228. 15 U.S.C. § 1 (1988).

229. 15 U.S.C. § 14 (1988).

230. *Digidyne*, 734 F.2d at 1338.

231. *Id.* at 1343 (citation omitted).

232. *Id.* at 1343-44.

233. *Virtual Maintenance*, 957 F.2d at 1321.

234. *Id.*

235. *Id.* at 1322

236. *Id.*

237. *Id.*

238. *Id.*

239. *Id.*

tie-in,<sup>240</sup> the Sixth Circuit held that the package did not violate the antitrust laws because Prime lacked sufficient market power in the relevant tying market to foreclose the tied market for maintenance to competitors such as VMI.<sup>241</sup>

That copyright tie-ins are prevalent in the computer industry, coupled with the fact that recent copyright misuse cases have disproportionately challenged computer software licensing and sales arrangements, suggests that more and more software tying arrangements will be challenged as misuse. Since 1990, courts have heard at least twelve software copyright infringement cases in which the alleged infringer argued the misuse defense.<sup>242</sup> These cases have spanned the federal judiciary, having been heard in the Second, Fourth, Fifth, Seventh, Eighth, Ninth, and D.C. Circuits. In six of these twelve cases, the defense to the alleged infringement was a claim of misuse in the form of a tie-in.<sup>243</sup> In five of these six cases, the court explicitly or implicitly recognized the traditional view of misuse, although not necessarily ruling for the alleged infringer.<sup>244</sup>

*Data General Corp. v. Grumman*<sup>245</sup> and *Advanced Computer Services of Michigan, Inc. v. MAI Systems Corp.*<sup>246</sup> are representative cases where

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240. *Id.* at 1323.

241. *Id.* at 1326-27.

242. *Atari Games Corp. v. Nintendo of America Inc.*, 975 F.2d 832 (Fed. Cir. 1992); *Service & Training, Inc. v. Data General Corp.*, 963 F.2d 680 (4th Cir. 1992); *PRC Realty Sys. v. National Ass'n of Realtors*, 972 F.2d 341 (4th Cir. 1992); *Hill v. XYQUAD*, 939 F.2d 627 (8th Cir. 1991); *Lasercomb America, Inc. v. Reynolds*, 911 F.2d 970 (4th Cir. 1990); *Advanced Computer Serv. of Mich. Inc. v. MAI Sys. Corp.*, 845 F. Supp. 356 (E.D. Va. 1994); *Atari Games Corp. v. Nintendo of America*, 1993 WL 207548 (N.D. Cal. 1993); *Electronic Data Sys. Corp. v. Computer Associates Int'l, Inc.*, 802 F. Supp. 1463 (N.D. Tex. 1992); *Microsoft Corp. v. BEC Computer Co., Inc.*, 818 F. Supp. 1313 (C.D. Cal. 1992); *Sega Enter. Ltd. v. Accolade, Inc.*, 785 F. Supp. 1392 (N.D. Cal. 1992), *rev'd on other grounds*, 977 F.2d 1510 (9th Cir. 1992); *Reliability Research Inc. v. Computer Associates Int'l, Inc.*, 793 F. Supp. 68 (E.D.N.Y. 1992); *QAD. inc., v. ALN Associates, Inc.*, 770 F. Supp. 1261 (N.D. Ill. 1991), *aff'd in part, dismissed in part*, 924 F.2d 834 (7th Cir. 1992).

243. *Service & Training, Inc. v. Data General Corp.*, 963 F.2d 680 (4th Cir. 1992); *PRC Realty Sys. v. National Ass'n of Realtors*, 972 F.2d 341 (4th Cir. 1992); *Advanced Computer Serv. of Mich., Inc. v. MAI Sys. Corp.*, 845 F. Supp. 356 (E.D. Va. 1994); *Electronic Data Sys. Corp. v. Computer Associates Int'l, Inc.*, 802 F. Supp. 1463 (N.D. Tex. 1992); *Microsoft Corp. v. BEC Computer Co.*, 818 F. Supp. 1313 (C.D. Cal. 1992); *Sega Enter. Ltd. v. Accolade, Inc.*, 785 F. Supp. 1392 (N.D. Cal. 1992), *rev'd on other grounds*, 977 F.2d 1510 (9th Cir. 1992).

244. *Service & Training, Inc. v. Data General Corp.*, 963 F.2d 680 (4th Cir. 1992); *PRC Realty Sys. v. National Ass'n of Realtors*, 972 F.2d 341 (4th Cir. 1992); *Advanced Computer Serv. of Mich., Inc. v. MAI Sys. Corp.*, 845 F. Supp. 356 (E.D. Va. 1994); *Microsoft Corp. v. BEC Computer Co.*, 818 F. Supp. 1313 (C.D. Cal. 1992); *Sega Enter. Ltd. v. Accolade, Inc.*, 785 F. Supp. 1392 (N.D. Cal. 1992), *rev'd on other grounds*, 977 F.2d 1510 (9th Cir. 1992).

245. 1988 WL 159936 (D. Mass. 1988).

246. 845 F. Supp. 356 (E.D. Va. 1994).

alleged software copyright infringers raised, as affirmative defenses, the copyright holder's use of the software as a tying product.

In *Data General*,<sup>247</sup> Data General (DG) designed and sold computer systems and provided services for their maintenance and repair. Grumman, a third party maintainer, directly competed with DG in providing maintenance and repair for DG computers. DG developed and copyrighted a diagnostic program, ADEX, used to design, diagnose, and repair DG computer systems. DG only licensed ADEX to customers purchasing DG's maintenance services and to cooperative maintenance organizations that maintained their own computers.<sup>248</sup> Grumman, which was not licensed to use ADEX, admitted to reproducing copies of ADEX and using them. By copying ADEX, Grumman infringed DG's copyright.<sup>249</sup> Grumman defended itself by arguing that DG had misused its copyright to effect a tie.<sup>250</sup> Specifically, Grumman alleged that DG tied the purchase of maintenance repair services (tied product) to licensing of its copyrighted ADEX software (tying product). DG justified its licensing arrangement as a way to ensure optimal maintenance and performance of its computer systems—a technological goodwill and reputation justification.<sup>251</sup> Despite Grumman's misuse allegations, the court granted DG a preliminary injunction enjoining Grumman from copying and using ADEX.<sup>252</sup> Although it rejected Grumman's misuse defense, the court generally showed support for the antitrust view by citing cases adopting this view.<sup>253</sup>

In *Advanced Computer Services*, decided in 1994, plaintiffs, independent service organizations (ISOs), alleged that defendant MAI's software sales arrangement was an illegal tie-in.<sup>254</sup> MAI manufactured and sold computers, which it maintained and serviced in competition with plaintiffs.<sup>255</sup> MAI had copyrighted two types of software: operating system software and diagnostic software.<sup>256</sup> Although MAI had not

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247. The facts of the case are detailed at *Data General Corp. v. Grumman*, 803 F. Supp. 487 (D. Mass. 1992) and *Data General Corp. v. Grumman*, 761 F. Supp. 185 (D. Mass. 1991).

248. *Data General*, 761 F. Supp. at 192.

249. *Data General*, 803 F. Supp. at 491.

250. *Data General*, 1988 WL 159936, at \*3.

251. *Id.* at 188. For a discussion of technological goodwill and reputation defense, see *supra* notes 211-214 and accompanying text.

252. 1988 WL 159936, at \*6.

253. *Id.* at \*3.

254. Advanced Computer Serv. of Mich., Inc. v. MAI Sys. Corp., 845 F. Supp. 356, 360 (E.D. Va. 1994). For a copyright misuse case that shares *Advanced Computer Services*'s fact pattern and issues, see *Triad Sys. Corp. v. Southeastern Express Co.*, 1994 WL 446049 (N.D. Cal. 1994).

255. *Advanced Computer Services*, 845 F. Supp. at 359.

256. *Id.* at 360.

licensed plaintiffs to use its software, plaintiffs nonetheless made unauthorized copies for use in servicing MAI computers.<sup>257</sup> In response to MAI's infringement claim, ISOs contended that MAI misused its copyrights by unlawfully tying the sale of its copyrighted operating system and diagnostic software (tying product) with the sale of its maintenance and repair services (tied product).<sup>258</sup> Ruling on motions for summary judgment, the court found that plaintiffs had infringed MAI's copyrights.<sup>259</sup> Since plaintiffs failed to raise a genuine issue of material fact as to the existence of an (illegal) tying arrangement,<sup>260</sup> the court dismissed their misuse defense predicated upon an illegal tie-in.<sup>261</sup>

Given the growing importance of computer-related technology to economic productivity, efficiency, and growth, it is critical that courts adequately protect the economic incentives of software program developers by adopting a view of misuse that, rather than emasculating a copyright holder's exclusive rights, instead subjects the copyright holder's conduct to rigorous scrutiny before deeming it misuse. The heightened concern and attention registered here for computer software programs bolsters the general public policy favoring copyright protection.<sup>262</sup>

Although courts, even those applying the traditional view, do not always rule in favor of the infringer, the misuse defense remains a potent shield against allegations of infringement. Infringers have increasingly used this shield, especially against allegations of software copyright infringement. Seven primary arguments favor the adoption and application by courts of the antitrust view rather than the traditional view in the specific case of tie-in misuse.<sup>263</sup>

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257. *Id.* at 360-64, 366 (discussion of copyright infringement of software).

258. *Id.* at 359-60.

259. *Id.* at 364, 366.

260. *Id.* at 369.

261. *Id.* at 366. Because plaintiffs failed to establish that MAI had in fact tied its copyrighted software to its servicing, the court dismissed plaintiffs' misuse defense, even though the court implicitly suggested that the traditional view of misuse should be applied. *Id.* at 368. Presumably, the court, which discussed misuse in terms of *Lasercomb*, would not have dismissed plaintiffs' (tying) misuse defense if it found that MAI in fact tied its software to its servicing, even though the court may still have dismissed plaintiffs' antitrust tying claim. See *id.* at 366

262. See *supra* Part II.

263. A recent publication addressing the issue of copyright misuse argues against the antitrust view. Ramsey Hanna, Note, *Misusing Antitrust: The Search for Functional Copyright Misuse Standards*, 46 STAN. L. REV. 401 (1994). Hanna argues that an antitrust-based approach to copyright misuse is inappropriate because: (1) courts' antitrust analyses presume market power from the existence of a copyright, even though rigorous economic scrutiny would prove that the copyright relevant in the case at bar confers insufficient market power to be of anticompetitive concern and (2) since the antitrust laws' primary concern is price competition, courts' antitrust analyses are based upon static models that

### 1. ONLY TIES THAT VIOLATE ANTITRUST LAWS UNDERMINE COPYRIGHT POLICY

Unless the copyright holder's tie rises to the level of an antitrust violation, the copyright holder has not used his copyright in a manner contrary to copyright policy. Only ties that violate the Clayton or Sherman Act restrain trade enough to undermine copyright policy. A violation of the antitrust laws is both a necessary and sufficient condition for a tie to undermine copyright policy. Courts have developed the per se

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do not account for the innovations and increased productivity that result when a large market share gives firms an incentive to invest in research and development. *Id.* at 417-31. In sum, Hanna argues that because courts' antitrust analyses presume market power from the existence of a copyright and discount the incentives created by market power to innovate, the antitrust view of misuse roots out procompetitive licensing practices that promote copyright policy, especially tying arrangements. *Id.* at 432-35. Although this commentator shares Hanna's concern for not rooting out procompetitive licensing practices that promote copyright policy, this commentator disagrees with Hanna's two premises. First, courts have increasingly refused to presume market power from the existence of a copyright. See cases cited *supra* note 196. Second, courts' antitrust analyses, at least implicitly, consider dynamic economic models; courts recognize efficiency gains, such as those resulting from innovation. See, e.g., *United States v. Baker Hughes, Inc.*, 908 F.2d 981, 985-86 (D.C. Cir. 1990). Third, if a copyright holder ties in order to meter rather than to lever his monopoly into the tied market, he will likely rebut allegations that his licensing/sales contract violates the antitrust laws. See, e.g., *Falls City Indus., Inc. v. Vanco Beverage, Inc.*, 450 U.S. 428, 434-45 (1983) (price discrimination violates antitrust laws only if it is reasonably probable that price differential may harm competition). Thus, a court applying the antitrust view of misuse would likely find that plaintiff did not misuse his copyright. Contrary to Hanna's assertions, modern antitrust analysis appeases Hanna's concern that the misuse defense should not undermine copyright policy. The arguments below substantiate this commentator's conclusion that the antitrust view is appropriate when the copyright holder's alleged misconduct is a tie-in. The antitrust view satisfies Hanna's, and this commentator's, ideal that "[p]ractices which do not constrain the development and dissemination of innovative materials should be permissible." Hanna, *supra* note 263 at 446.

The superiority of the antitrust view over the traditional view depends to a large extent on courts not presuming market power from the existence of a copyright. If courts applying the antitrust view presume market power, then even if these courts find that the copyright holder's tie rises to the level of an antitrust violation, there is still a strong likelihood that the tie is not anticompetitive, and thus does not undermine copyright policy, see *infra* Part IV.3(1), since few copyrights confer market power, see *supra* Part IV.2.a. The primary element distinguishing the antitrust view from the traditional view is that the former requires that the copyright holder have market power in the tied market. See *supra* notes 120-21 and accompanying text. If courts presume market power when applying the antitrust view, they harmonize the antitrust view with the traditional view, excepting the requirement of substantiality to prove a per se antitrust tying violation. See *supra* notes 120 and 122 and accompanying text. Thus, by presuming market power under the antitrust view, courts erode the merits of the antitrust view that make it preferable to the traditional view when plaintiff's alleged misconduct is a tie. However, given the recent judicial trend of not presuming market power from the existence of a copyright, see cases cited *supra* note 196, the advantages of the antitrust view appear to be real and substantial; courts appear unlikely to emasculate the merits of the antitrust view by presuming market power.

rule and rule of reason to determine when ties restrain trade sufficiently to undermine antitrust policy and incentives to innovate. Thus, the antitrust laws, rather than the traditional view's public policy standards (which do not even demand an affirmative showing of market power before condemning a tie as misuse), should measure misuse when plaintiff's alleged misconduct is a tie. Otherwise, courts fail to ensure that the copyright holder has, in fact, misused his copyright.<sup>264</sup> For by definition, unless the copyright holder's tying arrangement undermines incentives to innovate by restraining trade, the copyright holder has not misused his copyright to upset the balance between unfettered competition and innovation implicit in the copyright grant's exclusive rights.

## 2. THE TRADITIONAL VIEW IS INCONSISTENT WITH ECONOMIC REALITY

Referencing ties and other selling arrangements, then-Professor Easterbrook writes, "[e]conomists have developed procompetitive explanations for all these practices, sometimes several explanations for each practice. Then, too, practices that were deleterious yesterday may yield benefits today."<sup>265</sup> The reasoning of the early patent misuse cases, such as *Carbice*, *Leitch*, and *Morton Salt*, rested on a presumption that ties were sufficiently anticompetitive to undermine incentives to innovate. Without discussing here the risks of the Court's early misunderstanding of the potential effects of ties, it is enough to point out that recent economic theory rebuts the Court's early presumption, and thereby the traditional view of misuse embodied in that presumption. Specifically, the minimal market power conferred by copyrights,<sup>266</sup> the criticisms of leverage theory,<sup>267</sup> and the potentially procompetitive effects of ties<sup>268</sup> indicate that the traditional view is inconsistent with economic theory. The traditional view's presumption that a copyright tie ipso facto restrains trade enough to undermine incentives to innovate is untenable. Since there is nothing inherent in ties to suggest that they should be presumptively anticompetitive, courts should not adopt the traditional

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264. Subjecting a tie to the standards of the antitrust laws, of course, does not guarantee that the tie has in fact restrained trade, even if found to constitute an antitrust violation. However, an antitrust violation is generally accepted as a reasonable proxy for anticompetitive conduct. This commentator assumes for simplicity of discussion that conduct that violates the antitrust laws restrains trade sufficiently to undermine antitrust policy.

265. Easterbrook, *supra* note 123, at 7.

266. See *supra* Part IV.B.1.

267. See *supra* Part IV.B.2.

268. See *supra* Part IV.B.3.

view based upon an outdated economic theory of ties. Rather, courts should subject ties to the scrutiny of the antitrust laws before condemning them as misuse.<sup>269</sup>

### 3. THE TRADITIONAL VIEW THREATENS TO UNDERMINE COPYRIGHT POLICY

By rooting out efficient tying arrangements that the antitrust view would permit copyright holders to enter the traditional view threatens to undermine incentives to innovate. By not permitting copyright holders to meter as a means of efficient and effective profit maximization, the traditional view limits the economic reward of innovation,<sup>270</sup> as well as the innovator's potential to recoup his investment costs.<sup>271</sup>

Furthermore, by deterring copyright holders from entering tying arrangements, the traditional view retards the proliferation of works into the market and thus subverts copyright law's objective of promoting the pool of knowledge and information available to the public. Not only does metering allow an innovator to maximize his profits, it also increases the public's access to the copyrighted work more quickly and more widely than other licensing arrangements.

Moreover, rather than face the risk of having to purge, an innovator who can only protect his reputation and goodwill with a tie may decide not to license his good at all, or to license it on a restricted basis to preferred customers he can trust.

Finally, to avoid the risk of having to purge himself of profit-maximizing tying arrangements, a copyright holder may not enforce his exclusive rights against infringers. It may be more profitable for the copyright holder to allow limited infringement than to divest himself of the profits he earns from tying, especially if there are no financially viable alternative licensing arrangements that allow the innovator to recoup his costs. By discouraging suits against infringement, the traditional view subverts the copyright policy against piracy and free-riding.

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269. In fact, Judge Posner suggests that if any presumption is warranted when there is no market power it is that ties promote efficiency. *USM Corp. v. SPS Technologies, Inc.*, 694 F.2d 505, 511 (7th Cir. 1982), *cert. denied*, 482 U.S. 1107 (1983). Realizing the potentially procompetitive effects of intellectual property licensing restrictions, such as tie-ins, the DOJ in 1988 adopted a rule of reason standard to determine whether to challenge restrictive licensing practices as antitrust violations. *See Guidelines, supra* note 221, at S-17.

270. *See USM*, 694 F.2d at 510.

271. *See Guidelines, supra* note 221, S-16-17; Scherer, *supra* note 195, at 551.

#### 4. THE TRADITIONAL VIEW UNDERMINES POTENTIALLY PROCOMPETITIVE EFFECTS OF TIES

By deterring copyright holders from entering ties that do not foreclose the tied market to competitors, the traditional view contravenes public interest by depriving society of the potentially procompetitive benefits of ties. Those potential benefits include price discrimination by metering, the facilitation of entry into new markets, indirect price cuts, and economies of joint production and scale. Not only is society deprived of these competitive benefits under the traditional view, but the traditional view also does nothing to stimulate other aspects of competition or innovation.

Since the effect of a tie on competition and innovation depends on market share, it is critical that courts do not presume that all tying agreements are anticompetitive and in contravention of antitrust and copyright policy. Only when the tie undermines innovation should courts find that the copyright holder has misused his copyright. A proper analysis of the competitive effect of a tie cannot confidently be made under the traditional view, but rather requires a more extensive antitrust inquiry.

#### 5. EVEN IF APPROPRIATE FOR PATENT MISUSE, TRADITIONAL VIEW IS INAPPROPRIATE FOR COPYRIGHT MISUSE

Recall the proof gap analysis above. The traditional view rests on a presumption that ties ipso facto restrain trade sufficiently to undermine incentives to innovate, while the antitrust view requires defendant to prove an antitrust violation under the per se rule, or if necessary under the rule of reason. The risk of the proof gap is a function of the extent to which ties condemned as misuse under the traditional view would not be condemned under the antitrust view.

For a tie to restrain trade, the seller must have economic power in the tying market. Thus, the more likely it is that the tying product confers market power, the less likely it is that the traditional view, by presuming an anticompetitive effect, will condemn ties that would pass muster under the antitrust view. In other words, the probability that the traditional view, which does not require a showing of market power, and the antitrust view, which does require a showing of market power, result in consistent outcomes increases with the likelihood that the tying

product confers market power.<sup>272</sup> When the results of the traditional and antitrust views converge, the risks of the proof gap dissipate.

This analysis suggests that the *Lasercomb* court erred in adopting the traditional view of patent misuse for copyright law.<sup>273</sup> Patents confer more market power than copyrights, so the traditional view's presumption of an anticompetitive effect is more likely to be consistent with an antitrust analysis of patent ties than of copyright ties. The traditional and antitrust views, then, are more likely to lead to the same conclusions in patent than in copyright misuse cases.

To save time, administrative and litigation costs, and other transaction costs, it may be efficient for courts to adopt the traditional view in patent cases. However, because the risks of the proof gap are greater when the tying product is a copyright rather than a patent, the traditional view is not appropriate for copyright misuse. It is less likely that the presumption of an anticompetitive effect is correct when the tying product is a copyrighted work rather than a patented invention. Therefore, courts should adopt the antitrust view of copyright misuse, regardless of the view they adopt for patent misuse.<sup>274</sup>

## 6. EARLY PATENT MISUSE CASES INVOLVING TIES PRESUMED ILLEGAL RESTRAINT OF TRADE

In condemning ties as misuse, the Court in the early patent misuse cases presumed that patent tie-ins restrained trade sufficiently to undermine incentives to innovate. This presumption was a logical corollary to the Court's view at the time, that patent tie-ins were per se violations of the antitrust laws. Thus, the Court seems to have originally conceptualized misuse as conduct, such as a tie, that restrains trade sufficiently to constitute an antitrust violation if it were litigated under the Clayton or Sherman Acts. A procompetitive or neutrally competitive tie, which the Court presumed did not exist, would not have constituted misuse.

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272. Excepting the requirement of substantiality for a per se tying antitrust violation, courts harmonize the antitrust view with the traditional view when they presume market power from the existence of a copyright.

273. See *supra* notes 81-91 and accompanying text.

274. Constitutional concern over misuse is heightened when courts refuse to enforce a copyright holder's exclusive rights without requiring affirmative proof that a plaintiff's conduct undermines copyright policy. Furthermore, accepting the contractual view of misuse, if the copyright holder has not extended his market power beyond the legal scope of his statutory monopoly then the public, by upholding defendant's misuse defense, breaches its contract with the innovator. To minimize these constitutional concerns and the risk of breach of contract, courts should subject the copyright holder's tie to the scrutiny of the antitrust laws, since they are an accepted proxy for conduct that thwarts antitrust policy.

Not only does the reasoning of early misuse cases such as *Morton Salt* support the conclusion that antitrust policy and the misuse doctrine were meant to be coextensive, but so does the reasoning of the *Loew's* Court.<sup>275</sup> The *Loew's* Court explained that the Court had relied upon patent misuse cases to develop its antitrust standards for tying cases.<sup>276</sup> Specifically, the Court had read the misuse cases as standing for the proposition that patent tie-ins were presumptively an illegal restraint of trade in violation of the antitrust laws.<sup>277</sup> By premising antitrust standards for ties on patent misuse cases, the Court suggested that misuse analyses were identical to antitrust analyses. The consistency that the *Loew's* Court found between patent misuse and antitrust tying violations should be respected in copyright cases today.

#### 7. THE 1988 PATENT MISUSE REFORM ACT AND THE DEPARTMENT OF JUSTICE'S APPROACH TO INTELLECTUAL PROPERTY TIES SUPPORT USE OF ANTITRUST STANDARDS WHEN PLAINTIFF'S ALLEGED MISCONDUCT IS A TIE-IN

In the 1988 Patent Misuse Reform Act (PMRA),<sup>278</sup> Congress moved away from the traditional view of misuse involving ties and toward an antitrust standard. The relevant part of PMRA reads:

No patent owner otherwise entitled to relief for infringement or contributory infringement of a patent shall be denied relief or deemed guilty of misuse or illegal extension of the patent right by reason of his having . . . conditioned the license of any rights to the patent or the sale of the patented product on the acquisition of a license to rights in another patent or purchase of a separate product, unless, in view of the circumstances, the patent owner has market power in the relevant market for the patent or patented product on which the license or sale is conditioned.<sup>279</sup>

Moreover, Senators DeConcini and Leahy interpret PMRA to require courts to consider, in addition to proof of market power, the various procompetitive effects and business justifications of plaintiff's tie before condemning it as misuse; only if the net effect of the tie is to undermine innovation does the tie constitute misuse.<sup>280</sup>

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275. *Loew's*, 371 U.S. at 46.

276. *Id.*

277. *Id.*

278. Pub. L. No. 100-73, 102 Stat. 4674 (H.R. 4972). For an in-depth discussion of PMRA, see Burchfiel, *supra* note 178, at 89-92; Mark A. Lemley, Comment, *The Economic Irrationality of the Patent Misuse Doctrine*, 78 CAL. L. REV. 1599, 1620-26 (1990).

279. 35 U.S.C. § 271(d)(5) (Supp. 1993).

280. Senator Leahy, for example, stated: "Courts will have to go through the process of evaluating the patent owner's market power . . . and must consider the availability of

The Department of Justice (DOJ) also recognizes the potentially procompetitive effects of restrictive intellectual property licensing arrangements under a rule of reason.<sup>281</sup> The DOJ's rule of reason not only requires an affirmative showing of a restraint of trade but also requires the Department to determine the net effect of the licensing restriction in light of any procompetitive effects of the contract. The DOJ's policy is to prosecute only licensing arrangements where the net effect is an illegal restraint of trade. Not surprisingly, the DOJ does not investigate licenses that "represent simply an effort by the creator of intellectual property to appropriate the full value of that property," because if the creator cannot appropriate this value, his incentives to innovate are decreased.<sup>282</sup>

In sum, the antitrust view is the appropriate measure for copyright misuse when plaintiff's alleged misconduct is a tie-in. If courts apply the traditional view they risk not only rooting out procompetitive practices that benefit society, but also undermining the very policy they purport to protect. Given recent developments in economic theory of tying arrangements, and given that copyrights often confer little market power, courts should not presume an anticompetitive effect from copyright tie-ins, nor presume that ties restrain trade enough to undermine copyright policy without violating the antitrust laws. Rather, courts should require a defendant to affirmatively prove that plaintiff's tie restrains trade and that the net effect of the license is to undermine incentives to innovate. Otherwise, courts will continue to threaten the public interest by condemning licensing arrangements that do not undermine, and may in fact promote, copyright policy.

## V. COPYRIGHT MISUSE: NEVER A FIRST-BEST SOLUTION

It is likely that courts will continue to recognize the misuse defense in copyright infringement cases. Moreover, the Supreme Court may hear the issue in the not-too-distant future, given the stark differences among

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substitutes, and the existence of any business justification or there [sic] benefits, before concluding that the patent has been misused." 134 CONG. REC. S17,149 (daily ed. Oct. 21, 1988). Senator DeConcini explained: "The patent owner may still argue that any substantially anticompetitive impact of the tie-in is outweighed by benefits of the arrangement, including both procompetitive benefits and other potential business justifications." *Id.* at S17,148.

281. See *Guidelines*, *supra* note 221, at S-17.

282. *Id.* As of the date this article went to publication, the DOJ was considering new Guidelines under which it would analyze intellectual property licenses. See *Draft DOJ Antitrust Guidelines for the Licensing and Acquisition of Intellectual Property*, 67 Antitrust & Trade Reg. Rep. (BNA) No. 1676 (Aug. 11, 1994). Like the 1988 Guidelines, the proposed Guidelines would not presume market power from a copyright, would analyze licenses under a rule of reason, and would only prosecute licenses for which efficiency justifications do not overwhelm any anticompetitive effect. *Id.* §§ 2.2, 3.4, and 5.3.

courts. Assuming arguendo that the misuse defense should be available to infringers as an affirmative defense, the above analysis demonstrates that, when the alleged misconduct is a tie-in, courts should adopt the antitrust view and not the traditional view. However, the antitrust view is simply the lesser of two evils. It does not solve the concerns that arise when copyright holders use their legal monopolies to foreclose competition in tied markets; the antitrust view is simply the lesser of two evils.

When the plaintiff's alleged misconduct is a tie-in, courts should reject the copyright misuse defense completely. For two primary reasons, the misuse defense is never the first-best solution when the copyright holder ties: first, the misuse defense undermines copyright policy,<sup>283</sup> and second, antitrust litigation is available to root out tying arrangements that threaten copyright policy.

## A. Copyright Misuse Defense Undermines Copyright Policy

### 1. MISUSE DEFENSE DEVALUES COPYRIGHTS

The purpose of copyright is to promote creativity and innovation.<sup>284</sup> Copyrights fulfill their purpose by granting copyright holders exclusive rights over their work, creating the opportunity for monopoly profits. The potential to earn monopoly profits, then, provides the incentive to innovate that satisfies the constitutional charge to Congress "To Promote the Progress of Science and useful Arts."<sup>285</sup> However, the efficacy of the copyright in creating incentives depends on judicial enforcement of the copyright holder's exclusive rights.<sup>286</sup> If a copyright holder cannot enforce his exclusive rights against infringers, he loses his ability to earn monopoly profits or to recapture as damages profits lost to infringers. With an attenuated opportunity to capture all monopoly profits attributable to a copyright, there is less of an incentive to create copyrightable works.<sup>287</sup>

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283. Although the arguments discussed *infra* Part V.A apply to both the antitrust and traditional views of misuse, they do not upset this commentator's conclusion that the antitrust view is superior to the traditional view. Rather, they bolster the above analysis, since the risks of misuse discussed below are greater when courts adopt the traditional instead of the antitrust view.

284. See *supra* Part II.

285. U.S. CONST. art. I, § 8.

286. See *supra* notes 13-15 and accompanying text.

287. See, e.g., *Sega Enterprises Ltd. v. Accolade, Inc.*, 785 F. Supp. 1392, 1399 (N.D. Cal. 1992), *rev'd on other grounds*, 977 F.2d 1510 (9th Cir. 1992) ("The grant of a copyright is intended to motivate creative activity by the provision of a special reward. . . . Without

Assume a (potential) copyright holder's perspective on copyright misuse. Although copyright holders may create works in order to earn certain psychic rewards, they also create to earn profit. Thus, a potential creator's decision to create is—at least partly—driven by an expected profit. A creator's incentive to innovate increases with his expected profit from innovation. Anything undermining the creator's expected profit, therefore, undermines his incentive to innovate.

It is worth repeating that a fundamental determinant of the expected profit is the copyright holder's ability to enforce his exclusive rights against infringers. If a plaintiff-copyright holder is found to have misused his copyright, the court will refuse to enforce his exclusive rights, and infringers are free to pirate the copyrighted work until the plaintiff purges himself of his misconduct. No matter how carefully the copyright holder drafts his licensing arrangement, he is never certain that a court will find him free of misuse. While less of a concern under the antitrust view than the vague public policy approach of the traditional view, the risk of misuse nonetheless threatens the copyright holder, who can never be "altogether sure that he is not violating some provision" of the antitrust laws.<sup>288</sup> The misuse defense, whether defined in terms of the traditional or antitrust view, increases the likelihood that the copyright holder will be unable to enforce his exclusive rights. The fact that the misuse defense itself encourages infringement exacerbates this concern.<sup>289</sup>

Because the misuse defense provides a real risk for the copyright holder that he will be unable to enforce the exclusive rights upon which his profit potential depends, the defense drives down the expected profit generated by a given copyright, which in turn devalues copyrights.<sup>290</sup> As copyrights devalue, the demand for them decreases. As this demand decreases, individual and corporate effort to create copyrightable works decreases.<sup>291</sup> The result is less innovation and creativity. Because the misuse defense devalues copyrights by undermining the opportunity for copyright holders to earn the maximum profit from a copyright grant, the defense undermines incentives to innovate.

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the economic incentive to create which copyright protection provides, this incentive and the advantages it creates for society may well be lost.").

288. See Zechariah Chafee, Jr., *Coming into Equity with Unclean Hands*, 47 MICH. L. REV. 1065, 1072 (1949).

289. See *infra* Part V.B.

290. See Andewelt, *supra* note 108 ("Any significant tampering with the patent owner's exclusive rights can lead to a perception of decreased value of a patent, and this perception can result in decreased R&D and hence decreased progress of science.").

291. Cf. *id.*; Richard Levin, Panel Discussion, *The Value of Patents and Other Legally Protected Commercial Rights*, 53 ANTITRUST L.J. 535, 549 (1985) ("Anything that enhances the value of a patent to the inventor necessarily provides a greater incentive to innovate.").

Moreover, any efforts by a copyright holder to increase prices to recoup lost profits captured by infringers will prove futile. After purging, the best that a copyright holder can do, given his cost structure and the demand he faces, is maximize profits by setting marginal revenue equal to his marginal cost. This pricing strategy does not recoup any earlier losses the copyright holder experienced because he was denied relief against infringers. If the copyright holder chooses not to purge and raises his price, he will simply lose additional market share and profits by pricing himself out of the market. In either case, once the misuse defense divests a copyright holder of profit attributable to his creation, that profit cannot be regained. As a result, there is no means by which to restore to a copyright grant the value it loses when courts find a misuse of the copyright grant.

In conclusion, facing the risk of misuse, potential creators will expect less profit from a copyright grant because they might be unable to enforce their exclusive rights against infringers. As the value of expected profits decreases, the incentive to innovate and obtain a copyright decreases.

## 2. MISUSE DEFENSE ENCOURAGES INFRINGEMENT

The threat to infringers of being subject to the remedy provisions of the Copyright Act<sup>292</sup> promotes copyright policy by deterring infringement. The credibility of this threat depends on the courts enforcing the copyright holder's exclusive rights. The expected cost of infringement, therefore, is a function of the probability that the court will grant the copyright holder relief and the amount of that relief.

Judicial recognition of the misuse defense,<sup>293</sup> which increases the probability that the court will exonerate an infringer, weakens copyright policy by encouraging infringement.<sup>294</sup> First, by decreasing the relative cost of infringing a copyright as compared to purchasing the product, the defense encourages consumers to infringe rather than purchase. Second, by decreasing the relative cost of infringing as compared to innovating and creating, the defense undermines potential competitors' incentive to

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292. 17 U.S.C. §§ 501-11 (1988).

293. Adjudication of the misuse defense presumably increases litigation costs by protracting litigation and increasing its complexity. Thus, the defense undermines copyright policy by consuming resources that could have been dedicated to research and development.

294. Even if the misuse defense did not increase the frequency or likelihood of infringement, the discussion in the preceding section demonstrates that it nonetheless devalues copyrights. The fact that the defense also promotes infringement exacerbates the extent of the devaluation: Not only is the copyright holder less likely to win a suit against an infringer, but he is more likely to be infringed.

create new works to compete with current copyrighted works. Rather, competitors may opt to divert resources from research and development and other creative efforts, searching for licensing practices that may constitute misuse.<sup>295</sup> Having found such a practice, the competitor may decide to risk his chances with infringement and copy the good to market as his own in an effort to capture the copyright holder's market share and profits. This is an especially real threat for computer software companies.<sup>296</sup>

## B. Leave It to the Antitrust Laws: A Theory of Bifurcation

As argued above, the traditional view of misuse is a poor means of enforcing copyright policy when plaintiff's alleged misconduct is a tie. Moreover, the above criticisms of all views of misuse suggest that the antitrust view, while it is superior to the traditional view, is also a less than optimal means of protecting copyright policy. The optimal solution for protecting copyright policy from anticompetitive copyright tie-ins is a judicial policy that captures the upside of the antitrust view, without displacing incentives to innovate with incentives to infringe. "Bifurcation," a process whereby courts bifurcate issues of antitrust law from issues of infringement and discard the copyright misuse defense entirely, meets these criteria.

### 1. ANTITRUST LAWS PROTECT COPYRIGHT POLICY

When both the plaintiff and the defendant in an infringement action have violated the law, both should be held liable. The misuse defense, however, protects the infringer at the expense of the copyright holder, whom the copyright laws are supposed to protect against piracy. If the copyright holder's tie does not violate the antitrust laws, there is no justification for the courts denying him relief against an infringer, for the plaintiff has not misused his copyright to contravene copyright policy.<sup>297</sup> If the copyright holder's tie does constitute misuse by violating the antitrust laws, there is still no justification for the courts denying him relief against an infringer.

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295. See Abromats, *supra* note 105, at 651; Arar, *supra* note 107, at 1303; Sean M. Aylward, *Copyright Law: The Fourth Circuit's Extension of the Misuse Doctrine to the Area of Copyright: A Misuse of the Misuse Doctrine?*, 17 U. DAYTON L. REV. 661, 695 (1992).

296. For examples of computer software and program infringement cases where the alleged infringing defendant is a competitor of the copyright holder, see Atari Games Corp. v. Nintendo of America Inc., 975 F.2d 832 (Fed. Cir. 1992); Lasercomb America, Inc. v. Reynolds, 911 F.2d 970 (4th Cir. 1990); Sega Enter. Ltd. v. Accolade, Inc., 785 F. Supp. 1392 (N.D. Cal. 1992), *rev'd on other grounds*, 977 F.2d 1510 (9th Cir. 1992).

297. *See supra* Part IV.C.

The misuse defense and the antitrust laws share the same concern for rooting out and deterring anticompetitive ties that undermine innovation. Without the threat of misuse, therefore, an incentive nonetheless exists for copyright holders not to enter licensing arrangements that undermine copyright policy by illegally restraining trade. Ties that restrain trade sufficiently to undermine incentives to innovate violate the antitrust laws. The risk of losing an antitrust challenge and being subject to the remedies accorded a successful antitrust plaintiff, including the possible award of treble damages,<sup>298</sup> deters copyright holders from engaging in such licensing practices. Moreover, the remedy provisions of the antitrust laws create incentives for private enforcement (the award of treble damages especially encourages these "private attorney general" actions),<sup>299</sup> which supplements government enforcement. In fact, antitrust counterclaims are often the premise upon which defendant-infringers argue misuse. If not coupled with the misuse defense, the antitrust laws thus would collaterally protect copyright policy without undermining the copyright holder's ability to enforce his exclusive rights. Because both the copyright holder and infringer are answerable for their conduct, bifurcation provides the upside of misuse (i.e., rooting out and deterring illegal ties), without its downside of undermining incentives to innovate while creating incentives to infringe. Misuse, therefore, is never the first-best solution to protect copyright policy against the anticompetitive effects of copyright ties.

The viability of bifurcation as an alternative to misuse for protecting copyright policy depends on whether the antitrust laws provide optimal deterrence against illegal tying arrangements. If the misuse defense addressed harms other than those addressed by the antitrust laws, perhaps the additional sanction of misuse would be necessary to provide optimal deterrence of ties that subvert copyright policy. But the misuse defense and the antitrust laws are concerned with the same anticompetitive effects of ties. The antitrust laws, with their possibility of both public and private enforcement and their harsh remedies against a defendant if he ties, adequately deter illegal ties, independent of the misuse defense. This assertion is bolstered by the fact that historically the courts and Congress have been responsive to concerns that the antitrust laws, as then written and interpreted, did not sufficiently remedy the anticompetitive potentialities of certain practices. Both the courts and

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298. 15 U.S.C. § 5.

299. As the Court expressed in *Zenith Radio Corp. v. Hazeltine Research, Inc.*, 395 U.S. 100, 130-31 (1969): "[T]he purpose of giving private treble-damage and injunctive remedies was not merely to provide private relief, but was to serve as well the high purpose of enforcing the antitrust laws."

Congress have taken steps since the original enactment of the Sherman Act to heighten antitrust enforcement.<sup>300</sup>

Assuming arguendo that the antitrust laws are a suboptimal deterrent of anticompetitive conduct, antitrust laws should be carefully reviewed, amended, and enforced in order to achieve the desired results. The development of the common law of the misuse defense is a poor means of achieving copyright policy. Granted, it may prove desirable for courts and Congress, in response to perceived suboptimal deterrence of the antitrust laws, to create incentives for parties who would not otherwise have standing to bring private attorney general actions to achieve optimal enforcement of the laws. The affirmative defense of misuse may be viewed as a judicial innovation to create such an incentive, since it encourages collateral antitrust enforcement through infringement suits. However, by allowing a willful infringer to exonerate himself from liability by enforcing the public policy against restraints of trade, the misuse defense "creates a very strange class of private attorneys general,"<sup>301</sup> whose members may have undermined public policy more than the copyright holder.<sup>302</sup>

If antitrust laws are not a suboptimal deterrent, there is a real risk that courts will over deter tying licenses by recognizing the misuse defense. The misuse defense increases the expected cost to copyright holders of creating a tying contract. First, the sanctions of misuse and the antitrust laws overlap. If a court finds that a tying copyright holder has violated the antitrust laws, not only can an infringer infringe with impunity by invoking the misuse defense, but the copyright holder is also

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300. For discussions and evidence of judicial and congressional action taken to heighten enforcement of the antitrust laws since the enactment of the Sherman Act, see, e.g., *Eastman Kodak Co. v. Image Technical Services, Inc.*, 112 S. Ct. 2072, 2090 (1992); *California v. American Stores Co.*, 495 U.S. 271, 285-88 (1989); *Cargill, Inc. v. Monfort of Colorado, Inc.*, 479 U.S. 104, 124-27 (1986); *Brown Shoe Co. v. United States*, 370 U.S. 294, 311-23 (1961); *Northern Pacific Ry. Co. v. United States*, 356 U.S. 1, 5 (1958); *Standard Oil Co. v. United States*, 221 U.S. 1, 59-60 (1911); *Northern Securities Co. v. United States* 193 U.S. 197, 329-33, 345-46 (1904); *SCHERER & ROSS, supra* note 4, at 11-13, 174-76, 324-27, 509.

301. *Kelly v. Kosuga*, 358 U.S. 516, 520 (1959).

302. Zechariah Chafee, Jr., *Coming into Equity with Unclean Hands*, 47 MICH. L.REV. 1065, 1072 (1949). In *Radio Corporation of America v. Majestic*, 53 F.2d 641 (D. Conn. 1931), the court hints at the absurdity of allowing individuals, who themselves have violated the law, to collaterally enforce antitrust policy. The RCA court, in rejecting the defendant's antitrust defense to the plaintiff-patentee's infringement suit, stated:

The situation here . . . is quite analogous to a case where A sues B for injunction to restrain B's continuing to trespass upon A's land and B pleads as a defense that A is using his land in violation of law by maintaining a brewery thereon, and that in addition to being in violation of the law, the brewery constitutes a common-law nuisance to the general public. Such a defense would, obviously, have to be stricken out.

*Id.* at 643.

subject to the remedy provisions of the antitrust laws. Second, the misuse defense increases the probability that the copyright holder's practice will be challenged as an antitrust violation, since the defense increases an infringer's valuation of his antitrust counterclaim. By increasing the expected cost of tying, the stacking of misuse on antitrust sanctions deters both legal and illegal ties.<sup>303</sup> If the antitrust laws strike the optimal balance between the marginal benefit of rooting out one more illegal tie and the marginal cost of doing so (measured by the benefits lost to society when the risk of antitrust sanctions deters efficient tie-ins), or if the antitrust laws themselves deter ties better than the misuse defense, courts' allowing an infringer to stack misuse on an antitrust counterclaim undermines the public interest. If a third scenario—that the antitrust laws suboptimally deter illegal ties—best captures reality, then, as reasoned above, the antitrust laws and not misuse are the correct medium through which Congress and the courts can approach optimal deterrence.

## 2. HISTORICAL DENIAL OF ANTITRUST DEFENSE SUPPORTS BIFURCATION

Prior to the birth and maturity of the misuse doctrine, courts systematically rejected the view that a copyright holder's antitrust violation, effected by use of the copyrighted work, constituted an affirmative defense against infringement allegations.<sup>304</sup> These courts, which bifurcated issues of antitrust law from issues of infringement, supported their holdings along two primary avenues of reasoning. The courts argued, first, that the remedies of the antitrust laws are exclusive, and that a plaintiff's antitrust violation, therefore, could not be invoked as

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303. Michael K. Block and Joseph G. Sidak, *The Cost of Antitrust Deterrence: Why Not Hand a Price Fixer Now and Then?*, 68 GEO. L.J. 1131, 1138 (1980).

304. Peter Pan Fabrics, Inc. v. Candy Frocks, Inc., 187 F. Supp. 334 (S.D.N.Y. 1960); Harms, Inc. v. Sansom House Enter., Inc., 162 F. Supp. 129 (E.D. Pa. 1958); Buck v. Cecere, 45 F. Supp. 441 (W.D.N.Y. 1942); Buck v. Newsreel, Inc., 25 F. Supp. 787 (D. Mass. 1938); Buck v. Spanish Gables, Inc., 26 F. Supp. 36 (D. Mass. 1938); Buck v. Hillsgrave Country Club, 17 F. Supp. 643 (D.R.I. 1937); Vitagraph, Inc. v. Grobaski, 46 F.2d 813 (W.D. Mich. 1931); M. Whitmark & Sons v. Pastime Amusement Co., 298 Fed. 470 (E.D.S.C. 1924), *aff'd mem.*, 2 F.2d 1020 (4th Cir. 1924); Harms v. Cohen, 279 F. 276 (E.D. Pa. 1922).

The antitrust defense was also frequently rejected as an affirmative defense to patent infringement. See Radio Corp. of America v. Majestic Distributors, 53 F.2d 641 (D. Conn. 1931); Edison Electric Light Co. v. Sawyer-Man Electric Co., 53 F. 592 (2d Cir. 1892), *cert. denied*, 149 U.S. 785 (1893); F.A.D. Andrea, Inc. v. Radio Corp. of America, 14 F. Supp. 226 (D. Del. 1936); Radio Corp. of America v. Duovac Radio Tube Corp., 6 F. Supp. 275 (E.D.N.Y. 1931); General Electric Co. v. Wise, 119 F. 922 (N.D.N.Y. 1903); Brown Saddle Co. v. Troxel, 98 F. 620 (N.D. Ohio 1899); American Soda-Fountain Co. v. Green, 69 F. 333 (E.D. Pa. 1895); Strait v. National Harrow Co., 51 F. 819 (N.D.N.Y. 1892).

an affirmative defense to exonerate an infringer for his liabilities,<sup>305</sup> and second, that a party who violates the antitrust laws is not thereby divested of his property and the rights, such as the right to exclude trespassers, that inhere in his property.<sup>306</sup> As the court in *M. Whitmark & Sons v. Pastime Amusement Co.* reasoned:

The Sherman Act does not make the party to an interstate monopoly an outlaw. It does not prevent such a party from asserting his rights in the courts. It does not give any person the right to trespass upon the rights of such party, or to deprive him unlawfully of his property. There is no provision in the Act divesting the members of combinations in restraint of trade of their property. The illegality of such a combination cannot be tested collaterally. The Act itself provides the remedies against the illegal combination and these remedies are exclusive.<sup>307</sup>

A third ground upon which courts often rejected an infringer's antitrust defense was the "snowball effect." Courts reasoned that if an infringer could exonerate himself from liability by arguing plaintiff's antitrust violation, any individual could take possession of another's goods with impunity so long as the owner was using the goods in violation of the antitrust laws.<sup>308</sup>

Despite this line of cases, the rejected antitrust defense has nonetheless evolved into an affirmative defense against an infringement

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305. See, e.g., *Buck v. Hillsdale Country Club*, 17 F. Supp 643 (D.R.I. 1937); *Harms v. Cohen*, 279 F. 276 (E.D. Pa. 1922); *General Electric Co. v. Wise*, 119 F. 922 (N.D.N.Y. 1903).

306. See, e.g., *Edison Electric Light Co. v. Sawyer-Man Electric Co.*, 53 F. 592 (2d Cir. 1892), cert. denied, 149 U.S. 785 (1893); *F.A.D. Andrea, Inc. v. Radio Corp. of America*, 14 F. Supp. 226 (D. Del. 1936); *Radio Corp. of America v. Duovac Radio Tube Corp.*, 6 F. Supp. 275 (E.D.N.Y. 1931); *Brown Saddle Co. v. Troxel*, 98 F. 620 (N.D. Ohio 1899).

307. *Whitmark & Sons*, 298 Fed. at 480 (citations omitted).

308. For example, in *Harms v. Cohen*, 279 F. 276 (E.D. Pa. 1922), the court stated:

If an infringer . . . may set up as a defense that the copyright is the object of an unlawful combination, and is being used to carry into effect the purposes of an unlawful combination, may he thus escape liability for his own wrongful act? If he can set up an unlawful combination as a defense against his infringement of the copyright, then any one who wrongfully trespasses upon or takes the property of another may set up as a defense that the property was being held and used by a member of an unlawful combination in carrying out the purposes of that combination. It would follow, if one took possession of cattle or beef belonging to a corporation or individual, a member of a combination for fixing the price of cattle or beef of trade, he would be relieved from liability to pay for the property so taken, or from returning it to its owner, upon producing proof that the owner was engaged in such unlawful combination. In this same manner one might with impunity take possession of oil, gasoline, sugar or other commodities belonging to members of an alleged trust or combination in restraint of trade. But there is no provision in the Sherman Act divesting members of combinations in restraint of trade of their property.

*Id.* at 279.

allegation with the development of the misuse doctrine. By repackaging the copyright holder's antitrust violation as conduct that undermines copyright policy, courts have been able to sustain the antitrust defense under the guise of misuse and thereby formulate a new copyright common law that sits uncomfortably next to courts' earlier precedent disfavoring the antitrust defense. Unfortunately, with the maturity of the misuse defense, the tension between the early line of cases rejecting the antitrust defense and the more recent opinions recognizing the misuse doctrine has been ignored at the expense of copyright holders.

The misuse defense is a wolf in wolf's clothing. Given that the antitrust defense, when disguised and sustained as misuse, undermines copyright policy, courts should reject the misuse defense when plaintiff's alleged misconduct is a tie and defer to the antitrust laws to protect copyright policy. The reasoning of pre-misuse doctrine precedent imposing bifurcation by denying the antitrust defense to infringers supports this conclusion.

## VI. CONCLUSION

An infringer of a copyright should not be able to argue as an affirmative defense that the copyright holder has misused his copyright to undermine innovation and creativity when the copyright holder's alleged misconduct is a tie. The misuse defense claims to protect copyright policy by discouraging and rooting out licensing practices that threaten innovation and creativity. However, the defense offends the very objectives that it purports to promote, because it undermines the intrinsic value of copyrights and makes it relatively less costly to infringe than to create. Courts could better serve copyright policy and promote public welfare by discarding the misuse defense, which creates disincentives to innovate and incentives to infringe.

An alternative doctrine, bifurcation, would root out illegal ties that hinder innovation without displacing incentives to innovate with incentives to infringe. Bifurcation not only holds copyright holders accountable for their ties under the antitrust laws, but unlike the misuse doctrine, bifurcation also holds infringers accountable for their infringements.

Given the widespread and increasing recognition of the defense of copyright misuse, it is unlikely that the bifurcation doctrine will be adopted. Rather, the choice appears to be between the traditional and antitrust views of misuse. To the extent that antitrust violations and misuse are coextensive when a copyright holder's misconduct is a tie, the antitrust view of misuse is superior to the traditional view. Since only ties that rise to the level of an antitrust violation threaten incentives to

innovate and create, those courts preferring the traditional view of misuse not only threaten to favor an infringer at the expense of a copyright holder who has not used his copyright to offend copyright policy, but more importantly, they threaten the public interest. Not only does the traditional view root out procompetitive ties, but it undermines copyright policy by retarding the proliferation of works to the public and undermining economic incentives to innovate.

# **COMMENT**

## **DIGITAL LITIGATION: THE PREJUDICIAL EFFECTS OF COMPUTER-GENERATED ANIMATION IN THE COURTROOM**

**JOHN SELBAK<sup>†</sup>**

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## I. INTRODUCTION

On August 2, 1985, the crew of Delta Flight 191 tried to abort a landing after a wind shear tossed the plane into a violent wind pattern.<sup>1</sup> The plane, caught in a powerful wind vortex, was thrown to the ground a mile from the runway.<sup>2</sup> It crashed into a field, skidded onto a highway, hit a car and killed the driver. It then traveled another 1700 feet before smashing into a water tower.<sup>3</sup> One hundred and twenty-eight passengers, eight Delta crew members, and one person on the ground died.<sup>4</sup>

The Delta 191 crash led to a legal battle over who would pay the \$150 million to \$200 million of claims for wrongful death, loss of aircraft and other damages.<sup>5</sup> Litigants filed suit, claiming that Federal Aviation Administration and National Weather Service employees should have advised the crew of the weather disturbances and warned the crew to change its landing approach.<sup>6</sup> The core of the government's defense presentation at trial was a computer-generated animation illustrating its theory of the events that took place on August 2. Ultimately, the forty-five minute simulation was a key factor convincing U.S. District Court Judge David Belew to rule for the United States.<sup>7</sup>

While the use of computer-generated animation have become more common in litigation during the past several years, the Justice Department's presentation at the Delta 191 trial was truly monumental in terms of the length and sophistication of the technology used.<sup>8</sup> The trial marked the beginning of a new era for the use of computer-generated animations as demonstrative evidence in litigation settings, and it prompted wider acceptance of the technology by other judges and courts.<sup>9</sup>

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1. Paul Marcotte, *Animated Evidence: Delta 191 Crash Re-created Through Computer Simulations at Trial*, ABA JOURNAL, Dec. 1989 at 52.

2. *Id.*

3. *Id.* at 53.

4. *Id.*

5. *Id.*

6. *Id.*

7. *Id.* at 53-54.

8. *Id.* at 53. Four attorneys and six experts worked with Z-Axis Corp. of Denver, Colorado, for nearly two years to create the animation. The animation used forty different parameters to recreate the plane's flight, such as acceleration, roll, pitch and heading. *Id.*

9. Roy Krieger, *Sophisticated Computer Graphics Come of Age - And Evidence Will Never Be the Same*, ABA JOURNAL, Dec. 1992, at 92. The bench decision favoring the United States included more than a dozen references to the computer-generated animation in support of key findings of fact. *In re Air Crash at Dallas/Fort Worth Airport on Aug. 2, 1985*, 720 F. Supp. 1258 (N. D. Tex. 1989), *aff'd*, 919 F.2d 1079 (5th Cir. 1991), *cert. denied sub nom.* Connors v. United States, 112 S. Ct. 276 (1991).

Nevertheless, this enticing technology with all of its much-touted advantages creates a significant potential for misuse and prejudice. Judges unfamiliar with the mechanics of computer-generated animation may not adequately evaluate questions of preliminary facts regarding the simulation, as they are required to do before admitting it into evidence.<sup>10</sup> Similarly, juries are especially prone to believe evidence which is presented visually, regardless of its veracity.<sup>11</sup> Furthermore, juries may discard common sense when confronted with computer evidence, and instead accept as proven fact whatever the computer proposes as the calculated result or outcome.

This Comment argues that computer-generated animations should be allowed in the courtroom only under close scrutiny from the courts. Part II briefly discusses the existing technology and its use in the courtroom. Part III describes the admissibility requirements under the current Federal Rules of Evidence and analyzes case law regarding novel scientific evidence introduced at trial. Part IV addresses problems with computer-generated animations' application in the courtroom. Part V discusses this author's proposed methods to reap the benefits from the technology without sacrificing justice. Finally, Part VI offers an outlook towards future technologies and their potential for prejudice.

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10. See FED. R. EVID. 104(a). Federal Rule of Evidence 104(a) states in relevant part:

QUESTIONS OF ADMISSIBILITY GENERALLY. Preliminary questions concerning the qualification of a person to be a witness, the existence of a privilege, or the admissibility of evidence shall be determined by the court . . . . In making its determination it is not bound by the rules of evidence except those with respect to privileges.

*Id.* Judges determine whether evidence should or should not be admitted, and play an integral part in the outcome of the trial through this determination. However, as the Rule mentions, judges are generally not bound by the rules of evidence when determining preliminary questions of fact and may find evidence admissible without support from the rules. *Id.*

11. Krieger notes that "the 'Weiss-McGrath Report' found a 100 percent increase in juror retention of visual over oral presentations and a 650 percent increase in juror retention of combined visual and oral presentations over oral presentations alone." Krieger, *supra* note 9, at 93. See also Jennifer E. King, *Animation Seizes Jury, Judge's Attention*, ILLINOIS LEGAL TIMES, May 1993, at 1 (quoting David Weinberg, director of litigation services at Engineering Animation, Inc. in Chicago, stating that "[w]e have polled juries, and in every case [the jurors] have said that the animation played an important factor in their decision").

## II. THE STATE OF COMPUTER ANIMATION IN LITIGATION

### A. Existing Technology

Computer-generated animation is the primary type of computer demonstrative evidence that has been used in the courtroom.<sup>12</sup> Computer animation consists of two-dimensional, animated images projected either on a computer screen or on a larger-screen video monitor. Animations can include syntheses of images, text, and sound to create a fanciful visual aid, or can be used to demonstrate concepts otherwise indescribable in still pictures. It has been used to vividly recreate crimes and to explain to the jury concepts and theories that can best only be illustrated through demonstrative visual evidence. Without computer animation the concepts often would be difficult to bring into the courtroom.

There are two principal categories of computer animation: (1) demonstrative animations used as visual aids or enhancements and (2) scientific animations. Scientific animation differs from demonstrative animation in two important ways. First, scientific animations are more mathematically accurate.<sup>13</sup> Second, the motion in scientific animations attempts to follow the laws of physics rather than track the imagination of an artist.<sup>14</sup>

Despite technological advances in recent years, computer animations are still in their infancy. The concept, as presented in popular descriptions, is far more advanced than the actual capability of the technology.<sup>15</sup> Current limits of computer speed and disk storage create this lag between concept and actual practice.<sup>16</sup>

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12. Computer animation has been described as follows: "[A] special type of motion picture that is generated with the aid of a computer. It is an extension of CAD/CAM, or computer-aided design and computer-aided manufacturing." James W. Dabney, *Animation Is Invading Courtrooms*, NEW YORK LAW JOURNAL, Apr. 6, 1993, at 4. The newer animation technology created by CAD attempts to picture images through the illusion of three-dimensional arrays for a more realistic rendering of the object that is animated. *Id.*

13. David Weinberg, *Seeing is Believing With Scientific Animation*, MASSACHUSETTS LAWYERS WEEKLY, Sept. 13, 1993, at S1.

14. *Id.*

15. *Id.*

16. The two most important hardware capabilities of the personal computer in terms of animation are computer chip speed and hard disk size. The faster the computer chip speed, the more frames can be drawn, erased and reprocessed in a single second. Krieger, *supra* note 9, at 94. As the number of frames processed increases, the animation becomes smoother, more accurate, and reflects greater detail. *Id.* The hard disk of a computer is the main storage medium. Since a single frame can use, at a minimum, anywhere from 100 to 500 kilobytes of memory, a limited, standard-issue hard drive of 120 megabytes can

Nevertheless, the current capabilities of computer animation are advanced enough to be useful in many courtroom circumstances. The simulation operator can easily shift viewpoints within the animation during the presentation so that the audience can see objects and events from any vantage point.<sup>17</sup> Motion can also be altered to hypothetical variants to illustrate relationships between objects in the simulation. An airplane crash, a seat belt injury or the movement of a complex engine can be shown in slow motion so that the action can be understood frame by frame.<sup>18</sup> These valuable advantages have encouraged lawyers to present computer-generated animations at trial.

### B. Judicial Review of Computer-Generated Animation

Since appellate courts review a trial court's decision regarding the admissibility of evidence on an abuse of discretion standard, it is unlikely that a trial judge's evidentiary determination regarding the admissibility of a computer-generated animation will be overturned.<sup>19</sup> To date, very few appellate cases have directly addressed the admissibility of computer animation as either demonstrative or substantive evidence. The wide latitude trial judges are afforded in making evidentiary decisions may help explain the lack of appellate review.<sup>20</sup> Therefore, it seems that the standard of review of a judge's decision on the admissibility of an animation would create a difficult burden for an appellant to overcome.<sup>21</sup>

### C. Examples of Computer-Generated Animations Used at Trial

Computer-generated animation's growing use,<sup>22</sup> coupled with its increasing affordability,<sup>23</sup> has made it the buzz word of the litigation

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be filled with between 240 to 1200 frames, which is only enough to create between eight to forty seconds of rough animation.

17. Weinberg, *supra* note 13, at S1.

18. *Id.*

19. CHRISTOPHER B. MUELLER AND LAIRD KIRKPATRICK, EVIDENCE UNDER THE RULES; TEXT, CASES AND PROBLEMS, 1993, at 54.

20. See generally, *id.* at 53-54.

21. *Id.* at 54. See also Wheeler v. John Deere Co., 935 F.2d 1090, 1099 (10th Cir. 1991) (the admission or exclusion of evidence lies within the sound discretion of the trial court and cannot be reversed absent an abuse of discretion).

22. A study by the American Bar Association in 1992 reported that 13 percent of medium-sized law firms have used computer animation in cases, and that 45 percent of them planned to use it in the future. King, *supra* note 11, at 1.

23. The costs of creating computer-generated animations have decreased due to the drop in software prices, hardware prices and the increased accessibility of the technology. What once cost \$1,500 to \$5,000 per second of animation now can be processed on a personal computer for as little as \$100 per second. Jeanette Borzo and Kelley Damore, *Low-cost 3-D Animation Earns Its Day in Court; Makes Evidence Come Alive for Jury*, INFOWORLD, Sept. 13, 1993, at 1. More importantly, by purchasing a \$3,500 program such

community.<sup>24</sup> Computer animations have been used in cases involving such diverse areas as toxic spills, building collapses, transportation accidents, building ordinance reviews and criminal prosecutions.<sup>25</sup> The following cases illustrate the various situations in which attorneys have made use of computer animation to bolster their presentations.

Perhaps the most widely publicized use of computer animation in California occurred in the State's prosecution of James Mitchell following the death of his brother Artie Mitchell.<sup>26</sup> At trial, James claimed that he shot his brother in self defense.<sup>27</sup> A forensics expert worked with a criminalist to create an animated reconstruction of the events of the murder based on physical evidence gathered from the scene.<sup>28</sup> The animation was used at trial "to show the trajectory of the bullets and possible location of the victim when the shots were fired."<sup>29</sup> Mitchell appealed his conviction, claiming that the animation should not have been admitted.<sup>30</sup> The Court of Appeal noted the trial court's discretion in admitting expert testimony reconstructions so long as there is "preliminary proof that conditions are substantially identical and that the reconstruction is an accurate depiction."<sup>31</sup> Ultimately, the court held that it was error to admit the reconstruction because the reconstruction relied upon inadmissible evidence.<sup>32</sup> Nevertheless, the court affirmed the conviction because it held that the error was harmless.<sup>33</sup>

In another trial, an attorney presented animated evidence of the mechanics of a printing press to support his client's claim that the defendant stole crucial design drawings of the press.<sup>34</sup> The attorney retained a firm whose engineers created detailed three-dimensional computer images of the printing press and its component parts. By animating these pictures, the firm demonstrated the workings of the press. The plaintiff also provided two expert witnesses who explained the importance of the plates by using the animated sequences. The jury

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as AutoDesk 3D Studio, many law firms can do the work in-house and save even more money. *Id.* For a similar discussion regarding the cost of animation, see Krieger, *supra* note 9, at 94.

24. See, e.g., James W. Dabney, *Animation is Invading Courtrooms*, NEW YORK LAW JOURNAL, Apr. 6, 1993, at 4, for a discussion of the uses of computer animation.

25. Krieger, *supra* note 9, at 93.

26. People v. Mitchell, (Cal. App. First Dist. Div. 2), Marin County Superior Court No. SC-12462-A (1994).

27. *Id.* at 1.

28. *Id.* at 11.

29. *Id.*

30. *Id.* at 1-2.

31. *Id.* at 27.

32. *Id.*

33. *Id.* at 32.

34. Weinberg, *supra* note 13, at S1.

returned a \$2.7 million verdict for the plaintiff and later explained that the "animation helped in giving them information they needed to decide the case."<sup>35</sup>

An aviation attorney used computer animation to help a trial expert demonstrate the operation of a device that controlled aerodynamic flow over an airplane wing.<sup>36</sup> Since the device controlled particles the size of molecules traveling at supersonic speeds, the attorney suspected the jury would have a difficult time understanding the evidence.<sup>37</sup> After the attorney assembled an animation and introduced it to explain the mechanics of the devise, the jury was able to follow the complex physics testimony, and found in favor of the attorney's client.<sup>38</sup>

A Whatcom County, Washington prosecutor used computer animation to convict a husband of the murder of his wife.<sup>39</sup> The husband claimed that, while on a hunting trip, his wife was killed when she tripped on a log and accidentally dropped the gun, which discharged into her chest.<sup>40</sup> The computer animation, which used data from a survey of the crime scene, showed that the wound could not have been inflicted by any means other than the defendant facing his wife and shooting her at close range.<sup>41</sup>

A medical malpractice case involving a mother who died in childbirth was successfully defended with the help of computer animation.<sup>42</sup> The child survived, but suffered serious brain damage. The computer video showed that the baby was too big to pass through the mother's pelvic bones, and that the crushing of those bones led to a rupture of part of the womb, allowing fluid to fill the mother's lungs which caused her death.<sup>43</sup>

The animation of a proposed building presented to the Chicago City Council and Planning Commission convinced the two groups to issue the pending building permits.<sup>44</sup> The animation was designed to show the proposed development over time, as well as to replicate a shadow study using calculations of the sun's movement and resulting shadows.<sup>45</sup>

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35. *Id.*

36. *Id.*

37. *Id.*

38. *Id.*

39. Eric Dawes, *Washington State Prosecutor*, BUSINESS WIRE, Aug. 13, 1993.

40. *Id.*

41. *Id.*

42. Roger Harris, *A Picture is Worth a 1,000 Words: Computer Animation Used in Courtrooms*, BUSINESS FIRST - LOUISVILLE, June 14, 1993, at 1.

43. *Id.*

44. King, *supra* note 11, at 1.

45. *Id.*

### III. ADMISSIBILITY REQUIREMENTS FOR COMPUTER ANIMATION

#### A. General Rule on Admissibility of Potentially Prejudicial Evidence

Federal Rule of Evidence 403 provides the best rationale for the exclusion of computer animation evidence, and will likely be the most commonly cited rule for the exclusion of this type of evidence.<sup>46</sup> Rule 403 provides that, “[a]lthough relevant, evidence may be excluded if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury, or by considerations of undue delay, waste of time, or needless presentation of cumulative evidence.”<sup>47</sup> Advocates seeking to use animation will attempt to demonstrate that the probative value of the evidence outweighs any danger of unfair prejudice.<sup>48</sup>

#### B. Standards of Admissibility—Admitting the Animation into Evidence

The admission of computer animation evidence under the Federal Rules of Evidence, requires satisfying Rules 803(24), 901, 401, 402, and 702.

##### 1. OVERCOMING HEARSAY OBJECTIONS THROUGH THE “CATCHALL” EXCEPTION

When computer animation evidence involves data generated through the computer’s software, “[b]oth the data and the software (as out-of-court statements of the programmer) are subject to hearsay objections.”<sup>49</sup> Hearsay is evidence comprised of an “out of court statement offered to . . . prove the truth of the matter asserted.”<sup>50</sup> Rule 802 excludes hearsay from trial testimony unless it meets one of the exceptions listed in rules 803 or 804. Therefore, the process of admitting the animation begins by seeking an exception to the ban on hearsay evidence.

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46. Roy Krieger, *Getting It Admitted*, ABA JOURNAL, Dec. 1989, at 96.

47. FED. R. EVID. 403.

48. Since the focal point of this Comment is the prejudicial nature of computer animation evidence, the balancing test found in Rule 403 warrants further analysis and is discussed in greater detail in Part IV, *infra*.

49. David Siegel and Brian Pass, *High Technology at Trial: Use It or Lose It*, PLI Order H4-5138, Mode 444 PLI/Lit 605 (1992).

50. MUELLER & KIRKPATRICK, *supra* note 19, at 115.

Proponents of computer animation often employ Rule 803(24), the so-called "catchall" exception, to avoid the hearsay prohibition because computer animations usually do not neatly fit into any of the enumerated hearsay exceptions. This Rule provides that exceptions may be found to the hearsay rule for evidence which has

equivalent circumstantial guarantees of trustworthiness, [and if] the court determines that (A) the statement is offered as evidence of a material fact; (B) the statement is more probative on the point for which it is offered than any other evidence which the proponent can procure through reasonable efforts; and (C) the general purposes of these rules and the interests of justice will best be served by admission of the statement into evidence.<sup>51</sup>

Rule 803(24) requires the party seeking to admit the evidence to notify the other side of the animation's existence, and counsel's intent to enter it into evidence.<sup>52</sup> The drafters of the "catchall" rule appear to have foreseen the rule's role in adapting the system to new technologies. Specifically, the Advisory Committee Note for 803(24) states that the catchall is intended to

provide for treating new and presently unanticipated situations which demonstrate a trustworthiness within the spirit of the specifically stated exceptions. Within this framework, room is left for growth and development of the law of evidence in the hearsay area, consistently with the broad purposes expressed in Rule 102.<sup>53</sup>

Due to computer animation's exceptional ability to explain important and complex issues easily to the jury, and the current trust placed in the technology by judges, Rule 803(24) appears to be a ready gateway to the animation's entry into evidence. As can be seen in the following sections, however, a larger problem lies in the ability of parties to completely bypass even the minimal safeguards afforded by Rule 803(24).

## 2. OVERCOMING HEARSAY OBJECTIONS BY PASSING OFF THE ANIMATION AS DEMONSTRATIVE EVIDENCE

The rationale for excluding hearsay often rests on the need for cross-examination of the person who made the statement that is being offered for its truth.<sup>54</sup> While most of what is labeled as hearsay is eventually admitted,<sup>55</sup> the admission occurs only after the statement meets a certain standard of trustworthiness established by the rules to

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51. FED. R. EVID. 803(24).

52. *Id.*

53. FED. R. EVID. 803(24) advisory committee's note.

54. MUELLER & KIRKPATRICK, *supra* note 19, at 116-17.

55. *Id.* at 116.

ensure that it does not prejudice the party against whom it is offered.<sup>56</sup> This measure of trustworthiness inherent in the Rules is an important bar against unreliable evidence being admitted at trial.<sup>57</sup>

By successfully classifying computer animation evidence as demonstrative evidence, rather than as opinion or inference evidence, the party seeking its admission avoids the hearsay prohibitions entirely.<sup>58</sup> For example, demonstrative evidence such as graphs, charts, diagrams, sketches and illustration are not offered for their truth and therefore are not hearsay.<sup>59</sup> The hearsay objection provides little protection against this type of demonstrative evidence, and most attorneys seeking admission of evidence can invoke another exception under Rule 803 or 804 if the court rejects their arguments based on 803(24).<sup>60</sup> The opposing party may suffer prejudice if the court too freely admits a computer animation as demonstrative evidence, thus entirely avoiding hearsay concerns.

A leading case concerning the admissibility of computer animation as demonstrative evidence is *People v. McHugh*.<sup>61</sup> In *McHugh*, the defendant sought to introduce a computer reenactment illustrating his alternative theory of the accident.<sup>62</sup> Upholding the reenactment's admission, the court ruled that "[t]he evidence sought to be introduced here is more akin to a chart or diagram than a scientific device. Whether

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56. FED. R. EVID. 803(24).

57. *Id.* at advisory committee's note. The Advisory Committee Notes following 803(24) state that the rule does "not contemplate an unfettered exercise of judicial discretion, but [it does] provide for treating new and presently unanticipated situations which demonstrate a trustworthiness within the spirit of the specifically stated exceptions." *Id.*

58. Siegal and Pass offer the following description of the lower threshold applied to demonstrative evidence:

A lesser showing is needed to introduce computer generated evidence such as charts, diagrams and simulations that are offered as demonstrative evidence. Because this type of evidence lacks independent probative value, generally all that is required is a demonstration that the evidence is fair and accurate. In short, demonstrative evidence avoids hearsay problems because it is not offered for its truth. Demonstrative evidence can be used independently or in connection with the testimony of an expert witness. Facts or data relied on by experts need not otherwise be admissible into evidence if the information is "of a type reasonably relied upon by experts in the particular field." Fed. R. Evid. 703.

Siegel & Pass, *supra* note 49, at 605.

59. *Id.* at 605. Since demonstrative evidence is illustrative by nature, nothing more is asserted which is not already contained in the verbal testimony previously admissible in the case.

60. Usually, the other exceptions that are best suited for overcoming hearsay objections to computer data evidence are Rule 803(6), the business records exception and Rule 803(8), the public records exception. *See id.*

61. 476 N.Y.S.2d 721 (1984).

62. *Id.* at 722.

a diagram is hand drawn or mechanically drawn by means of a computer is of no importance."<sup>63</sup>

The view of the *McHugh* court is the one most often subscribed to in deciding admissibility issues regarding computer animation.<sup>64</sup> However, elements of *McHugh*'s reasoning may conflict with the reality of computer programming. For example, the *McHugh* court stated that "[c]omputers are simply mechanical tools—receiving information and acting on instructions at lightning speed."<sup>65</sup> The idea that computers are mindless machines ignores the programmers' assumptions and algorithms embedded in the software which produces the animation itself.<sup>66</sup>

### 3. ADMITTING THE ANIMATION AS SCIENTIFIC EVIDENCE

Another alternative to avoid hearsay objections is to admit the animation as scientific evidence. Scientific evidence is expert testimony created by or with an expert as an explanatory aide. This method avoids the hearsay prohibition by reclassifying the animation as a visual interpretation of the testimony offered by an expert in court. Since computer animation is a new technology that most courts have not explicitly addressed, the animation likely will be treated as novel scientific evidence if it is presented in that way.

If the animation is admitted as scientific evidence, an expert must testify alongside it.<sup>67</sup> This requirement ensures that the jury will be able to understand the nature of the evidence presented, and allows the

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63. *Id.* At the time of the *McHugh* test, the test most commonly used for novel scientific evidence was that enumerated in *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923). However, even under the modern test of *Daubert v. Merrell Dow Pharmaceutical, Inc.*, 113 S. Ct. 2786 (1993), the holding would have been the same since *Daubert* provides an even broader test for admissibility. For a fuller discussion, see *infra* notes 70-102 and accompanying text.

64. Siegel & Pass, *supra* note 49, at 605.

65. *McHugh*, 476 N.Y.S.2d at 722-23.

66. The computer animation process, discussed *infra* at notes 127-137 and accompanying text, is a multi-step process which includes collection of data, storyboarding the events, creation of computer models, scripting the animation motion, rendering the frames, and editing the animation before copying it to a storage medium. See generally David W. Muir, *Debunking the Myths About Computer Animation*, PLI Order No. H4-5138, Mode 444 PLI/Lit 591 (1992).

67. Rule 702 provides that, "[i]f scientific, technical or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training or education, may testify thereto in the form of an opinion or otherwise." FED. R. EVID. 702. The admissibility requirements for computer animation are actually more detailed, and include "(1) qualification of the expert who produced or supervised the animation; (2) qualification of the computer hardware; (3) qualification of the computer software; (4) qualification of the input data and assumptions; and (5) qualification of the computer output." Muir, *supra* note 66.

opposing party to cross-examine the expert as a means of countering the evidence presented.

Under the Federal Rules' requirement that evidence be both relevant and authenticated, sufficient guarantees that the evidence is trustworthy must be shown.<sup>68</sup> Since the Federal Rules do not explicitly address the admissibility of novel forms of evidence,<sup>69</sup> a few courts have developed judicial tests.

#### a. Test for novel scientific opinion evidence

Until June of 1993, the accepted test for determining the reliability and admissibility of novel scientific evidence under the Federal Rules was the test expressed in *Frye v. United States*.<sup>70</sup> *Frye* involved an attempt to admit evidence from a systolic blood pressure machine, an early precursor of the polygraph ("lie detector") test.<sup>71</sup> Prior to trial the defendant passed the test and, at trial, defense counsel offered the scientist who conducted the test as an expert to testify to the results obtained.<sup>72</sup> Excluding the evidence, the court stated that:

[j]ust when a scientific principle or discovery crosses the line between the experimental and demonstrable stages is difficult to define. Somewhere in this twilight zone the evidential force of the principle must be recognized, . . . [but] the thing from which the deduction is made must be sufficiently established to have gained general acceptance in the particular field in which it belongs.<sup>73</sup>

*Frye* therefore announced the general acceptance test, which required that any scientific evidence which "has not yet gained such standing and scientific recognition among physiological and psychological authorities" should be excluded.<sup>74</sup>

Most jurisdictions accepted the *Frye* standard as the dominant standard for determining admissibility of novel scientific evidence at trial.<sup>75</sup> However, the Supreme Court addressed the issue and reversed the standard in June 1993 in *Daubert v. Merrell Dow Pharmaceutical, Inc.*<sup>76</sup>

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68. MUELLER & KIRKPATRICK, *supra* note 19, at 2.

69. The federal rules do, however, seem to lean towards a liberal acceptance of such technologies. See FED. R. EVID. 803(24) Advisory Committee's Note.

70. 293 F. 1013 (D.C. Cir. 1923). While this Comment will discuss on the Court's eventual move away from *Frye*, it is important to note that a majority of states still adhere to *Frye*'s admissibility requirements.

71. *Id.* The test was based on the theory that "[t]ruth is spontaneous, and comes without conscious effort, while the utterance of a falsehood requires a conscious effort, which is reflected in the blood pressure." *Id.*

72. *Id.* at 1014.

73. *Id.*

74. *Id.*

75. See E. GREEN & C. NESSON, PROBLEMS, CASES AND MATERIALS ON EVIDENCE 649.

76. 113 S. Ct. 2786 (1993).

In *Daubert*, the Court was asked to rule on the issue of whether the adoption of the Federal Rules of Evidence superseded the *Frye* test.<sup>77</sup> A unanimous Court held that the rules had in fact superseded *Frye*.<sup>78</sup>

*Daubert* involved expert testimony regarding the effects of the drug Bendectin on unborn children and its relation to birth defects.<sup>79</sup> To counter Merrell Dow's expert testimony that Bendectin did not cause birth defects, the petitioners submitted the affidavits of eight qualified experts who concluded that Bendectin can cause birth defects.<sup>80</sup> The district court excluded the plaintiff's evidence and granted summary judgment for Merrell Dow,<sup>81</sup> and the Ninth Circuit Court of Appeals affirmed the decision.<sup>82</sup> Both courts disallowed petitioner's evidence on the basis that the expert testimony proffered failed the general acceptance test of *Frye*.<sup>83</sup> The petitioner's expert testimony was not sufficiently established to have general acceptance in its field because the opinions were not based on current methods and peer review.

Recognizing the debate whether the *Frye* test remained valid after the adoption of the Federal Rules of Evidence,<sup>84</sup> the Supreme Court heard the *Daubert* case and concluded that the Federal Rules had indeed superseded the *Frye* standard.<sup>85</sup> The Court asserted that "[i]n principle, under the Federal Rules no common law of evidence remains. . . . In reality, of course, the body of common law knowledge continues to exist, though in the somewhat altered form of a source of guidance in the

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77. *Id.* at 2793.

78. *Id.* at 2791, 2793. The Court's decision with regards to the superseding effect of the Federal Rules was unanimous. However, Chief Justice Rhenquist, joined by Justice Stevens, dissented in part because they felt that the majority's attempt to interpret the federal rules was premature and should be left for development in future cases. *Id.* at 2799-2800. The case was remanded for further proceedings consistent with the Court's holding. *Id.* at 2799.

79. *Id.* at 2791.

80. *Id.*

81. *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 951 F.2d 1128 (9th Cir. 1991).

82. *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 727 F. Supp. 570 (S.D. Cal. 1989).

83. *Daubert*, 113 S. Ct at 2792. The District Court relied on *United States v. Kilgus*, 571 F.2d 508 (9th. Cir. 1978), which was the version of *Frye* adopted in the Ninth Circuit. *Daubert*, 727 F. Supp. at 572.

84. See, e.g., Roger S. Hanson, *James Alphonso Frye Is Sixty-Five Years Old; Should He Retire?*, 16 W. St. U. L. Rev. 357 (1989); *Proposals for a Model Rule on the Admissibility of Scientific Evidence*, 26 JURIMETRICS J. 235 (1986).

85. *Daubert*, 113 S. Ct at 2793. However, the Court was aware in making its decision that there were arguments on both sides as to *Frye*'s survivability. *Id.* at 2794. Compare *United States v. Williams*, 583 F.2d 1194 (2nd Cir. 1978), cert. denied, 439 U.S. 1117 (1979) (holding that *Frye* is superseded by the rules of evidence); with *Christopherson v. Allied-Signal Corp.*, 939 F.2d 1106, (5th Cir. 1991) (en banc), cert. denied, 112 S.Ct. 1280 (1992) (holding that *Frye* and the rules combined provide a framework for determining admissibility of expert testimony).

exercise of delegated powers.<sup>86</sup> Since “[n]othing in the text of [Rule 702] establishes ‘general acceptance’ as an absolute prerequisite to admissibility . . . [and] . . . the drafting history makes no mention of *Frye*,” the Court found that a rigid general acceptance requirement would be at odds with the liberal thrust of the Federal Rules in favoring opinion testimony.<sup>87</sup>

With the *Frye* test repudiated, seven of the nine justices<sup>88</sup> joined in the second part of Justice Blackmun’s majority opinion in his interpretation of the Rules of Evidence.<sup>89</sup> Parsing Rule 702 into its essential elements, Blackmun concluded that the “subject of an expert’s testimony must be based on ‘scientific . . . knowledge.’ ”<sup>90</sup> Realizing that the mere words “scientific knowledge” left federal judges with little guidance on what types of evidence Rule 702 allowed, the Court articulated four criteria for acceptability: (1) whether the theory can be tested or falsified; (2) whether the theory or technique has been subjected to peer review and publication; (3) the potential rate of error; and (4) the existence and maintenance of standards controlling the technique’s operation.<sup>91</sup>

In summary, the *Daubert* court’s rejection of *Frye* and its interpretation of Rule 702 expanded the scope of admissible scientific evidence. Rather than subjecting the evidence to a general acceptance showing, the evidence need only be based on “scientific knowledge.” The Court determined that this interpretation of Rule 702 was more consistent with the Federal Rules’ general trend in removing evidentiary

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86. *Daubert*, 113 S. Ct. at 2794 (quoting U.S. v. Abel, 469 U.S. 45, 51-52 (1984)). See also *Bourjaily v. United States*, 483 U.S. 171 (1987) (holding that the common law rule is superseded where the Court is unable to find it in the Rules).

87. *Id.*

88. *Id.* at 2791. Justice Blackmun’s opinion was fully joined by Justices White, O’Connor, Scalia, Kennedy, Souter and Thomas. Chief Justice Rehnquist, joined by Justice Stevens, filed an opinion concurring with the decision to find that the Federal Rules superseded *Frye*, but dissenting from further defining any new tests or interpretations of Rule 702.

89. *Id.* at 2795.

90. *Id.* at 2795. The Court further defined “scientific knowledge” through an analysis of the words and their denotation:

The adjective “scientific” implies a grounding in the methods and procedures of science. Similarly, the word ‘knowledge’ connotes more than subjective belief or unsupported speculation. The term “applies to any body of known facts or to any body of ideas inferred from such facts or accepted as truths on good grounds.” (citations omitted).

91. *Id.* at 2797-98. Relating back to *Frye*, the Court recognizes that general acceptance did have a role to play in the evidentiary determination: “Widespread acceptance can be an important factor in ruling particular evidence admissible, and a ‘known technique that has been able to attract only minimal support within the community’ . . . may properly be viewed with skepticism.” *Id.* (citations omitted).

constraints on novel evidence and moving more towards a liberal standard admitting opinion evidence.<sup>92</sup>

b. Implications of *Daubert*

At the outset it is clear that *Daubert* lessened the barriers to the admission of novel scientific evidence by rejecting the general acceptance test of *Frye*. *Daubert* also highlighted the Federal Rules' broad acceptance of opinion evidence.<sup>93</sup> Both of these developments have increased the probability that most courts will admit computer animation into the courtroom under the current standards. However, animations created from inadmissible hearsay evidence remain inadmissible unless they are justified under an exception to this prohibition.<sup>94</sup> If the animation is classified as mere opinion evidence, this safeguard in the Federal Rules is bypassed. In this regard, the *Daubert* Court's liberalization of the standards for scientific and opinion evidence will naturally lead to greater use of these classifications in an attempt to evade any potential hearsay objections.

The Tenth Circuit Court of Appeals noted the implications of *Daubert* for animated evidence in *Robinson v. Missouri Pacific Railroad Co.*<sup>95</sup> In *Robinson*, a video animation of stop motion photography recreated an accident between a car and a moving train<sup>96</sup> After holding that the trial judge did not abuse his discretion by allowing the video animation,<sup>97</sup> the court cited *Daubert* as defining the "trial court's special role as gatekeeper with respect to expert evidence and opinion."<sup>98</sup> Although the *Robinson* court felt the case was "a close one,"<sup>99</sup> the opinion relied on the standards articulated in *Daubert* to find that the crash movements depicted in the animation could have been explained on scientific principles, even

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92. *Id.* at 2794. The Court specifically states that the "rigid 'general acceptance' requirement would be at odds with the Federal Rules and their 'general approach of relaxing the traditional barriers to opinion testimony.' " *Id.* (quoting *Beech Aircraft Corp. v. Rainey*, 488 U.S. 153, 169 (1988)).

93. *Daubert*, 113 S.Ct. at 2794.

94. Generally, animations are based on data that would normally be classified as inadmissible hearsay unless an exception could be found for admitting the evidence. Siegel & Pass, *supra* note 49, at 605. However, Rule 703 allows the admissibility of much that would be inadmissible if it is admitted as expert opinion testimony. FED. R. EVID. 703. For a more detailed discussion, see *infra*, part IV.A. and accompanying notes.

95. 16 F.3d 1083 (1994).

96. Stop-motion photography involves moving actual models by hand and videotaping each scaled movement so that each second is composed of ten frames. The simulation in *Robinson* resulted in a two-minute silent color video reenacting the accident that was the subject of the litigation.

97. *Id.* at 1088.

98. *Id.*

99. *Id.* at 1086.

though the simulation presented certain assumptions made outside the realm of scientific knowledge.<sup>100</sup> The court concluded that the *Daubert* standard was a "flexible one," at least in terms of admitting evidence and of the "trial court's consideration of objections to scientific evidence."<sup>101</sup> The court believed that *Daubert's* flexibility combined with liberal pretrial discovery rules provided the best solution to the situation:

[C]oncerning future similar issues under Rule 702, we suggest that as "gatekeeper" the district court carefully and meticulously make an early pretrial evaluation of issues of admissibility, particularly of scientific expert opinions and films or animations illustrative of such opinions. Recent amendments to the federal discovery rules will permit an early and full evaluation of these evidentiary problems.<sup>102</sup>

#### 4. ADDITIONAL REQUIREMENTS FOR ADMITTING COMPUTER ANIMATION EVIDENCE

##### a. Rule 901—Authentication

Following introduction at trial, Rule 901(a) requires that the proponent of the evidence provide "authentication or identification . . . to support a finding that the matter in question is what its proponent claims."<sup>103</sup> Thus as with other evidence, the animation must be properly authenticated and presented to the court. Rule 901(b) provides, by way of illustration only, the following as an example of authentication: "[e]vidence describing a process or system used to produce a result . . . [may be authenticated by] showing that the process or system produces an accurate result."<sup>104</sup> Most computer animation evidence could be authenticated in this way by presenting expert testimony as to the process used to develop the simulation, accompanied with an explanation of the assumptions, variables and programs the developers used.<sup>105</sup>

##### b. Rule 402—Relevance

Since all evidence presented must meet the relevance test, Rule 401 requires the court to consider the relevance of the animation.<sup>106</sup> The party

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100. *Id.* at 1089.

101. *Id.*

102. *Id.*

103. FED. R. EVID. 901(a).

104. FED. R. EVID. 901(b)(9).

105. Krieger, *supra* note 46, at 96.

106. Under Rule 401, "[r]elevant evidence" means evidence having any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would be without the evidence." Most interpretations of the rule have found that if the evidence advances the inquiry in any

seeking to utilize the computer evidence must show its relevance to the facts that need to be established. Once relevance is established, the evidence is easily admissible through Rule 402, which declares that "all relevant evidence is admissible."<sup>107</sup> The burden then shifts to the opponent of the evidence to show why the evidence should not be admitted once it has been established as relevant.

#### **IV. THE PREJUDICIAL EFFECTS OF COMPUTER ANIMATION AS EVIDENCE**

Rule 403 states, "[a]lthough relevant, evidence may be excluded if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury."<sup>108</sup> The Advisory Committee's Note following the rule states that "[s]ituations in this area call for balancing the probative value of need for evidence against the harm likely to result from its admission."<sup>109</sup> The Note also defines "unfair prejudice" as a "tendency to suggest decision on an improper basis, commonly, though not necessarily, an emotional one."<sup>110</sup>

Some of the objections to admitting computer-animated evidence, for fear of prejudicial effects, include: (1) it can escape clear classification; (2) it confuses the jury and misleads them in their fact-finding role; (3) it creates a handicap to opponents who cannot afford to use the technology; and, (4) it can be readily manipulated in the courtroom, at least for "real time" computer-animated evidence. Taken individually, these objections to admitting computer-animated evidence may not be enough to tip the balancing test against the admission of such evidence. But when considered together, such objections may outweigh the probative value provided by computer-animated evidence. Each objection is discussed separately below.

##### **A. Confusion over the Nature of Computer Evidence**

In some circumstances, computer animation is prejudicial because it lacks a definitive evidential classification. Attorneys seeking to properly introduce their animations may classify their presentations as either demonstrative, scientific, or opinion evidence. These alternative

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way, it will be deemed relevant. MCCORMICK ON EVIDENCE § 185 (E. Cleary ed., 3d ed. 1984).

107. The exact language of Rule 402 states, "All relevant evidence is admissible, except as otherwise provided by the Constitution of the United States, by Act of Congress, by these rules, or by other rules prescribed by the Supreme Court pursuant to statutory authority. Evidence which is not relevant is not admissible." FED. R. EVID. 402.

108. FED. R. EVID. 403.

109. *Id.* Advisory Committee's Notes.

110. *Id.*

classifications by proponents further obscure the nature of the evidence. This potential confusion as to the nature of the evidence increases the danger of confusing the jury and blurring lines between an expert's opinion of the facts and a presentation of the facts themselves.

As mentioned above, hearsay evidence is often admitted after meeting one of the recognized exceptions.<sup>111</sup> However, if this evidence is of a scientific or technical nature, it must also satisfy Rules 702, 703 and the *Daubert* test. On the other hand, if the animation is classified as demonstrative evidence, no such test is required.<sup>112</sup> Therefore, the *Daubert* test of ensuring the reliability of novel scientific evidence, discussed *supra* in section III.B.3., is completely by-passed, removing one more measure of the evidence's reliability.

Federal Rule 702 also opens the door to allow expert testimony that is in a form other than traditional opinion evidence.<sup>113</sup> Rule 702 admits "scientific, technical or other specialized knowledge" if it will "assist the trier of fact to understand the evidence or determine a fact in issue."<sup>114</sup> The important allowance of Rule 702 is that it allows testimony "in the form of an opinion or otherwise."<sup>115</sup> This inclusive standard appears to permit the admission of most computer graphics, whether the animations themselves represent expert conclusions or merely illustrate the basis of opinion by expert testimony.<sup>116</sup>

Consequently, an animation's probative value is compromised by the jury's inability to ascertain what type of evidence it is evaluating. Not only is the line between demonstrative and actual scientific evidence blurred, but the possibility that the animation is nothing more than opinion testimony raises the question of whether the animation is evidence at all. The Rules do not require that the attorneys or the court disclose to the jury the nature of the presented evidence. Without direction, the jury may wrongly assume that whatever the computer shows them is the correct, scientifically-validated answer to the inquiry. This conclusion, of course, may be far from the truth, and essentially removes from the jury their fact-finding role.<sup>117</sup>

Some courts are beginning to address the misclassification techniques proponents have used to introduce computer animations into

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111. See *supra* notes 49-53 and accompanying text.

112. See *supra* notes 54-66 and accompanying text.

113. Krieger, *supra* note 9, at 96.

114. FED. R. EVID. 702.

115. *Id.* (emphasis added).

116. Krieger, *supra* note 9, at 96.

117. If computer animation is presented as a scientific process in which the laws of physics and science are incorporated, the jury may look to the computer for the answer, rather than view the animation as a visual depiction of counsel's opinions or theories about the case.

evidence. For example, the Court of Appeals of Arizona in *Bledsoe v. Salt River Valley Water Users' Assoc.*<sup>118</sup> held that the trial court had erred in permitting counsel to employ a computer animation during closing argument because it was misclassified.<sup>119</sup> At trial, the proponent argued that the evidence was for demonstrative purposes, and the trial court agreed, although it was "a more sophisticated way of presenting his theory as to how the accident happened."<sup>120</sup> However, the Court of Appeals ruled that the animation should not have been classified as demonstrative evidence because it was more like a depiction of a computer expert's opinion of how the accident happened.<sup>121</sup> Therefore, the court held that counsel was required to lay the foundation for those opinions prior to their introduction, and opposing counsel should have been permitted to cross-examine the expert about them.<sup>122</sup>

Misclassifying the nature of computer evidence prejudicially affects the judicial process in several ways. First, it unduly confuses the jury as to whether the evidence is demonstrative or scientific. Secondly, it allows an astute party to avoid the trustworthiness requirements of the hearsay rule by entering substantive evidence under the guise of demonstrative evidence. Lastly, it completely avoids the evidentiary requirements established to ensure the reliability of the novel scientific evidence presented.

## B. Problems Inherent in the Process and the Technology

The problems in the animation process affect the judicial system in two ways. First, the fact-finder is often unaware of the unconscious biases and necessary assumptions made by the animation's creator and, therefore, the fact-finder cannot reach a fully informed decision.<sup>123</sup> Second, juries may surrender their role as fact-finder by accepting computer evidence as a factual conclusion.<sup>124</sup>

### 1. THE BIASES INHERENT IN THE ANIMATION PROCESS

Far from the simple input/output decisions that the *McHugh* court used to characterize computer-generated evidence, computer animation is a long process that involves human speculation and assumptions at each

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118. 880 P.2d 689 (Ariz. Ct. App. 1994).

119. *Id.* at 691.

120. *Id.*

121. *Id.*

122. *Id.*

123. *Id.*

124. See *infra* notes 142-152 and accompanying text.

stage of development.<sup>125</sup> Even the most conscientious animator must make assumptions in order to provide for a continuous simulation of the events alleged to have taken place.<sup>126</sup>

The animation process generally involves six steps. The first step is to collect the data for the animation.<sup>127</sup> The developer gathers data from a wide variety of sources, some more accurate than others. These sources include police reports, public records, witness interviews, depositions, expert investigations, and photographs.<sup>128</sup> The second step is to storyboard each frame, "a process by which key events are sketched out and words are added to the still images to describe the motion that is proposed for animation."<sup>129</sup> The third step involves actually drawing, composing or building the image models that will be used in the animation on the computer.<sup>130</sup> Once these images are complete, the animator next must script the movement of the images on a time line that marks the occurrence of certain events.<sup>131</sup> The fifth step is rendering, in which the computer fills out the images appearing in each frame of the animation by incorporating the variables established in the program.<sup>132</sup>

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125. J. Stratten Shartel, *Caution is Warranted in Use of New Technologies in Court*, PRENTICE HALL LAW AND BUSINESS, May 1992, at 3.

126. *Id.*

127. Muir, *supra* note 66 at 591.

128. *Id.* The list of sources is not exhaustive. However, from just this list, it is clear that the evidentiary basis of the animation immediately subjects it to hearsay analysis. Further, the danger in classifying the evidence as "demonstrative" is evident since a collage of potentially inadmissible evidence may be admitted without meeting any of the hearsay exclusions or exceptions. See discussion, *supra*, at Part IV.A.

129. *Id.*

130. *Id.* There are three ways in which these images are constructed. One method is to use a digitizer, which is akin to an electronic drawing pad that senses the movement of an electronic pen and duplicates the images onto a computer, but in three-dimensional quality. The second instrument used is a three-dimensional digitizer. The object is placed on the digitizer and points are touched, with the computer drawing it based on its distance and depth from the last point touched. The third method is to employ a Computer Aided Design (CAD) program to draw a three-dimensional wireframe model on the computer, and then allow the computer to animate it. Whatever process is used, the animator can then apply textures and colors from the computer's library of characteristics. For example, once an object has been imaged, say a couch, the animator can then assign a plush cloth texture to it and color it gray. *Id.*

131. *Id.* This process of placing events on a time line usually is done by closely following the data collected as to times and locations of events or objects. The rendering process fills in the gaps between one occurrence and the other. *Id.*

132. *Id.* While the rendering process is a "hands-off" process for the animator, and one example of where the computer is "acting on instructions at lightning speed," *McHugh*, 476 N.Y.S.2d at 723, it is still completely dependent on the data input. Therefore, the potential for bias is still inherent in even the most computer-based step of the process.

The frames are then assembled to form a continuous animation which is placed onto either videotape or laser disc.<sup>133</sup>

Assumptions, speculation and opinions by experts are accepted by the rules of evidence,<sup>134</sup> but should be closely scrutinized nonetheless. Within the confines of thirty frames for each second of videotape animation, there is room for tampering with the evidence.<sup>135</sup> To a certain degree, cross-examination of the expert animator will alleviate this problem, but intentional tampering easily can be hidden within the 1800 frames contained in just one minute of animation. However, absent any bad faith attempt to alter the evidence, there still remains a great deal of data collection, human judgment and speculation at each step of the animation process. Therefore, the contention that the computer's process is an objective one is not tenable.<sup>136</sup> Parties seeking to object to the admission of computer evidence at trial should keep this fact in mind, as well as the fact that if the animation is admitted as anything—as for example demonstrative or illustrative evidence—other than substantive evidence, much of the hearsay evidence that underlies the animation will be admitted as well without any scrutiny by the court<sup>137</sup>

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133. *Id.* For real time animations, frames are kept in the computer's memory. The computer then readjusts viewpoints and positions by recalling from its large catalog of previously-rendered frames the correct one to place next in the animation sequence. Each second of animation contains thirty rendered frames. *Id.*

134. FED. R. EVID. 702. Rule 702 states that "[i]f scientific, technical or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise." *Id.*

135. Edmund B. Sabato, *Visuals for Expert Testimony 'Beyond the Blackboard,'* THE LEGAL INTELLIGENCER, July 26, 1993, at 4. Sabato, manager of Graphic Services, an engineering and consulting firm specializing in graphic design, technical illustration, and video presentation, states that even photographs can be digitally altered before being animated. He also states:

Although the technology has existed for years to airbrush, merge and alter photographs, the ability to do it quickly and undetectably has not. Image manipulation that used to require six-figure workstations and cost tens of thousands of dollars now cost hundreds. Still-video cameras allow a photographer to take pictures, edit their content, and display them on a TV monitor within minutes, without ever going to film.

*Id.*

136. Deciding a case that has been characterized as "[t]he leading case dealing with the independent use of a computer simulation," the *McHugh* court relied upon the objectivity of the animation process. Siegel & Pass, *supra* note 49, at 605

137. FED. R. EVID. 703. Rule 703 states in relevant part that, "[i]f of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject, the facts or data need not be admissible in evidence." *Id.* In regards to the sweeping admissibility this Rule could offer, the Advisory Committee's Note states that "[i]f it be feared that enlargement of permissible data may tend to break down the rules of exclusion unduly, notice should be taken that the rule requires that the facts or data 'be of a type reasonably relied upon by experts in the particular field.'" *Id.* Advisory Committee's Note. Of course, what is reasonably relied on becomes a question of fact, and

The case of *Sommervold v. Grevlos*<sup>138</sup> illustrates the inaccuracies that animations can contain. In *Sommervold*, the Supreme Court of South Dakota affirmed a trial court's decision to exclude the computer animation evidence because of its prejudicial nature and the inaccuracies which it contained.<sup>139</sup> The court found that the animation, recreating an accident involving two bicycles, was not similar enough to the actual events or the testimony to be admissible.<sup>140</sup> In upholding the exclusion of the evidence based on prejudice, the court echoed the trial court's decision that "[a] video recreation of an accident . . . stands out in the jury's mind. So it emphasizes that evidence substantially over . . . ordinary . . . spoken testimony."<sup>141</sup>

As stated above, problems with the process and technology in creating computer animation may create prejudicial effects. First, because computer animation involves assumptions, speculations, and opinions at each step of the process, it really should not be classified as either demonstrative or scientific evidence. Second, computer animation easily may be tampered with, and the detection of a tampered animation is difficult. While computer animation is impressive and most likely the wave of the future, its foundations remain the people who design the animation; these foundations retain a collage of prejudicial elements capable of evading the Federal Rules of Evidence if courts do not subject them to proper scrutiny.

## 2. RISK OF JURY MISTAKING ALL COMPUTER EVIDENCE AS FACT

Some courts have viewed computer evidence as merely a "mechanical tool"<sup>142</sup> for the presentation of evidence. For example, the Supreme Court of New York in *McHugh* found that computers were only

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is most likely to be resolved by looking at the test for novel scientific evidence found in *Daubert*. But in regards to the data most relevant to computer animations, the Advisory Committee's Note goes on to say that "[t]he language would *not* warrant admitting in evidence the opinion of an 'accidentologist' as to the point of impact in an automobile collision *based on statements of bystanders*, since this requirement is not satisfied." *Id.* (emphasis added) This last point is of great importance since every animator, as an expert 'accidentologist' or reconstructionist, many times relies mostly on the facts and data supplied by witnesses. The Advisory Committee's Note therefore implies that this practice should not allow the party to evade the exclusionary rules, which in this case would be the hearsay doctrine.

138. 518 N.W.2d 733 (1993).

139. *Id.* at 738.

140. *Id.* The animation misrepresented the speed of the bicycles, wrongly depicted the light that was cast from a nearby streetlight, and showed the wrong location of the injuries to riders. *Id.*

141. *Id.*

142. *McHugh*, 476 N.Y.S.2d at 722.

"receiving information and acting on instructions at lightning speed"<sup>143</sup> in the presentation of factual evidence. As popular as this view may be, it is misinformed. This view encourages jurors to surrender their role in factual determinations and allow the computer to resolve the factual disputes in the case.

*People v. Mitchell*,<sup>144</sup> provides an example of the risk in adopting such a view. In the case, James Mitchell was convicted for the murder of his brother, Artie Mitchell, despite James's claim that he acted in self-defense.<sup>145</sup> The prosecution used computer animation to show that, because of Artie's location behind a wall, James could not have seen any threatening gestures made by Artie.<sup>146</sup> The original animation portrayed Artie walking down the hallway with his hands at his sides.<sup>147</sup> Upon defense counsel's objection, the judge ordered that the animation be altered several times, ultimately replacing the human-like figure representing Artie with that of a geometric shape to avoid the risk that the jury might assume as proven fact the position of Artie's hands in the animation.<sup>148</sup> The *Mitchell* case illustrates that computers do not merely spit out factual information "acting on instructions at lightning speeds."<sup>149</sup> Instead, they reflect the theories and opinions advanced by counsel, based on assumptions and speculation.<sup>150</sup>

The Federal Rules of Evidence were primarily drafted because of a mistrust of unrestrained juries and the methods they might utilize in reaching a decision.<sup>151</sup> They were also drafted to "ensure accurate fact-finding."<sup>152</sup> If evidence were allowed without considering these concerns, it would violate the primary purpose of the Federal Rules.

### C. Sensory Impact on Jury

The fact that computer-animated evidence is gaining acceptance reflects its influence on juries. Jurors respond almost uniformly in favor

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143. *Id.* at 723.

144. No. 12462, Marin County Superior Court, California (1992).

145. *Id.*

146. *Id.*

147. Shartel, *supra* note 125, at 3.

148. *Id.* Defense counsel objected because there was no evidence as to how Artie positioned his arms or his body as he walked down the hallway. *Id.*

149. *McHugh*, 476 N.Y.S.2d at 723.

150. Shartel, *supra* note 125, at 3.

151. MUELLER & KIRKPATRICK, *supra* note 19, at 1. The authors state that "[it] sounds strange in a republic which places great faith in the jury system, but mistrust of juries is the single overriding reason for the law of evidence." *Id.*

152. *Id.* at 2.

of computer animation in the courtroom.<sup>153</sup> Exposed to computer animation on television and in the movies, jurors are accustomed to receiving information through this medium.<sup>154</sup> Studies measuring jurors' information retention have shown that jurors were able to recall sixty-five percent of the evidence presented three days earlier if the evidence was presented through a combination of oral and visual evidence.<sup>155</sup> Where only oral evidence was presented at trial, jurors were able to retain only ten percent of the evidence.<sup>156</sup> Studies also have shown that jurors focused primarily on the visual evidence used during trial.<sup>157</sup>

The findings from these studies prompted at least one court to preclude the use of computer-animated evidence. In *Racz v. R.T. Merryman Trucking, Inc.*,<sup>158</sup> the district court held the risk of unfair prejudice to the plaintiff from the defendant's computer-animated recreation of the accident at issue in the trial outweighed the relevance of the evidence.<sup>159</sup> The court recited the old adage, "seeing is believing," in concluding that the jury might give undue weight to a computer recreation.<sup>160</sup> The court asserted, "[b]ecause the expert's conclusion would be graphically depicted in a moving and animated form, the viewing of the computer simulation might more readily lead the jury to accept the data and premises underlying the defendant's expert's opinion, and, therefore, to give more weight to such opinion."<sup>161</sup>

Critics contend that computer animation encourages juries to suspend their skepticism. Brian Stonehill, the director of media studies at Pomona College in Claremont, California, found that computer animation "works on a visceral level that quite easily bypasses skeptical, rational faculties."<sup>162</sup> Computer animation "creates pseudo-memories of the

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153. Bruce G. Vanyo, *Communicating with 'Post Literate' Jury: Advanced Graphic Exhibits in Patent Trials*, PLI Order No. G4-3892, Mode 349 PLI/Pat 409 (1992).

154. *Id.*

155. Rebecca White Berch, *A Proposal to Amend Rule 30(B) of the Federal Rules of Civil Procedure: Cross-Disciplinary and Empirical Evidence Supporting Presumptive Use of Video to Record Depositions*, 59 FORDHAM L. REV. 347, 356 (1990).

156. *Id.*

157. Dennis Robert Anti and Susan Solomon Seif, *Demonstrative Evidence Can Be Most Effective When it is Kept Simple*, THE NATIONAL LAW JOURNAL, Aug. 2, 1993, at 32.

158. 1994 WL 124857 (E.D. Pa. 1994).

159. *Id.* at \*5.

160. *Id.* At the same time, the court found biases in the way that the animation was created. The court was particularly concerned with a decision by the reconstructionist to discount the testimony of one of the witnesses who reported facts unsympathetic to the proponent of the animation. *Id.*

161. *Id.*

162. Claire Cooper, *Computer Animation on Trial*, THE SAN DIEGO UNION-TRIBUNE, Jan. 27, 1993 at E-1.

event" and the "memorability of having witnessed the crime itself [or event in dispute], but [with] no validity in fact."<sup>163</sup>

The powerful impact of computer animation on juries is not enough reason by itself to declare such evidence prejudicial because courtroom advocacy often demands that a powerful impact be made. The Federal Rules of Evidence, however, define "unfair prejudice" as evidence resulting in the undue tendency to suggest decision on an improper basis, commonly, though not necessarily, an emotional one.<sup>164</sup> This would certainly apply to evidence which is more convincing merely because it appeals to jurors on a visceral level. A decision based on visceral impact is arguably just as bad as a decision based on emotion.

#### D. Prejudicial Effects of Not Using the Technology

The visceral influence of computer-animated evidence on jurors is compounded when an opposing party does not use animation at trial. Studies have found:

[I]f there is any juror prejudice relating to the use of advanced graphics it appears directed against the party which does not use them. In a number of cases where advanced graphics were used by one side, in post-trial interviews the jury praised the use of video exhibits and . . . criticized the other side for not presenting similar materials.<sup>165</sup>

Thus, a party opting to present a traditional case will often be prejudiced by the use of computer-animated evidence by the other side.

Cost is often the reason parties forego the use of computer-animated evidence. While computer animation has become more affordable in recent years,<sup>166</sup> the technology remains relatively expensive and is primarily used only by wealthier parties to a lawsuit or criminal trial.<sup>167</sup> In criminal cases, the prohibitive cost of computer-animated evidence will favor the prosecution, which has the state's resources at its disposal against usually less wealthy defendants.<sup>168</sup> A related concern is that litigants with limited budgets may be compelled to settle rather than seek a trial on the merits when facing opponents who are able to afford animated graphics.<sup>169</sup>

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163. *Id.*

164. *Id.* (emphasis added).

165. Vanyo, *supra* note 153, at 409.

166. See *supra* note 23 and accompanying text.

167. Shartel, *supra* note 125, at 2.

168. *Id.* at 3.

169. *Id.* See also Gordon Walker, *Show Time: Courtroom Technology is Finally Hitting its Stride - And Litigators are Finding that it has a Potent Effect on Judges and Juries*, TEXAS LAWYER, May 24, 1993 at 7 ("because the technology is still so expensive, often one side can afford it while the other can't, giving one side a potential unfair advantage"). A related concern is that parties, faced with the need to produce a \$20,000 animation to meet the

The sure winners from the use of computer-animated evidence are the engineering and computer design firms that produce the technologically enhanced evidence. If counsel on one side decides to use computer animation, opposing counsel will feel compelled to present its own animation. At a minimum, a party facing an opponent presenting computer-animated evidence will seek out an expert witness to rebut such evidence. Not surprisingly, the same firms that create computer-animated evidence also provide expert witnesses challenging the accuracy of such evidence.

### E. The Expansion Into "Real-Time" Animation

The powerful appeal of computer animation to jurors' sensory perceptions combined with an opposing party's lack of such technology begins to tip the scale against admitting such evidence. These effects are true for even the most basic "pre-recorded" computer animation. Such evidence is produced before trial, recorded on videotape and played back to the jury in an immutable form.

Computer-animated evidence, however, has become increasingly more sophisticated with the advent of "real-time" animation. Real-time animation allows counsel to manipulate the visual images in the court room, so that jurors can be shown an animated sequence from a variety of viewpoints and configurations.<sup>170</sup> With real-time animation, counsel is able to instantly perform these manipulations with a device such as a joystick or mouse.

Real-time animation also gives counsel the ability to change the animation at any time during testimony so that it may be used to test out an opposing party's claims.<sup>171</sup> For example, if an attorney presenting computer animation depicts a witness standing thirty-five feet from the scene of an accident and opposing counsel contends the witness was fifty feet away, the attorney can adjust the animation so that it depicts the witness fifty feet from the accident. The manipulation may be made in a matter of seconds through the use of a computer. This powerful tool, however, can certainly lead to prejudicial results. Since real-time animation allows counsel to instantaneously change the nature of the

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other side's presentation, will opt for settlement, preventing litigation of the issue for economic reasons.

170. Marshall S. Turner and Andrew T. Houghton, *In With the Old, In With the New; Interactive Animations Are Wave of the Future*, NEW YORK LAW JOURNAL, Feb. 16, 1993, at S-1. Real time animation is best illustrated by the following example:

At any point during the presentation . . . of an automobile accident, the visual depiction can be changed from an overhead view, to the driver's view, to the position of an eyewitness at the time of the accident.

*Id.*

171. *Id.*

evidence before the jury, there is no opportunity for the judge to decide whether to exclude a particular viewpoint or construction because it is prejudicial. Similarly, opposing counsel will be unable to view the evidence before it is shown to the jury, and can only object after harm has occurred.

The Advisory Committee's notes to Rule 403 noted that "[i]n reaching a decision whether to exclude [evidence] on grounds of unfair prejudice, consideration should be given to the probable effectiveness or lack of effectiveness of limiting instruction[s]."<sup>172</sup> Courts have specifically found that limiting instructions fail to eliminate the egregious prejudicial effect from evidence such as codefendant confessions.<sup>173</sup> Courts may also be persuaded that limiting instructions are inadequate for screening out the prejudicial effects of computer-animated graphics.

## V. RECOMMENDATIONS

Computer animation is a hybrid of scientific, demonstrative, and opinion evidence. It does not fit comfortably into any one category, though it shares elements with each of these categories of evidence. Such technology, however, should not be kept out of the courtroom simply because it does not fit into the existing scheme of evidentiary rules. Instead, the judiciary should accommodate computer technology and design new rules for dealing with this new and unique form of evidence.

Most courts have attempted to fit computer animation into existing categories of evidence, but such an approach clearly fails to safeguard against the prejudicial effects of this new form of evidence. For example, in *Kudlacek v. Fiat*,<sup>174</sup> the Supreme Court of Nebraska treated computer-generated models and simulations like other scientific tests, conditioning their admissibility on a sufficient showing that "1) the computer is functioning properly; 2) the input and underlying equations are sufficiently complete and accurate (and disclosed to the opposing party, so that they may challenge them); and 3) the program is generally accepted by the appropriate community of scientists."<sup>175</sup>

The flaw in this approach is that computer animation is an entirely different method of presenting testimony. Judges are quite capable of ruling on complicated issues arising from oral testimony. Computer

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172. FED. R. EVID. 403 Advisory Committee's Note (emphasis added).

173. See *Bruton v. United States*, 391 U.S. 123, 142 (1968) (holding that a limiting instruction did not effectively protect the accused against the prejudicial effect of admitting in evidence the confession of a codefendant which implicated him).

174. 509 N.W.2d 603 (1994). The case involved an automobile passenger who was injured. The plaintiff brought a products liability action against the manufacturer of the car, asserting defective design claims. A computer-generated model was used by the plaintiff at trial and became the partial basis for the defendant's appeal. *Id.* at 607-08, 617.

175. *Id.* at 617.

animation, however, is a visual form of testimony that has unique psychological effects not associated with other forms of evidence. Computer animation thus requires an evidentiary standard that takes into account these unique effects.

Such a standard should be expressly articulated in the Federal Rules of Evidence, making courts across the nation aware of the special problems associated with evidence in the form of computer animation. Explicit inclusion in the rules of evidence will help the courts respond to the increasing use of such evidence.

### A. Developing Guidelines for the Use of Animation

While the structure of the Federal Rules is flexible enough to apply to new types of evidence,<sup>176</sup> the special challenges that computer-animated evidence presents, as well as its hybrid nature, suggest that it should be treated separately from other types of evidence. To achieve such a goal, the following guidelines, standards and limitations should be adopted whenever dealing with computer animation.

#### 1. FORMULATING A STANDARDIZED CLASSIFICATION FOR THE EVIDENCE

Whether computer animation is classified as either strictly demonstrative, scientific or opinion, the animation should be classified uniformly among all jurisdictions. For example, if computer animations are defined as scientific evidence, then all jurisdictions should require experts to testify alongside the animation in court. If computer animation cannot be classified uniformly, then judges should deal with each piece of computer evidence in a motion in limine at the start of the trial. However, judges should be knowledgeable enough to recognize when a crafty attorney is trying to admit scientific evidence under the guise of mere "visual aids." Whatever is done, it is clear that future attempts to standardize criteria for defining computer-animated evidence will bolster the legitimacy of using the technology in the courtroom.

#### 2. PRELIMINARY EVIDENTIARY DECISIONS ON ADMISSIBILITY

A computer animation should be submitted before trial both to the judge for review and approval, and to the opposing counsels to examine the animation, consider its admissibility, and object if necessary. Regardless of how computer animation is classified, judges will be the

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176. For example, Rule 803(24) is expressly designed for this purpose. FED R. EVID. 803(24) Advisory Committee's Note. See also *supra* note 53 and accompanying text.

ultimate authority on the admissibility of the animation. Therefore, judges should be knowledgeable enough to distinguish among the various types of computer animations presented to them before ruling on the matters in a motion in limine.

Among the guidelines and criteria that should be considered to ascertain an animation's admissibility are the following: (1) the danger of misleading or confusing the jury pursuant to Rule 403, or causing them to make a decision merely on a sensory basis; (2) the prejudicial effect of the animation, including its similarity to alleged or actual events, places and persons; (3) the harm to the opposing party if the animation is admitted; (4) the harm to the proponent of the animation if the animation is excluded; (5) the accuracy and reliability of the assumptions used in the animation; and (6) the trustworthiness of the process employed to create and present the animation.

Animations that are capable of being altered or run in a "live" format—real-time animations—should not be allowed unless there is a showing by clear and convincing evidence that the possibility of altering the image will not unduly prejudice the opposing side. Since juries are strongly affected by visual evidence, the prejudicial effect of an improper viewpoint shown live in the courtroom cannot be undone. In these instances, a limiting instruction by the judge, instructing the jury to disregard the highly-prejudicial image would be largely ineffective.

### *3. INSTRUCTIONS TO THE JURY ABOUT COMPUTER EVIDENCE*

To ensure the reliability of a jury trial, judges should forewarn jurors of the nature of the computer evidence being presented. If the evidence is being offered strictly as a visual aid, the jurors should be aware of such a fact. If an expert or other witness intends to use the animation as an illustration of her testimony, this too should be made clear to the jury. Also, if the animation is a true scientific animation, one which uses the laws of physics, engineering and mathematics, then the jury should be informed of the assumptions that are inherent in the animation. Thus, just as a jury is cautioned that a closing argument is partly the attorney's opinion and not necessarily factual evidence, a jury viewing a computer animation should be forewarned about the use of such evidence.

### **B. Meeting these Goals at the Present Time**

Until these evidentiary standards, guidelines and limitations can be drafted into the Rules, the burden of ensuring fairness in trial proceedings rests on the judges who preside over them. If an animation is admitted, current practice still mandates that an expert testify

alongside the evidence, and vigorous cross-examination of that individual is necessary to ensure that the animation is what it purports to be.<sup>177</sup> During cross-examination, the opponent of the animation should be allowed to demonstrate to the jury that the events portrayed in the animation are based, at least partially, on assumptions and conjectures, and not on purely objective, scientific factual determinations.

Computer technology has revolutionized such diverse areas as telecommunications, document production, education, household appliances, automotive engineering, movie making and office automation. The next frontier seems to be the courtroom, and the technology is rapidly taking root. At a time when trials are becoming more complex, and both the public and other government entities are pressing to speed up the pace of the judicial system, computer animation technology can be very useful in expediting the process of presenting evidence to the jury. However, the American judicial system does not sacrifice fairness and proper safeguards to produce efficiency gains, and it should not start now.

## VI. FUTURE TECHNOLOGIES AND THE CONTINUED GROWTH OF THE PREJUDICIAL EFFECT

This Comment has primarily focused on computer animation. The greatest opportunities for attorneys using digital demonstrative evidence, however, lies in future technologies being developed by virtual reality innovators.<sup>178</sup> Computer programmers work constantly to both utilize and master this new technology to help construct a new world which they envision.<sup>179</sup> Advances in the quality and quantity of computer animation and virtual reality will likely come as computer speeds

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177. See *supra* note 67 and accompanying text.

178. Virtual reality has been defined in the following ways:

[A]n evolving technology that transports a person into a computer-generated, three-dimensional environment. A helmet with sensory devices and electronic goggles is the entryway to the artificial world. Once inside, players employ joysticks, backpacks, electronic pods and other equipment to interact with the simulated world.

Thomas Heath, *Shoppers Jump Headfirst Into the Nearly Futuristic; Mall Presents Virtual Reality in the Rough*, THE WASHINGTON POST, Aug. 29, 1993, at B-3. It has also been described as "[a]n interactive technology that creates an illusion, still crude rather than convincing, of being immersed in an artificial world. The user generally dons a computerized glove and a head-mounted display equipped with a TV screen for each eye." TIME, Feb. 8, 1993, at 58.

179. Miriam Horn, *Seeing the Invisible*, U.S. NEWS AND WORLD REPORT, Jan 28, 1991, at 56. This new world includes entire virtual reality cities where people can join through computer hookups to meet in this new digital world. *Id.* Virtual reality, when it comes into full fruition, will be used in such diverse areas as medicine, test piloting, entertainment and motion pictures, sports conditioning, military maneuvers, and space exploration. *Id.*

increase and new media storage devices become more readily accessible and adaptable to personal computers.

This developing technology seeks to actually project the viewer into a separate "reality."<sup>180</sup> The computer senses the viewer's movements and readjusts the entire reality to reflect the movement. In the courtroom of the future, virtual reality could transport the jury into any setting the attorney wishes, and it can replace verbal testimony with visual recreation of any "reality" the attorney or expert witness conjures up. With these leaps in animation technology, many litigators are waiting for the day when "jurors will be transported back to the scene of an accident simply by wearing a special helmet."<sup>181</sup>

Today's impressive computer animations will be no match for tomorrow's ability to travel in time or space through a man-made version of the facts. The coming technology could allow jurors to actually become fact "investigators" in the true sense of the word, rather than fact determiners.<sup>182</sup> In the least, it will provide such a realistic experience for the jury that concerns about the veracity of the proffered testimony will become secondary to the juror's sensory experiences. If the rules on prejudicial testimony, such as Rule 403, are to have any meaning in our evidentiary systems, then the judiciary and the bar must begin to recognize and address the problems that are inherent in the present and future state of computer animation technology.

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180. Persons venturing into virtual reality enter a computer-generated world in which humans can "walk" and "touch" things, interacting with the artificial environment. Mark Potts, *Future Fixtures, or Flops? Some Educated Guesses About Which of the New Consumer Technologies Will Survive*, THE WASHINGTON POST, Dec. 27, 1992, at H-1.

181. Walker, *supra* note 169, at 7.

182. Not since early common law England have jurors been allowed to investigate, ask questions, or participate in the presentation of a case. However, the coming technology of virtual reality will remove jurors from being passive viewers in the jury box, and transform them into active investigators and participants in the unfolding of each case.



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# **ARTICLE**

## **ISSUES OF PROPERTY, ETHICS AND CONSENT IN THE TRANSPLANTATION OF FETAL REPRODUCTIVE TISSUE**

**HEATHER J. MEEKER †**

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### **I. INTRODUCTION**

In January 1994, a team of doctors led by Roger Gosden at the University of Edinburgh announced the successful transplantation of the ovaries of fetal sheep to adult animals, a procedure that could soon be

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carried out on humans.<sup>1</sup> Reaction was immediate and emotional. The idea that fetal reproductive tissue could be used to create "grandmothers who were never mothers" and the "genetic offspring of a dead fetus"<sup>2</sup> raised ontological and ethical questions that elicited an impassioned response from the public, European governments, and the United States legal community.<sup>3</sup>

The controversy over transplantation of fetal germ cells is part of a broader ethical debate on the use of fetal tissues in medical treatment and research. Transplanted fetal tissue has been recently used to treat Parkinson's disease<sup>4</sup> and diabetes.<sup>5</sup> But the use of reproductive fetal tissues raises "a new set of ethical and legal issues"<sup>6</sup> on which there is little consensus in this country.

This Article discusses some of the biological, legal, and ethical implications of transplanting fetal germ cells. Part II explains how the technology differs from current infertility treatments. Part III discusses the regulatory and ethical issues involved in the transplantation of fetal reproductive tissue. Part IV sets forth in detail several doctrines of property law on which consent to donate fetal tissue may be based.

## II. THE TECHNOLOGY

### A. Current Methods for Treating Infertility

The treatment of infertility<sup>7</sup> has been a booming business for more than a decade.<sup>8</sup> The course of treatment for couples who cannot conceive

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1. Eugene Robinson, *Furor Over Fertility Options: Should Eggs from Fetuses or Cadavers Be Used to Help Women Become Pregnant?*, WASH. POST, Jan. 11, 1994, at 6.

2. Roger C. Gosden, *Transplantation of Fetal Germ Cells*, 9 J. ASSISTED REPRODUCTION & GENETICS 118, 122 (1992).

3. Gina Kolata, *Reproductive Revolution is Jolting Old Views*, N.Y. TIMES, Jan. 11, 1994, at A1.

4. This use was suggested in Ignacio Madrazo et al., *Open Microsurgical Autograft of Adrenal Medulla to the Right Caudate Nucleus in Two Patients with Intractable Parkinson's Disease*, 316 NEW ENG. J. MED. 831 (1987). For a recent analysis, see C.G. Goetz, *Fetal-Tissue Transplantation for Parkinson's Disease*, 329 NEW ENG. J. MED. 1498 (1993).

5. Marlene Cimons & Thomas Maugh, *After 5-Year Wait, Scientists are Set to Resume Research on Fetal Cells*, L.A. TIMES, Jan. 26, 1993, at A5.

6. Gosden, *supra* note 2, at 122.

7. Infertility is a temporary condition, usually due to age, but often due to unknown causes. Sterility is a permanent condition, frequently due to known causes such as menopause or removal of the ovaries. See Lawrence J. Kaplan & Carolyn M. Kaplan, *Natural Reproduction and Reproduction-Aiding Techniques*, in *THE ETHICS OF REPRODUCTIVE TECHNOLOGY* 30 n.7 (Kenneth D. Alpern ed., 1992) (difference between sterility and infertility); Michael Freeman, *The Unscrambling of Egg Donation*, in *LAW REFORM AND HUMAN REPRODUCTION* 273 (Sheila McLean ed., 1992) (causes of sterility). In this Article I will refer to infertility and sterility collectively as "infertility."

8. See Ellen Hopkins, *Tales from the Baby Factory*, N.Y. TIMES, Mar. 15, 1992, at 40.

a child without medical assistance usually proceeds from the least invasive to the most invasive procedure.<sup>9</sup> For instance, artificial insemination is available when sperm dysfunction causes infertility.<sup>10</sup> Depending on the cause of infertility—and the financial resources of the infertile couple—treatment may proceed to in vitro fertilization ("IVF").<sup>11</sup>

IVF was developed in the late 1970s.<sup>12</sup> "In vitro" literally means "in glass,"<sup>13</sup> and gives rise to the familiar term "test tube baby."<sup>14</sup> IVF involves mixing sperm and ova in a petri dish, and implanting the resulting embryo into the womb of the gestational mother.<sup>15</sup> The ova used in the process may be harvested from either the gestational mother or a donor genetic mother. Donor ova are necessary when a woman seeks IVF because her own ova are too old or otherwise incapable of fertilization.<sup>16</sup>

Today, IVF is widely practiced. However, it has a disappointing success rate of less than one in four.<sup>17</sup> In addition, its availability is limited by a severe lack of willing egg donors.<sup>18</sup> Egg donation is time-consuming, painful, invasive, and dangerous.<sup>19</sup> Consequently, egg donor services are expensive, commonly costing thousands of dollars.<sup>20</sup> A

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9. BARBARA KATZ ROTHMAN, ENCYCLOPEDIA OF CHILDBEARING 197 (1993) (entry under "Infertility"). The least invasive is listed as using the "correct" method of sexual intercourse. *Id.* Unfortunately, the author does not elaborate on what this might be.

10. *Id.*

11. *Id.*

12. The first IVF baby, Louise Brown, was born in 1978 under the care of British doctors Steptoe and Edwards. Kaplan & Kaplan, *supra* note 7, at 25.

13. *Id.*

14. Hopkins, *supra* note 8, at 40.

15. Kaplan & Kaplan, *supra* note 7, at 24, 26.

16. Freeman, *supra* note 7, at 273.

17. While only 10% of all couples enrolled in IVF programs actually bring home babies, couples who are "good candidates" for IVF may have a one in three chance of successful pregnancy. Ellen Hopkins, *Behind the IVF Hype: A Shocking Failure Rate*, MED. ECON., June 1, 1992, at 152. The reported success rates of individual clinics are, of course, instrumental to their financial health, and may therefore be over-reported. This concern prompted Representative Ron Wyden of Oregon to sponsor a bill mandating uniform reporting of success rates. Melinda Beck et al., *How Far Should We Push Mother Nature?*, NEWSWEEK, Jan. 17, 1994, at 54, 55.

18. Robinson, *supra* note 1, at 6.

19. ROTHMAN, *supra* note 9, at 120 (entry under "Egg Retrieval"). Some women have died from the laparoscopy procedure, whose danger stems primarily from the need for general anesthesia. *Id.* A new non-surgical ultrasound procedure, which is replacing laparoscopy, is less dangerous because it only requires local anesthesia. Kaplan & Kaplan, *supra* note 7, at 25. However, the ultrasound procedure still requires hospitalization and hormonal injection. *Id.*

20. See Hopkins, *supra* note 8, at 40. In comparison, the fee for the average sperm donation is about \$50. Sam Howe Verhovek, *New York, in Move to Bar AIDS, Puts New Limits on Sperm Banks*, N.Y. TIMES, Oct. 4, 1989, at A1.

recent article in the *New England Journal of Medicine* estimated the "cost of a successful delivery" using IVF to range from \$44,000 to \$800,000.<sup>21</sup>

### B. Fetal Germ Cell Transplants

The drawbacks of IVF have motivated medical researchers like Doctor Gosden to seek alternative infertility treatments.<sup>22</sup> Gosden's fetal germ cell transplant procedure offers several advantages. First, it relies on fetuses, of which there is an ample supply from elective abortion. At a stroke, Gosden's procedure could transform the contours of infertility treatment from extreme scarcity—expensive and dangerous egg donation—to extreme abundance—each fetus painlessly providing one or more women with a lifetime of fertility. Second, the costs of Gosden's procedure, while necessarily still speculative for human treatment, may rival or fall below the cost of a single round of IVF. Finally, successful transplantation provides the recipient with a lifetime of fertility; subsequent pregnancies can be achieved without medical intervention.

Transplantation of fetal germ cells differs in method and result from existing fertility treatments. Unlike in IVF, conception does not take place *in vitro*, but *in vivo*. The fetal ovary, once transplanted into the recipient, grows rapidly to maturity and begins producing ova, entirely replacing the missing or non-functional ovary.<sup>23</sup> Ovulation and conception then take place naturally—in the Fallopian tube rather than in the laboratory.<sup>24</sup> The ova produced carry the DNA of the fetal donor, not the adult recipient.<sup>25</sup>

In contrast to existing fertility treatments, which are simply temporary expedients to conceive,<sup>26</sup> fetal ovary transplants provide health benefits to the recipient. Healthy ovaries perform both a generative function of oocyte maturation and a vegetative function of estrogen and progesterone production.<sup>27</sup> In women who suffer from "gonadal dysgenesis," neither function is performed.<sup>28</sup> This results in both lifelong sterility and a variety of health problems associated with

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21. Peter J. Neumann et al., *The Cost of a Successful Delivery with In Vitro Fertilization*, 331 NEW ENG. J. MED. 239, 239 (1994). These figures are somewhat misleading on their face because they are adjusted in a variety of ways. They are discounted by the success rate and stratified by number of cycles. A complete explanation is provided in the "Methods" section of the article. *Id.* at 241-42.

22. Gosden, *supra* note 2, at 118-19.

23. *Id.* (Transplanted sheep ovaries, while remaining smaller in size, acquired adult morphology within a few weeks).

24. *Id.*

25. See Robinson, *supra* note 1, at 6.

26. *Id.*

27. DICTIONARY OF OBSTETRICS AND GYNECOLOGY 175 (1988) (entry under "Ovarium").

28. See *id.* (entries under "Dysgenesis, gonadal" and "Dysgenesis, pure gonadal").

low estrogen levels, such as cardiovascular disease and bone demineralization.<sup>29</sup> Women who have gone through menopause or who have undergone a complete hysterectomy also experience sterility and estrogen-deficiency ailments.<sup>30</sup> Although health problems stemming from insufficient estrogen can be treated with hormone injections, such therapy does not restore fertility.<sup>31</sup> These women may benefit from fetal reproductive tissue transplants not only by becoming fertile, but also by permanently regaining the hormonal production and regulation of a functioning ovary.<sup>32</sup> In contrast, when such women undergo existing fertility treatments, their estrogen levels return to abnormally low levels once the pregnancy is over, and there is no expectation of continuing health benefits.<sup>33</sup>

Like most mammals, female humans produce all of their "germ cells" or oocytes well before birth.<sup>34</sup> In fact, the number of oocytes dramatically decreases during late gestation and childhood.<sup>35</sup> Female midterm fetuses have several million oocytes,<sup>36</sup> newborns around one million,<sup>37</sup> and pubescents approximately 250,000.<sup>38</sup> These remaining quarter of a million oocytes are sufficient for the average reproductive life span.<sup>39</sup> Because nature supplies the fetus with sufficient oocytes to survive the process of pre-natal and childhood attrition, one fetus, at least theoretically, can provide enough germ material for several mature women.<sup>40</sup> If full ovary transplants were performed, a fetus could supply one or two adult women with tissue to overcome sterility and hormonal deficiency.

To date, fetal ovary transplants have only been carried out on animals. Roger Gosden and his team are, of course, optimistic that the

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29. Gosden, *supra* note 2, at 118.

30. Harinder Grewal, *The Good and Bad Cholesterol*, 14 TOTAL HEALTH 44 (1992); Most Women "Medical Rebels" About Taking Hormones, VANCOUVER SUN, Sept. 20, 1994, at B2.

31. Gosden, *supra* note 2, at 118.

32. *Id.* at 118-19.

33. *Id.* at 118.

34. *Id.*

35. *Id.*

36. T. G. Baker, *A Quantitative and Cytological Study of Germ Cells in Human Ovaries*, 158 PROC. ROYAL SOC'Y 417 (1963). The number of oocytes increases rapidly from 600 thousand at two months of gestation to 6 million to 7 million at five months. *Id.* It should be noted, in light of the discussion of *Roe v. Wade* in Part III.A, *infra*, that two months is long before fetal viability and five months is near the current point of viability. See Dena Kleiman, *When Abortion Becomes Birth: A Dilemma of Medical Ethics Shaken by New Advances*, N.Y. TIMES, Feb. 15, 1984, at B1.

37. Baker, *supra* note 36, at 417.

38. Gosden, *supra* note 2, at 118.

39. *Id.*

40. *Id.* at 119.

procedure will work on humans.<sup>41</sup> Gosden states, "These prospects for germ cell transfer are not merely wishful thinking but are borne out by a large body of critical experimental evidence in animals."<sup>42</sup> While rejection of the transplanted tissue by the recipient's immune system is often a problem with human transplants,<sup>43</sup> it is unlikely to prevent fetal tissue transplants for two reasons. First, rejection of non-fetal tissue has been successfully minimized by treatment with immunosuppressants such as cyclosporine<sup>44</sup> and monoclonal antibodies.<sup>45</sup> Second, many fetal tissues appear to be "immunologically privileged," or especially resistant to rejection.<sup>46</sup> While fetal ovaries have yet to be tested,<sup>47</sup> they may well be similarly privileged.

However, transplantation of ova from aborted fetuses raises another medical issue. The requirement that an individual survive through childhood and adolescence in order to reproduce helps to ensure that defective genetic sequences are not passed on. The genes of ova taken from an aborted fetus have not undergone this test. Thus, pregnancies resulting from fetal ovary transplants may have an increased risk of birth defects and other genetically transmitted diseases. Gosden points out that many of the worst genetically transmitted diseases can be tested at the fetal stage<sup>48</sup> and suggests that fetal reproductive tissue may be screened to prevent the transmission of defective genetic sequences. However, this argument is not convincing. First, it assumes too much knowledge on the part of scientists; many genetic defects are certainly still unknown or unidentified.<sup>49</sup> Second, it might be difficult to test ova, because some genetic disorders are only expressed as the result of the

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41. *Id.*

42. *Id.*

43. Animal ovarian transplants, routine for many years, are not prone to rejection because the donors and recipients are immunologically identical or syngeneic. *Id.*

44. W.A. Baumgartner et al., *Heart and Lung Transplantation: Program, Development, Organization, and Initiation*, 4 J. HEART TRANSPLANTATION 197 (1985).

45. D.J. Norman, *An Overview of the Use of Monoclonal Antibody OKT3 in Renal Transplantation*, 20 TRANSPLANT PROC. 1248 (1988).

46. See T.J. Gill & H.W. Kunz, *The Role of Regional Differences in the Major Histocompatibility Complex in the Production During Pregnancy of a Serum Factor Inhibiting Macrophage Migration*, 7 J. IMMUNOGENETICS 157 (1980); Warren Leary, *U.S. Panel Backs Research Use of Fetal Tissue From Abortions*, N.Y. TIMES, Sept. 17, 1988, at 1.

47. Gosden, *supra* note 2, at 122.

48. *Id.*

49. See Rex Dalton, *Born with a Broken Heart; Detectives Search for Gene That Causes Abnormalities in Family's Boys*, SAN DIEGO UNION-TRIBUNE, Dec. 1, 1993, at E1; Jim Morris, *Baby Tragedy has No Bounds; Woodlands, Like the Valley, Sees Infants Missing Brains*, HOUS. CHRONICLE, Aug. 2, 1992, at 1.

fully combined gene sequences of both parents.<sup>50</sup> Third, it leaves the door open for eugenic selection, which is widely rejected on moral grounds.<sup>51</sup>

### III. LEGAL AND ETHICAL ISSUES FOR FETAL REPRODUCTIVE TISSUE TRANSPLANTS

#### A. Regulatory Issues

Several European governments have taken a strong stand regarding treatment of infertility. The United Kingdom has already banned not only the use of fetal ovarian tissue, but the use of fetal eggs for IVF—a procedure that is not yet available.<sup>52</sup> France and Italy are calling for a broad ban on all reproductive technologies that will restore fertility to post-menopausal women.<sup>53</sup>

In contrast, there is currently little regulation of medically assisted reproduction in the United States.<sup>54</sup> The only federal statute that has specifically addressed the fertility industry is the Fertility Clinic Success Rate and Certification Act of 1992.<sup>55</sup> The Act is primarily directed toward consumer protection, but also authorizes the Centers for Disease Control to develop standards for certification of fertility clinics,<sup>56</sup> suggesting that federal regulation may be imminent. However, if human fetal germ cell transplants were feasible today, most of the relevant regulatory law would lie in state statutory schemes pertaining to the general use of fetal tissue in therapeutic transplantation.

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50. See Robert Steinbrook, *Healing Genes: Medicine's Attack of Genetic Diseases*, L.A. TIMES, Nov. 1, 1993, at A1 (discussing cystic fibrosis).

51. See George J. Annas, *Genetics and the Law: Mapping the Human Genome and the Meaning of Monster Mythology*, 39 EMORY L.J. 629, 645-46 (1990); see generally DANIEL KEVELS, IN THE NAME OF EUGENICS: GENETICS AND THE USES OF HUMAN HEREDITY (1985).

52. Magie Verrall, U.K. Bans Use of Fetal Eggs in IVF, 370 NATURE 241 (1994). In the current state of the art, oocytes will not mature in vitro. Therefore, oocytes must be harvested from adult ovaries upon maturation. Fetal eggs are therefore not yet viable for IVF. Sir Colin Campbell, chairman of the Human Fertilization and Embryology Authority, described the technology as "still 10-20 years away from being feasible in humans." *Id.* The U.K. ban essentially prohibits any use of fetal tissue in infertility treatment. *Id.* Roger Gosden called the move "misinformed." David Dickson, U.K. Parliament Passes Surprise Ban on Fetal Embryos in IVF, 368 NATURE 676 (1994).

53. An Inconceivable Breakthrough? Science Poised to Create Offspring from Aborted Fetus, CHI. TRIB. Jan. 6, 1994, at 14.

54. See Beck, *supra* note 17, at 55 ("There are no federal rules or guidelines governing the estimated 300 assisted-fertility clinics operating nationwide . . .").

55. Pub. L. No. 102-493 (codified at 42 U.S.C.A. §§ 201, 263(a)(1-7) (Supp. 1994)).

56. *Id.*

## 1. THE FEDERAL MORATORIUM

The federal government currently controls the extent of fetal tissue transplantation solely through its allocation of research funding. Federal law explicitly defers regulation of the use of fetal tissue to the states.<sup>57</sup> However, in 1988, the Reagan administration injected its anti-abortion political philosophy into the field of science funding by taking a stand against fetal tissue implantation. In that year, the National Institutes of Health ("NIH") began a voluntary moratorium, banning the use of tissue from elective abortions in fetal tissue research. It did so with the explicit intention of delaying further research pending discussion of the legal and ethical issues involved.<sup>58</sup> In September of the same year, an NIH Advisory Committee voted unanimously to recommend that the moratorium be lifted.<sup>59</sup> However, the moratorium remained in place, despite the Advisory Committee's recommendation.<sup>60</sup> President Bush never lifted the ban while he was in office.

Although the Reagan/Bush moratorium was a lightning rod for controversy, it did not halt all fetal tissue research. Because the moratorium only applied to federally funded research, private research could—and did—continue during the moratorium.<sup>61</sup> In addition, an exception to the moratorium that permitted funding for fundamental scientific research allowed the NIH to spend \$45 million on fetal tissue research while the moratorium was in place.<sup>62</sup> Also, the moratorium did not affect research in Europe and Britain—where Gosden's team developed its new procedure.

In January 1993, on his second day in office, President Clinton lifted the moratorium on federally funded fetal tissue research.<sup>63</sup> Congressional hearings on the regulation of fetal tissue research soon followed.<sup>64</sup> In March 1993, Congress passed the National Institutes of Health

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57. 45 C.F.R. § 46.210 (1992) ("Activities involving the dead fetus, macerated fetal material, or cells, tissue, or organs excised from a dead fetus shall be conducted only in accordance with any applicable State or local laws regarding such activities").

58. Gina Kolata, *Federal Agency Bars Implanting of Fetal Tissue*, N.Y. TIMES, Apr. 16, 1988, at A1.

59. National Institutes of Health, Human Fetal Tissue Transplantation Research, Report of the Advisory Committee to the Director 7 (Dec. 14, 1988); Leary, *supra* note 46, at 1.

60. *Fetal Tissue Study Ban Retained*, L.A. TIMES, Oct. 16, 1989, at P2; Emanuel Thorne & Julia Paradise, *Politicians in the Lab . . . Life, Death and Debate: The Ban on Fetal Tissue Research*, WASH. POST, June 23, 1991, at B3.

61. Thorne & Paradise, *supra* note 60, at B3.

62. Sharon Begley et al., *Cures from the Womb*, NEWSWEEK, Feb. 22, 1993, at 48.

63. Susan Brink, *Top 10 Health Stories to Watch*, U.S. NEWS & WORLD REP., May 10, 1993, at 81.

64. Health and the Environment Subcommittee of the House Energy and Commerce Committee, §§ 111-13, Feb. 3, 1993.

Revitalization Act.<sup>65</sup> This Act amended the Public Health Service Act to authorize research on human fetal tissue transplantation without regard to whether the tissue is obtained from a spontaneous or induced abortion.<sup>66</sup>

It is unlikely that the debate concerning federal funding of fetal tissue transplants is over. The current administration has merely sidestepped the issue by lifting the NIH moratorium. States are still free to legislate against the use of fetal tissue, and, as demonstrated by the federal moratorium, NIH funding of fetal tissue research may be only as healthy as the tenure of the current administration.

The influence of politics on federal funding of research addressing human reproduction was underscored quite recently. On December 3, 1994, in the wake of a resounding Democratic electoral defeat,<sup>67</sup> President Clinton ruled out using federal money to support work on human embryos specifically created for research purposes.<sup>68</sup> The President, citing "profound ethical and moral questions" associated with the subject, refused to follow the contrary recommendation of a National Institutes of Health panel.<sup>69</sup> Nevertheless, the President's order did not specifically bar federal support for research carried out on left-over embryos from IVF clinics.<sup>70</sup>

## 2. STATE LAWS REGARDING THE USE OF FETAL TISSUE

State laws regarding fetal tissue donation address two issues: who may give consent for donation, and what may be done with the tissues once they are donated. The Uniform Anatomical Gift Act ("UAGA"), which has been adopted in every state, permits either parent to donate a dead fetus.<sup>71</sup> The circuitous path by which the UAGA is applied to fetal donation demonstrates that the act was not written with fetal tissue transplants in mind. The UAGA defines a "decedent" to include a dead or stillborn fetus.<sup>72</sup> It then specifies a list of relatives who are authorized

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65. Pub. L. No. 103-324, § 112, 107 Stat. 133 (codified at 42 U.S.C. § 289g-2 (Supp. 1994)).

66. Bill Tracking Report, *Research on Human Fetal Tissue Amendments Act of 1993*, Mar. 2, 1993.

67. Warren Leary, *Clinton Rules Out Federal Money for Research on Human Embryos Created for That Purpose*, N.Y. TIMES, Dec. 3, 1994, at 8.

68. *Id.*

69. *Id.*

70. *Id.*

71. UNIF. ANATOMICAL GIFT ACT (1987) §§ 1(2), 3(a)(3), 8A U.L.A. 30, 40 (1993) [hereinafter UAGA]; UNIF. ANATOMICAL GIFT ACT (1968) §§ 1(b), 2(3), 8A U.L.A. 94, 99 (1993). The 1987 revision of the Act has been adopted in 15 states. The 1968 Act is in force in the other 35 states and in the District of Columbia. *Table of Jurisdictions Wherein Act Has Been Adopted*, 8A U.L.A. 19, 63 (1993).

72. UAGA (1987) at § 1(2).

to donate the body of a "decedent."<sup>73</sup> That list contains (1) the "spouse," (2) an "adult son or daughter"—none of which a fetus will have—and finally, (3) "either parent."<sup>74</sup>

State statutes defining the legal uses of an aborted fetus vary widely in form and purpose. The Arkansas statute exemplifies those aimed narrowly at public health and sanitation: it directs that "the fetal remains and all parts thereof" should be "disposed of in a fashion similar to that in which other tissue is disposed."<sup>75</sup> Twenty-five states have enacted statutes specifically authorizing the donation of fetal tissue for therapeutic use.<sup>76</sup> Only a few states have passed statutes prohibiting the use of fetuses.<sup>77</sup>

State statutes that set moral or ethical standards for disposal of fetal tissue have consistently failed constitutional scrutiny. In *City of Akron v. Akron Center for Reproductive Health*,<sup>78</sup> the United States Supreme Court struck down as impermissibly vague a local ordinance that stated, "Any physician who shall perform or induce an abortion upon a pregnant woman shall insure that the remains of the unborn child are disposed of in a humane and sanitary manner."<sup>79</sup> Likewise, a Louisiana statute requiring the "decent burial" of the "remains of the unborn child" was struck down by a federal district court as not narrowly tailored to serve a compelling state interest.<sup>80</sup>

### 3. CONSTITUTIONAL LIMITATIONS ON THE REGULATION OF FETAL TISSUE USE

Some supporters of fetal tissue research take comfort in the constitutional guarantees of *Roe v. Wade*.<sup>81</sup> They believe the *Roe* line of authority implies that the state cannot prevent a woman from conceiving, whatever the purpose of conception.<sup>82</sup> Moreover, under *Roe* the state

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73. *Id.* at § 3(a).

74. *Id.*

75. ARK. STAT. ANN. § 82-436 (Supp. 1985).

76. For a list, see Note, *Fetal Tissue Transplants: A Proposal to Amend the Uniform Anatomical Gift Act*, 1989 U. ILL. L. REV. 1095, 1108 n.132.

77. For a list of the 8 states and the relevant statutes, see *id.* at 1109 n.138.

78. 462 U.S. 416 (1983).

79. *Id.* at 424 n.7 (citing AKRON, OHIO, ORDINANCES § 1870.16 (1978)).

80. See Margaret S. v. Edwards, 488 F. Supp. 181 (E.D. La. 1980). The statute was amended in response to this decision, but fared no better after its amendment. See Nicolas P. Terry, *Alas! Poor Yorick! I Knew Him Ex Utero: The Regulation of Embryo and Fetal Experimentation and Disposal in England and the United States*, 39 VAND. L. REV. 419, 427 (1986).

81. 410 U.S. 113 (1973).

82. *Carey v. Population Services International* protected the "decision whether or not to beget or bear a child." 431 U.S. 678, 685 (1977).

cannot prevent a woman from terminating a pregnancy until fetal viability, when the state's interest in fetal life becomes compelling.<sup>83</sup>

However, the guarantees of *Roe* are legally and technically precarious. *Roe* protects access to abortion based on the fundamental right of privacy.<sup>84</sup> Although the result of *Roe* may be desirable, its definition of the right to choose whether to bear a child as a part of the privacy right subjects it to the vagaries of jurisprudence on non-textual rights.<sup>85</sup> For this reason, and because of the political controversy that surrounds the abortion issue, even supporters of *Roe* remain concerned that it will be overturned.<sup>86</sup>

Moreover, the facts underlying *Roe* are becoming outdated. *Roe* holds that the state's interest in protecting fetal life does not become compelling until the fetus is "viable."<sup>87</sup> This line, drawn in *Roe* and affirmed in *Planned Parenthood v. Casey*,<sup>88</sup> is shifting as technology advances. In *City of Akron*, Justice O'Connor wrote:

Recent studies have demonstrated increasingly earlier fetal viability. It is certainly reasonable to believe that the fetal viability in the first trimester of pregnancy may be possible in the not-too-distant future . . . . The *Roe* framework, then, is clearly on a collision course with itself.<sup>89</sup>

If medical technology advances fetal viability to the date of conception, a strict application of the *Roe* framework could prevent the use of fetal tissue. Even if a woman retained the right to terminate her pregnancy,<sup>90</sup> the state's interest in protecting potential life might allow it to mandate that the fetus be allowed to complete gestation after the abortion. This would, of course, prevent the use of the fetus for transplant purposes.

## B. Ethical Issues

Many of the ethical issues surrounding transplantation of fetal reproductive tissue stem from the technique's reliance on abortion as a

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83. *Roe*, 410 U.S. at 163.

84. *Id.* at 154. See also, Note, *Fetal Tissue Transplants: Restricting Recipient Designation*, 39 HASTINGS L.J. 1079, 1096 (1988).

85. For a discussion of the changeability of abortion law, see Anita L. Allen, *Autonomy's Magic Wand*, 72 B.U. L. Rev. 683 (1992).

86. See Note, *The Supreme Court's Abortion Jurisprudence*, 65 NOTRE DAME L. REV. 731, 738 (1990).

87. *Roe*, 410 U.S. at 163.

88. 112 S. Ct. 2791, 2811-12 (1992) ("Whenever it may occur, the attainment of viability may continue to serve as the critical fact, just as it has done since *Roe* was decided. . . .").

89. *City of Akron*, 462 U.S. at 457-58 (O'Connor, J., dissenting).

90. See *Roe*, 410 U.S. at 163-164 ("If the State is interested in protecting fetal life after viability, it may go so far as to proscribe abortion during that period. . . .").

source of transplant tissue. Two ethical arguments advanced in opposition to fetal ovary transplants involve abortion. One argument is that any technology based on abortion is immoral because abortion itself is inherently wrong. A second is that the technology is immoral because it encourages women to elect abortion.

A complete discussion of the ethical implications of abortion is beyond the scope of this Article. However, there is no way to reconcile the Gosden technology with the absolutist position that abortion is inherently wrong. Those opposing abortion on moral grounds object to transplantation of fetal tissue from elective abortions, but sometimes do not object to the use of tissue from spontaneous abortions.<sup>91</sup> However, scientists usually consider the reproductive tissue from spontaneously aborted fetuses unusable for transplants because there is a high risk of genetic anomaly<sup>92</sup> and the tissue is likely to be necrotic.<sup>93</sup> Thus, the transplantation of fetal reproductive tissue is inextricably tied to elective abortion.

The second objection, that the availability of fetal tissue transplants will encourage abortions, proceeds along two lines. First, a woman may be motivated to abort in order to donate the fetus' reproductive tissue to help solve another's fertility problem.<sup>94</sup> Second, a market in reproductive tissue may develop, leading women to abort for a pecuniary motive.

There is no empirical proof that the encouragement feared by opponents of fetal tissue transplants will take place on a significant scale. During the Reagan-era ban on fetal tissue research, 1.6 million elective abortions were performed in the United States in a single year.<sup>95</sup> Even though abortions have recently been reported at a thirteen-year low, there were still over 1.5 million abortions performed in 1992.<sup>96</sup> Given the supply of fetal tissue already available from elective abortions, there is no reason to expect that the availability of fetal ovary transplants will significantly increase the number of abortions.

Although there have been several news reports of women who expressed the desire to conceive in order to provide critically ill relatives with fetal tissue for transplants,<sup>97</sup> there has never been a documented case

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91. Mark Siegler, *USA: Politics of Fetal Tissue Research*, 339 LANCET 1404 (1992).

92. David Fletcher, *Just How Far Should Baby Doctors Go?*, DAILY TELEGRAPH, Jan. 8, 1994, at 1; Charles Krauthammer, *Hostage to Abortion Politics*, WASH. POST, May 22, 1994, at A25.

93. James Kilpatrick, *Fetal Research Raises Tough Questions*, ST. PETERSBURG TIMES, Sept. 23, 1988, at 21A.

94. Comment, *Conceiving to Abort and Donate Fetal Tissue*, 36 UCLA L. REV. 1167 (1989).

95. Begley, *supra* note 62, at 48.

96. Tamar Lewin, *Abortions in U.S. Hit 13-Year Low, A Study Reports*, N.Y. TIMES, June 16, 1994, at A1.

97. Marlene Cimons, *Fetal Tissue Research Stirs Debate*, L.A. TIMES, Sept. 26, 1988, at Metro p.3 (to help husband who had Parkinson's disease); Christine Gorman, *A Balancing Act of Life and Death*, TIME, Feb. 1, 1988, at 49 (to help father who had Parkinson's disease); Emanuel Thorne, *Trade in Human Tissue Need Regulation*, WALL ST. J., Aug. 19, 1987, at A16 (to help father who needed kidney tissue).

in which the result was achieved.<sup>98</sup> Moreover, several commentators have convincingly argued that this result could be avoided by limiting a woman's right to specify the recipient of a fetal tissue donation.<sup>99</sup>

However, two recent news stories demonstrate that the availability of tissue donation procedures may influence the decision to conceive or deliver a child. The first involved a decision to conceive a child to provide tissue for transplantation. In 1989, Mary and Abe Ayala conceived a child to be a bone marrow donor for their older daughter.<sup>100</sup> Medical ethicists reacted with shock and disgust. In the opinion of Phillip Boyle of the Hastings Center, the decision was "outrageous."<sup>101</sup> Law and medicine professor Alexander Capron commented that the Ayala decision was unethical because a child should not be conceived for any reason other than the child's own welfare.<sup>102</sup>

The second story concerned a woman's decision to carry an anencephalic baby ("Baby Theresa") to term to provide organs for harvest. Anencephaly is gross developmental defect in which most of the brain fails to form.<sup>103</sup> While the remaining brain stem can support the heart and lungs, most anencephalics do not survive to birth, and those that do have a life expectancy of less than one week.<sup>104</sup> Because anencephaly can be accurately diagnosed during pregnancy, many anencephalic fetuses are aborted.<sup>105</sup> However, the mother of one such fetus chose to bring her to term and deliver her by Caesarean section so that her organs would be more useful for donation.<sup>106</sup>

Conception intended solely to provide donor fetal reproductive tissue differs materially from both examples. Both the Ayala case and the "Baby Theresa" case involved potentially life-saving donations without lethal intervention. Bone marrow donation is a potentially life-saving procedure that poses little risk to the donor child.<sup>107</sup> An anencephalic

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98. *Fetal Tissue Transplants: Restricting Recipient Designation*, *supra* note 84, at 1080.

99. Vivian Dempsey, *Clash of Ethics: Use of Fetal Remains in Medical Treatment Provokes a Furor over Ownership of Tissue*, *RECODER*, Sept. 8, 1987, at 19; Rorie Sherman, *The Selling of Body Parts*, *NAT'L. L.J.*, Dec. 7, 1987, at 1; Beverly Burlingame, *Commercialization in Fetal-Tissue Transplantation: Steering Medical Progress to Ethical Cures*, 68 *TEX. L. REV.* 213, 236 (1989).

100. *Baby Is Conceived to Save Daughter*, *N.Y. TIMES*, Feb. 17, 1990, at A1.

101. *Id.*

102. *Id.* While this is an admirable standard, if the only children born were those so ethically conceived, humans might be an endangered species. It should also be noted that this is an objection to the conception itself, not to the decision to abort. It is not likely to be shared by those who oppose abortion—a group that voices no opinion on the decision to conceive.

103. Charles N. Rock, *The Living Dead: Anencephaly and Organ Donation*, 7 *N.Y.L. SCH. J. HUM. RTS.* 243 (1989).

104. *Id.*

105. Charles Krauthammer, *The Case of Baby Theresa*, *WASH. POST*, Apr. 3, 1992, at A21.

106. Julie Koenig, *The Anencephalic Baby Theresa*, 17 *NOVA L. REV.* 445 (1992); Krauthammer, *supra* note 105, at A21.

107. Denise Hamilton, *Woman Is Having Baby to Save Her Ailing Daughter*, *L.A. TIMES*, Feb. 16, 1990, at A1.

fetus is destined to die soon after birth,<sup>108</sup> and its mother's decision to bring the fetus to term merely prolongs its life. By comparison, fetal death is a prerequisite to reproductive tissue donation, and the donated tissue, while enhancing the quality of the recipient's life, does not preserve life.

This scant evidence suggests that the danger that availability of the Gosden technique will encourage women to have abortions is minimal. This is simply because when a woman exercises her freedom of choice, she is unlikely to prefer another woman's fertility to the life of her fetus. It is understandable that a woman may wish to abort in order to save the life of a loved one; yet, there is no evidence that any woman has made such a choice. Given this, it seems unlikely that she would do so just to solve an infertility problem.

Fetal reproductive tissue transplants also raise ethical concerns about the possibility of abortion for pecuniary motives. Opponents worry that even if another woman's fertility is not motive enough, money might be. It is undeniable that healthy reproductive tissue commands a high price; with ovum collection from donors costing thousands of dollars,<sup>109</sup> it is likely infertile couples would be willing to pay comparable amounts for fetal ovaries.

The objection to abortion for pecuniary motive comes in two forms. Many, including those who generally oppose abortion on moral grounds, conclude that it cannot be ethical to terminate fetal life in exchange for money. Another, very different, camp objects to the commodification of body parts and human properties.<sup>110</sup>

It is probably unnecessary to resolve this ethical dilemma, because abortion for profit is already illegal. The National Organ Transplant Act<sup>111</sup> prohibits acquiring, receiving, or otherwise transferring any human organ for valuable consideration.<sup>112</sup> A 1988 amendment to the Act added fetal organs to the definition of human organs.<sup>113</sup> The National Institutes of Health Revitalization Act of 1993 also prohibits the sale of fetal material,<sup>114</sup> as does the 1987 revision of the Uniform Anatomical Gift Act,<sup>115</sup> which has been adopted by fifteen states.<sup>116</sup> Thus, the only lawful commercial opportunities in fetal tissue are for biotechnology companies

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108. Krauthammer, *supra* note 105, at A21.

109. See note 20 and accompanying text.

110. See Margaret Jane Radin, *Market-Inalienability*, 100 HARV. L. REV. 1849 (1987); Stephen J. Schnably, *Property and Pragmatism: A Critique of Radin's Theory of Property and Personhood*, 45 STAN. L. REV. 347 (1993).

111. Pub. L. No. 98-507, 98 Stat. 2339 (1984) (codified at 42 U.S.C. §§ 273-274(e) (1988)).

112. 42 U.S.C. § 274(e).

113. Pub. L. No 100-607, tit. IV, § 407, 102 Stat. 3116 (1988) (codified at 42 U.S.C. § 274e(c)(1) (1988)).

114. Pub. L. No. 103-43, § 112, 107 Stat. 133 (codified at 42 U.S.C. § 289g-2 (Supp. 1994)).

115. UNIF. ANATOMICAL GIFT ACT (1987) § 10, 8A U.L.A. 58 (1993).

116. *Table of Jurisdictions Wherein Act Has Been Adopted*, 8A U.L.A. 19 (1993).

intending to market fetal cell lines.<sup>117</sup> These cell lines are based on cloned tissue, and therefore require a small number of fetuses,<sup>118</sup> which could be easily obtained without payment.

Of course, this protection has limitations: among others, it reaches only as far as the jurisdiction of American law, whereas the technology spans the globe. Organs for transplant command high prices in some countries, and murder for the purpose of harvesting organs has been reported in China, Guatemala, and the Philippines.<sup>119</sup> It is not difficult to imagine that forced abortion for the purpose of harvesting fetal organs could be just as likely, and even harder to detect.

#### IV. PROPERTY RIGHTS AND CONTROL OVER FETAL TISSUE

Central to the issue of the use of fetal reproductive tissue in transplantation is the question of who has the right to consent to the donation. Of course, the fetus itself is incapable of giving consent to donate its organs.<sup>120</sup> The UAGA's implicit reliance on parental consent glosses over potentially serious questions. The adequacy of the parent's consent depends on our social and moral attitudes regarding the nature of the fetus and the parent's control over it.

The next section of this Article is devoted to the issue of consent, and frames the issue as one of property rights. Our legal system often couches the determination of legal status in property terms, and thus we must ask whether the fetus is property, and, if so, to whom it belongs. The answer to each of these questions has specific implications for the adequacy of consent for fetal donation.

##### A. Fundamental Property Theory

The *Restatement of Property* uses the concepts of right, privilege, power, and immunity to define property in terms of the legal relations between people.<sup>121</sup> American property law thus views property as a

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117. See, e.g., Thomas Maugh, *Use of Fetal Tissue Stirs Hot Debate*, L.A. TIMES, Apr. 16, 1988, at 1.

118. *Id.*

119. Maud Beelman, *Body Parts Needed for Transplants; Trade in Human Organs Stirs Global Attention*, L.A. TIMES, July 16, 1989, at 6; Victor Perera, *Behind the Kidnapping of Children for Their Organs*, L.A. TIMES, May 1, 1994, at M1; *Grim Commerce in China*, N.Y. TIMES, Aug. 30, 1994, at A20. It should be noted, however, that reports of "baby theft" in Guatemala are now thought to be a hoax. Perera, *supra*, at M1.

120. Gina Kolata, *Fetal Ovary Transplant is Envisioned*, N.Y. TIMES, Jan. 6, 1994, at A16 (quoting Arthur Caplan).

121. *RESTATEMENT OF PROPERTY*, ch. 1 Introductory Note (1936). The black letter of American property law is founded primarily upon the writings of Wesley Hohfeld. See Wesley N. Hohfeld, *Fundamental Legal Conceptions As Applied in Judicial Reasoning*, 26 YALE L.J. 710 (1917); Wesley N. Hohfeld, *Some Fundamental Legal Conceptions As Applied to*

"bundle of rights" or collection of interests with respect to the thing owned—interests protected by the state.<sup>122</sup> These interests include exclusive possession or enjoyment, control over use, disposal, alienability, and devisability.<sup>123</sup> A property interest may contain any of these interests, but need not contain them all.<sup>124</sup> Fetal tissue is inalienable,<sup>125</sup> and, presumably, even the most ardent biological mother would have no interest in possessing it *ex utero*. Thus, the question of a property interest in it centers upon the right to control or determine the disposition of fetal material.

There are several ways to approach the construction of such an interest. First, the fetus might be considered a part of the gestational mother's body, with a right of control based on the mother's property right in her own body. Second, the fetus might be considered a child, with a right of custody and control associated with parental power. Third, the aborted fetus might be viewed as abandoned property and therefore subject to state ownership through escheat.

## B. Property Rights in One's Own Tissue

The notion of a property interest in one's own body has long been associated with the philosophy of natural rights. This philosophy was articulated by John Locke in his *Second Treatise of Government*. Locke stated that each person has "property in his own person."<sup>126</sup> The construction of this right is more recently expressed as a right of identity; one owns one's body because the body is an extension of one's self.<sup>127</sup>

This issue first arose in a legal context in the seminal case of *Moore v. Regents of University of California*.<sup>128</sup> There, the California Supreme Court discussed the issue of ownership of bodily tissues, although it declined to decide whether one can own one's tissues.<sup>129</sup> The *Moore* court held that a medical patient whose excised spleen cells were used without his

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Judicial Reasoning, 23 YALE L.J. 16 (1913). The American Law Institute adopted Hohfeld's conception of property when it drafted the *Restatement of Property*. RESTATEMENT OF PROPERTY §§ 1-4 (1936).

122. 63A AM. JUR. 2D *Property* §§ 1-3 (1984).

123. LAWRENCE C. BECKER, *PROPERTY RIGHTS* 18 (1980); BLACK'S LAW DICTIONARY 1216 (6th ed. 1990).

124. BECKER, *supra* note 123, at 18.

125. See notes 111-118 and accompanying text.

126. JOHN LOCKE, *TREATISE OF CIVIL GOVERNMENT AND A LETTER CONCERNING TOLERATION* 19 at ¶ 27 (Charles L. Sherman ed., 1965). Locke's formulation, however, is derived from a labor theory of value, which does not ultimately support a property right in one's tissue; one does not acquire one's tissue through one's own labor. Note, *Genetic Information and Property Theory*, 87 NW. U. L. REV. 1037, 1070-72 (1993).

127. ALAN RYAN, *PROPERTY* 61 (1987) (citing Robert Nozick).

128. 271 Cal. Rptr. 146 (1990)..

129. *Id.*

knowledge to create a marketable cell line did not have a cause of action for conversion.<sup>130</sup> Although the court did not "purport to hold that excised cells can never be property for any purpose whatsoever,"<sup>131</sup> it declined to enforce any property interest in Moore's cells, based on the public interest in the reproduction and distribution of cell tissue for research purposes.<sup>132</sup>

The application of *Moore* to situations involving fetal tissue is unclear. The California Court of Appeal decision in *Moore* explicitly declined "to resolve the complex issues relating to the human fetus."<sup>133</sup> The transition from ownership of one's own cells to ownership of a fetus is doctrinally and ethically problematic.

Some commentators have argued that *Roe v. Wade* and its progeny imply that a woman has a property interest in her fetus manifested by the right to dispose of the fetus by abortion.<sup>134</sup> However, this argument strains the scope of the already precarious *Roe* reasoning. While the right to control disposition is one of the important elements of the property right, *Roe* confers the right to terminate a pregnancy rather than the right to dispose of a fetus. Moreover, as set forth above, property rights generally encompass more than the right to dispose. Ultimately it appears that the *Roe* decision "says very little about the legal status and rights of the fetus."<sup>135</sup>

If the fetus is considered part of its mother's body, then any property rights inhering in it depend on a property right in one's own tissue. If we take this view, then we may deduce two corollaries. First, that property right belongs to the mother—and not the father. Second, we have presupposed that the fetus is not a separate being, distinct from its mother.

This was the approach implicit in the recent New York Supreme Court case *Kass v. Kass*.<sup>136</sup> During their marriage, Maureen and Steven Kass underwent IVF and an unsuccessful attempt to implant one of the

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130. *Id.* at 147, 155, 164.

131. *Id.* at 160.

132. *Id.* at 162-63.

133. *Moore v. Regents of Univ. of Calif.*, 249 Cal. Rptr. 494, 506 n.8 (1988).

134. See, e.g., Nancy E. Field, *Evolving Conceptualizations of Property: A Proposal to De-Commercialize the Value of Fetal Tissue*, 99 YALE L.J. 169, 182-83 (1989).

135. Harold P. Green, *The Fetus and the Law*, in GENETICS AND THE LAW 19, 20 (National Symposium on Genetics and the Law ed., 1976).

136. *Kass v. Kass*, No. 19658/93 (N.Y. Sup. Ct., Nassau Cty., filed Jan. 18, 1995). An appeal is expected. *Judge Rules Woman Who Provides Eggs Has Right to Decide Embryos' Fate*, N.Y. TIMES, Jan. 20, 1995, at B5. The facts of *Kass* are similar to those of *Davis v. Davis*, discussed *infra* at notes 154-162 and accompanying text. In its opinion, the *Kass* court rejected the rationale of *Davis* and departed diametrically from its result.

resulting pre-embryos.<sup>137</sup> Following their subsequent divorce, the Kasses disagreed about the disposition of the five remaining pre-embryos. Maureen Kass wished them to be implanted in herself;<sup>138</sup> Steven Kass desired that they be donated for research.<sup>139</sup>

The *Kass* court awarded Maureen Kass the exclusive right to determine the fate of the pre-embryos.<sup>140</sup> The court stated, based on *Roe v. Wade* and its progeny, “[i]t cannot seriously be argued that a husband has a right to procreate or avoid procreation following an in vivo fertilization.”<sup>141</sup> The court reasoned that the result should not change when conception takes place in “the public glare of a petri dish” rather than in the fallopian tube of the mother.<sup>142</sup> In doing so, the court implicitly concluded that a pre-embryo, however created and whatever its actual location, is a part of the mother’s body.

This reasoning misconstrues the U.S. Supreme Court precedent on which it relies. Insofar as U.S. Supreme Court precedent speaks to the rights of the father, it balances his rights against the rights of the mother while presuming the mother is gestating the child.<sup>143</sup> The *Roe* holding does not deny the existence of a father’s right to control the fetus; it merely prevents him from exercising that right where it would interfere with the bodily integrity of the mother.<sup>144</sup> Since the pre-embryos in *Kass* are located in a laboratory vial rather than a human uterus, there is no issue of bodily integrity involved. Because the fertilization occurred outside the mother’s body, the parents’ rights to decide the fate of the pre-embryos are brought into equipoise.

The *Kass* opinion also confuses the issue of property rights. Contrary to the court’s assertion of “the legal dichotomy of person or property,”<sup>145</sup> personhood and property rights are not incompatible.<sup>146</sup> The combination of this error with the court’s statement that “[e]quating

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137. *Kass*, slip op. at 1. A zygote is the cell formed by fertilization of an ovum. The term “pre-embryo” refers to a zygote less than two weeks after conception. *Id.*

138. *Id.*

139. *Id.* at 2.

140. *Id.* at 4.

141. *Id.* at 3.

142. *Id.* at 4.

143. See *Planned Parenthood of Missouri v. Danforth*, 428 U.S. 52, 71 (1976) (“The obvious fact is that when the wife and husband disagree on this [abortion] decision, the view of only one of the two marriage partners can prevail. Inasmuch as it is the woman who physically bears the child and who is the more directly and immediately affected by the pregnancy, as between the two, the balance weighs in her favor”).

144. See John A. Robertson, *In the Beginning: The Legal Status of Early Embryos*, 76 VA. L. REV. 437, 456 n.50 (1990).

145. *Kass*, slip op. at 2.

146. For instance, parental control of children is one of the few express exceptions to the Thirteenth Amendment proscription against involuntary servitude. *Robertson v. Baldwin*, 165 U.S. 275, 282 (1897); *Clyatt v. United States*, 197 U.S. 207, 215-16 (1905).

zygotes with washing machines and jewelry for purposes of a marital distribution borders on the absurd"<sup>147</sup> gives the impression that the decision is inconsistent with a conception of pre-embryos as property. Actually, *Kass* is completely consistent with such a notion. By holding the pre-embryos subject to maternal control, the court has merely designated them maternal property rather than marital property. The mere status of the embryo as property says little about its nature, and everything about who possesses the right of control.<sup>148</sup>

### C. Property Rights in Children

If the fetus is considered a child, then property rights may inhere in its parents. The question of whether children are property of their parents is a difficult one,<sup>149</sup> but in abstract terms, children are often treated like the property of their parents. Parents exercise rights of control, transferability, and even alienability with respect to the custody of children. These rights are generally considered to inhere in both parents equally.<sup>150</sup>

This view is attractive in light of the recent attention to paternal rights.<sup>151</sup> The most lasting effect of the transplantation of fetal ova or ovaries is not its immediate effect on fetal life, but its perpetuation of the genetic legacy of the fetus. This legacy is, unarguably, the provenance of both the mother and father, who contribute equally to the genetic makeup of the fetal donor. Rationally or not, humans feel a strong personal stake in whether and how their genes are passed on.<sup>152</sup> Even sperm and egg donors who have no part in conceiving, gestating, or raising a child sometimes care greatly about their genetic legacy.<sup>153</sup> The model of equal interests on the part of the mother and father is the only one that appropriately recognizes this connection.

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147. *Kass*, slip op. at 2.

148. Robertson, *supra* note 137, at 454-55.

149. Heather J. Meeker, *Issac's Revenge: Children as Property in Western Law* (1994) (unpublished manuscript, on file with author). See also Barbara Bennett Woodhouse, *Who Owns the Child?: Meyer and Pierce and the Child as Property*, 33 WM. & MARY L. REV. 995 (1992); Francis Barry McCarthy, *Parents, Children and the Courts: The Confused Constitutional Status and Meaning of Parental Rights*, 22 GA. L. REV. 975 (1988).

150. McCarthy, *supra* note 149, at 975 n.3.

151. Janet L. Dolgin, *Just a Gene: Judicial Assumptions About Parenthood*, 40 UCLA L. REV. 637 (1993); John Hill, *What Does it Mean to be a Parent? The Claims of Biology As the Basis for Parental Rights*, 66 N.Y.U. L. REV. 353 (1991); Note, *Michael H. v. Gerald D.: The Presumption of Paternity*, 39 CATH. U. L. REV. 831 (1990).

152. See Paul Dean, *Two Men and a Baby; Birth Fathers, Adoption's Once-Silent Partners, Seek Role in Their Children's Lives*, L.A. TIMES, Oct. 29, 1989, at E1; Herman Wong, *Family Search; Adult Adoptees Seek Roots*, L.A. TIMES, May 18, 1990, at N1; JOHN H. BECKSTROM, *SOCIOBIOLOGY AND THE LAW* 11 (1985).

153. *Davis v. Davis*, 842 S.W.2d 588, 603 n.26 (Tenn. 1992).

#### D. Custody

Even if there is to be an equal interest in the mother and father, there are still two possibilities—ownership and custody. *Davis v. Davis*, an unreported 1989 decision of the Tennessee Court of Appeals, addressed the issue of control of human embryonic tissue.<sup>154</sup> While the decision was subsequently reversed by the Tennessee Supreme Court, *Davis* illustrates the doctrinal difference between ownership and custody, and the confusion between them that may result when reproductive material is at issue.

*Davis* was a dispute between husband and wife over the right to implant seven frozen embryos, obtained through IVF of the couple's germ cells.<sup>155</sup> Following the couple's divorce, Mrs. Davis wished the embryos to be implanted into her,<sup>156</sup> and Mr. Davis wished them to remain in cryogenic stasis until the parties could come to an agreement concerning their use.<sup>157</sup>

The *Davis* court explicitly found that "[h]uman embryos are not property."<sup>158</sup> Rather, the court found that the fertilized embryos were "unborn human beings" and thus the children of Mr. and Mrs. Davis.<sup>159</sup> The court based its decision entirely on the *parens patriae* doctrine and the best interests of the child.<sup>160</sup> Because the "practical storage life" of the embryos was two years,<sup>161</sup> the court reasoned that the embryos' best chance for survival was implantation and awarded custody to Mrs. Davis for that purpose.<sup>162</sup>

Here, the result follows necessarily from the premise. Because the parent's interest in the child is one of custody rather than ownership, it must be exercised in the child's best interest. This necessitated a ruling in favor of implantation of the frozen embryos. When applied to fetal reproductive tissue transplants, the custody model would preclude either parent from consenting to abortion and the subsequent donation of fetal tissue. Adoption of the custody model is tantamount to making the ethical judgment that this technology should not be used.

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154. 1989 WL 140495 (Tenn. Cir. 1989), *rev'd*, 842 S.W.2d 588 (Tenn. 1992).

155. *Id.* at \*3.

156. *Id.* at \*11.

157. *Id.* at \*19.

158. *Id.* at \*1.

159. *Id.* at \*1, \*9. It was this holding that the Tennessee Supreme Court found to be error; rather, it found that the human embryos at issue in the case "[could] not be considered persons under Tennessee law." *Davis v. Davis*, 842 S.W.2d 588, 594 (Tenn. 1992).

160. *Davis*, 1989 WL 140495 at \*10-\*11.

161. *Id.* at \*3.

162. *Id.* at \*11.

### E. Quasi-Property Rights in Dead Bodies

Alternatively, we can approach the consent issue by taking the position that fetuses are not living tissue at all. If so, then an entirely different doctrine should apply—far closer to the pure property model.

The law of control and disposal rights in dead bodies is illustrated by *McCoy v. Georgia Baptist Hospital*.<sup>163</sup> In *McCoy*, the court considered whether a couple had a quasi-property interest in the body of their stillborn infant.<sup>164</sup> Although Georgia recognized a quasi-property interest in the dead body of a relative, the court stated that the plaintiffs had no such interest after they signed an agreement authorizing the hospital staff to "dispose of this infant in any manner they deem advisable."<sup>165</sup> Although the *McCoy* court did not clearly find that a stillborn child was a relative within the meaning of Georgia law, a parental quasi-property interest in the body of the stillborn child may be inferred from the decision—if the couple signed their rights away, they must have had the rights at some point. The court, perhaps intentionally, never reached the issue.

Currently, many states recognize the quasi-property right discussed in *McCoy*,<sup>166</sup> either under common law or under statute. The Uniform Anatomical Gift Act provides that the next-of-kin has a right to dispose of a body.<sup>167</sup> It should be noted that the right is quite limited. The next-of-kin does not have the right to sell the body,<sup>168</sup> and must dispose of it in a manner consistent with the public health.<sup>169</sup>

*McCoy* is distinguishable from the situation under discussion here because the stillborn infant in *McCoy* was a deceased but fully formed human being. Our culture plainly recognizes the difference between a fetus and an infant, whether born alive or stillborn. Most notably, society recognizes the difference through ritual: infants, even stillborn infants,

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163. 306 S.E.2d 746, 748 (Ga. Ct. App. 1983).

164. *Id.* at 747-48.

165. *Id.*

166. See, e.g., *Cohen v. Groman Mortuary*, 41 Cal. Rptr. 481, 483-84 (Cal. Ct. App. 1964); *Przybyszewski v. Metropolitan Dade County*, 363 So. 2d 388 (Fla. Dist. Ct. App. 1978); *Speigel v. Evergreen Cemetery Co.*, 186 A. 585, 586 (N.J. 1936); *In re Johnson*, 612 P.2d 1302, 1305 (N.M. 1980); *Nichols v. Central Vt. Ry. Co.*, 109 A. 905, 906 (Vt. 1919); Note, *Toward the Right of Commerciality: Recognizing Property Rights in the Commercial Value of Human Tissue*, 34 UCLA L. REV. 207, 225-27 (1986).

167. UNIF. ANATOMICAL GIFT ACT (1968) § 7(a), 8A U.L.A. 124 (1993). The corresponding section of the 1987 revision of the Act merely states that custody "vests in the person under obligation to dispose of the body." UNIF. ANATOMICAL GIFT ACT (1987) § 8(a), 8A U.L.A. 56 (1993).

168. *Dougherty v. Mercantile-Safe Deposit & Trust Co.*, 387 A.2d 244, 246 (Md. 1978).

169. *Georgia Lions Eye Bank v. Lavant*, 335 S.E.2d 127, 128-29 (Ga. 1985).

are usually buried,<sup>170</sup> but most aborted fetuses are disposed of by incineration.<sup>171</sup> A bioethics professor commented, "[I]t is intuitively wrong to say that a two-week embryo is [much] like us."<sup>172</sup>

If we use this approach, then we have posited that the fetus is not a living being at all. But it should be noted that the fetus does not always experience death as soon as an abortion is performed.<sup>173</sup> Indeed, the advance of medical technology will probably insure that, in the future, no such assumption can be made. Thus, this approach may be based on an incorrect factual assumption—or at least an assumption that will soon be obsolete.

#### F. Escheat: Property Rights in Abandoned Property

A final alternative is to presume an aborted fetus to be abandoned property. In *Moore*, the court viewed such abandonment as implicit: "Moore clearly did not expect to retain possession of his cells following their removal . . ."<sup>174</sup> This approach is implied by the Uniform Anatomical Gift Act, which provides that the next-of-kin may give consent for the use of the deceased's organs "[i]n the absence of any other action or contrary indication by that individual before death . . ."<sup>175</sup> In addition, some states have "presumed consent laws," which allow body parts to be used when there is an appropriate recipient, and there is no known objection, either by the deceased or the next-of-kin, to its use.<sup>176</sup> Louisiana's "Human Embryo" law declares that unwanted embryos must be made available for "adoptive implantation."<sup>177</sup>

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170. The facts of *McCoy* included an inquiry from the hospital whether to release the body of the stillborn infant to the funeral home for burial; this eventually took place. *McCoy*, 306 S.E.2d at 747-49.

171. Terry, *supra* note 80, at 427 n.40. Not surprisingly, one of the practices of anti-abortion activists is to give fetal remains a burial ceremony. But oddly, the same activists have sought to escape culpability for theft of the remains by calling them "abandoned property." See Respondent's Brief at A2, *National Organization for Women v. Scheidler*, 114 S. Ct. 798 (1994) (No. 92-780). This concept of abandonment is wholly inconsistent with the notion of the fetus as a person. See the discussion of escheat, *infra*, at Part IV.F.

172. Laurie Garrett, *Abortion in America*, NEWSDAY, Apr. 24, 1989, at 7.

173. See TENN. CODE ANN. § 39-15-207 (1994) (providing for state custody of a fetus born alive in the course of a voluntary abortion).

174. *Moore v. Regents of Univ. of Cal.*, 271 Cal. Rptr. 146, 155 (1990).

175. UNIF. ANATOMICAL GIFT ACT (1968) § 2(b), 8A U.L.A. (1993). See also, UNIF. ANATOMICAL GIFT ACT (1987) § 3(a), 8A U.L.A. 40 (1993).

176. For a list of the state statutes, see Note, *She's Got Bette Davis['s] Eyes: Assessing the Nonconsensual Removal of Cadaver Organs Under the Takings and Due Process Clauses*, 90 COLUM. L. REV. 528, 537 n.35 (1990) [hereinafter *She's Got Bette Davis['s] Eyes*].

177. LA REV. STAT. ANN. § 130 (West 1991).

Presumed consent is loosely based on the doctrine of escheat.<sup>178</sup> Escheat is the "reversion of property to the state in consequence of a want of any competent individual to inherit."<sup>179</sup> At common law, it was a device by which real property reverted to the crown if the line of succession ended and there was no heir.<sup>180</sup>

Because escheat is a state action potentially adverse to private interest, it is subject to a Takings Clause analysis.<sup>181</sup> Several commentators have raised the objection that presumed consent laws violate the Takings Clause.<sup>182</sup> Three such challenges in state courts have failed because, in each case, the court held that the property interest did not rise to the level of constitutional significance.<sup>183</sup> Because property interests in the body of an adult relative do not merit constitutional protection in the face of a compelling interest in providing medically needed tissue, it is unlikely that a court would find a protectable property interest in a fetus based on its usefulness in restoring fertility.

Such an approach, again, brings us to an entirely new result. If an aborted fetus is escheatable abandoned property, it is the property of the state. If so, then consent for the use of fetal tissue adheres in the state, not the parent or parents. Depending on its assessment of the social value of fetal transplants, the state might prohibit, or, at the other extreme, mandate, donation.

## G. A New Category

As shown above, slight changes in the underlying philosophical or legal model lead to wide variation in the appropriate rule of consent. Because these models, all of which have a secure place in our legal philosophy, exhibit so little internal consistency, it is tempting to simply create a new category for fetal reproductive tissue. When it reviewed *Davis v. Davis* on appeal,<sup>184</sup> the Tennessee Supreme Court made such a finding regarding the status of cryogenically preserved human

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178. See Gregory S. Crespi, *Overcoming the Legal Obstacles to the Creation of Futures Market in Bodily Organs*, 55 OHIO ST. L.J. 1, 53 (1994).

179. BLACK'S LAW DICTIONARY 488 (5th ed. 1979).

180. See Note, *Virginia's Acquisition of Unclaimed and Abandoned Personal Property*, 27 WM. & MARY L. REV. 409, 409 (1986).

181. Standard Oil v. New Jersey, 347 U.S. 428 (1951).

182. *She's Got Bette Davis's Eyes*, *supra* note 176, at 570-74 (concluding that nonconsensual organ donation violates the Takings Clause).

183. *State v. Powell*, 497 So. 2d 1188, 1193 (Fla. 1986), cert. denied, 481 U.S. 1059 (1987); *Georgia Lions Eye Bank v. Lavant*, 335 S.E.2d 127, 128 (Ga. 1985); *Tillman v. Detroit Receiving Hosp.*, 360 N.W.2d 275, 277 (Mich. Ct. App. 1984).

184. 842 S.W.2d 588 (Tenn. 1992).

pre-embryos.<sup>185</sup> "We conclude that pre-embryos are not, strictly speaking, either 'persons' or 'property,' but occupy an interim category that entitles them to special respect because of their potential for human life."<sup>186</sup> Of course, the value of fetal reproductive tissue stems from its reproductive potential rather than its "potential for human life."

Each of the other models has its conceptual difficulties. To call the fetus mere property, escheatable to the state, denies its nature as a living organism. To impose a duty of custody on parents is an unnecessarily inflexible application of a doctrine that was developed in a wholly different context, and denies the important difference between fetuses and children. To call the fetus merely a part of its mother's body denies its potential for transmitting the genetic legacy of both parents. For these reasons, I conclude that the joint property model—giving equal and undivided right of consent to both parents—is the most appropriate for this technology.

In reality, it is quite possible that these rights will be determined not by operation of law, but by private agreement. If fetal tissue becomes a valuable commodity in light of its increased usefulness in transplantation, then hospitals will likely begin to contract with potential patients for the right to use it. Hospitals may sidestep the issue of ownership by contracting with all possible parties—mother, father, and state. This would not only eliminate all those with standing to bring a suit, but cover all those likely to claim the right to give consent.

In practice, fetal tissue for research is usually obtained by contract with the biological mother. The National Disease Research Interchange, a non-profit organization funded by the NIH, has obtained fetal tissue through volunteers who sought "the informed consent of women who had already given their consent for abortions."<sup>187</sup> However, these donations were made before fetal germ cell transplants were announced. The decision to allow the use of genetic material is qualitatively different. The same women who consented to therapeutic use of fetal tissue might have balked at authorizing the use of genetic material rather than brain, bone or skin.

## V. CONCLUSION

The ethical objections to transplantation of fetal tissue have been widely discussed, largely as a result of the federal moratorium on

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185. *Id.* at 596. The court declined to make its holding based on the best interests of the pre-embryos, thus affirming the Court of Appeals' unpublished reversal of the trial court's holding. *Id.* at 604.

186. *Id.* at 597.

187. Burlingame, *supra* note 99, at 222. In addition, there are non-profit tissue banks that provide researchers with various types of fetal tissue. *Id.* at 221-22.

research funding. After the ban was lifted, and even before, fetal tissue research proceeded with promising results. However, the transplantation of fetal germ cells raises ethical issues that go beyond those of transplanting fetal cells for treatment of Parkinson's disease or diabetes.

There are various ethical objections to using fetal genetic tissue. In addition, there are biological concerns, and an important question as to whether great resources should be devoted to such procedures. Infertility, unlike Parkinson's and diabetes, is not a life-threatening condition.

Serious questions remain as to who should have the power to give informed consent for use of fetal reproductive tissue. Existing common law supports a variety of property interests that may include the power to control and dispose of fetal tissue. Unfortunately, subtle differences in doctrine can lead to wide variations in result. This power could inhere in the mother, the father, the state—or no one. But with increased social emphasis on the genetic legacy of the parent, a joint parental interest in the right to give consent may be most appropriate.

Gosden's ovarian transplant procedure, if it becomes feasible for humans, promises to revolutionize treatment of infertility and gonadal dysgenesis. However, the success of the new procedure will depend on the availability of fetal reproductive tissue. This may be a bigger barrier to the technology than science or ethics. While the technology may add one more factor to the already complex choice to terminate a pregnancy, it will probably not have a significant impact on behavior. Women who choose to terminate a pregnancy have declined motherhood. It seems unlikely that they will make a further choice to donate the fetus—a choice resulting in progeny—to solve an infertility problem that is not life-threatening.



# **ARTICLE**

## **NON-PROLIFERATION AND FREE ACCESS TO OUTER SPACE: THE DUAL-USE CONFLICT BETWEEN THE OUTER SPACE TREATY AND THE MISSILE TECHNOLOGY CONTROL REGIME**

**BARRY J. HUREWITZ<sup>†</sup>**

Outer space . . . shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law. . . . There shall be freedom of scientific investigation in outer space . . . and States shall facilitate and encourage international cooperation in such investigation.<sup>1</sup>

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1. Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space Including the Moon and Other Celestial Bodies, Jan. 27, 1967, 18 U.S.T. 2410, T.I.A.S. No. 6347 [hereinafter Outer Space Treaty].

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## I. INTRODUCTION

The Charter of the United Nations guarantees all nations the right to pursue "higher standards of living, full employment, and conditions of economic and social progress and development."<sup>2</sup> In the 1967 Outer Space Treaty, this promise of progress was extended skyward. Article I of the Outer Space Treaty guarantees all nations, regardless of their size or level of development, the right to peacefully explore and use outer space.<sup>3</sup>

More recently, however, fears of mass nuclear annihilation have led to strict controls over the international exchange of the commodities and technologies necessary for a renegade state to launch an attack. To coordinate these controls, the leading industrial states implemented the multilateral Missile Technology Control Regime (MTCR). Often, the technologies used to build sophisticated weaponry are "dual-use"—similar or even identical to the technologies required for civilian space programs. The dual-use nature of these technologies has led created tension between the right of states to use and explore outer space and the need to control weapons proliferation. The MTCR, particularly as applied by the United States, heavily favors non-proliferation goals at the expense of newly emerging civilian space programs.

This Article questions the United States' application of the MTCR to the extent that it impedes the legitimate national space programs of developing nations. First, this Article asserts that the 1967 Outer Space Treaty remains binding international law. The treaty guarantees all states the right to engage in non-aggressive activities in outer space, without

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2. U.N. CHARTER, art. 55.

3. See discussion *infra* at notes 9-25 and accompanying text.

discrimination of any kind and which prohibits the appropriation of space by any state. Second, this Article discusses the MTCR and its implementation in domestic U.S. law. Third, this article demonstrates that the MTCR, as implemented by the United States, handles dual-use space launch technologies in a manner which is inconsistent with the legal obligations set forth in the Outer Space Treaty and which also fails to fully address articulated national security and foreign policy goals of the United States. Finally, it examines recent MTCR developments and proposes modifications of the MTCR to bring that agreement into compliance with the goals of the Outer Space Treaty.

## II. FREE ACCESS PRINCIPLES OF THE 1967 OUTER SPACE TREATY

International law guarantees all nations the right of access to outer space for "peaceful purposes."<sup>4</sup> The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space Including the Moon and Other Celestial Bodies,<sup>5</sup> widely considered the fundamental document of international space law,<sup>6</sup> contains several provisions which are designed to safeguard peaceful space launch programs. Prior to this agreement, outer space was not formally addressed in an international treaty. The Outer Space Treaty extended the scope of general international law into space<sup>7</sup> and set forth additional principles to govern national activities in space, including the right of all nations to explore and use outer space without discrimination.<sup>8</sup> In addition to access, the treaty promotes international cooperation, prohibits national appropriation of space, and protects the right to use military technologies for peaceful purposes in space.

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4. The definition of "peaceful purposes" is controversial and is beyond the scope of this paper. For this analysis, "peaceful purposes" includes civilian as well as "non-aggressive" military uses of space.

5. Outer Space Treaty, *supra* note 1.

6. BARRY E. CARTER & PHILLIP R. TRIMBLE, INTERNATIONAL LAW 1112 (1991) (the Outer Space Treaty is the "basic legal regime governing outer space").

7. Outer Space Treaty, *supra* note 1 art. III. The article provides:

States Parties to the Treaty shall carry on activities in the exploration and use of outer space, including the moon and other celestial bodies, in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international cooperation and understanding.

*Id.*

8. *Id.* art. I.

### A. Evolution of the Right of Free Access to Space

All states are entitled to conduct peaceful activities in outer space. The basic principle of free access to outer space is articulated in Article I of the Outer Space Treaty, which provides in part that "[o]uter space, including the moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law . . ."<sup>9</sup> This principle has a long history which supports a liberal interpretation of its scope.

Early space law was the province of the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS), which was established by the U.N. General Assembly in 1958.<sup>10</sup> In its first report, COPUOS acknowledged the emergence of "a generally accepted rule to the effect that, in principle, outer space is, on conditions of equality, freely available for exploration and use by all in accordance with existing or future international law and agreements."<sup>11</sup> This free access principle was further developed in General Assembly Resolutions 1721<sup>12</sup> and 1962,<sup>13</sup> adopted in 1961 and 1963 respectively.

Unrestricted access to outer space became the unambiguous, articulated policy of the United States during the period leading up to the 1967 Outer Space Treaty. The United States strongly favored the nondiscrimination principle adopted in the earlier resolutions. Speaking before the General Assembly after the adoption of Resolution 1721, U.S. Ambassador Adlai Stevenson acknowledged that "small nations have an overriding interest in seeing to it that access to space and the benefits of

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9. *Id.*

10. G.A. Res. 1348, U.N. GAOR, 13th Sess., Supp. No. 18 at 5, U.N. Doc. A/4090 (1958). See Paul G. Dembling & Daniel M. Arons, *Space Law and the United Nations: The Work of the Legal Subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space*, 32 J. AIR L. & COM. 329 (1966) (chronicling the work of COPUOS preceding the Outer Space Treaty).

11. Report of the Ad Hoc Committee on the Peaceful Uses of Outer Space, UN Doc. A/4141/25 (1959), *excerpted in* 1 MANUAL ON SPACE LAW 3-4 (Nandasiri Jasentuliyana & Roy S.K. Lee, eds. 1981).

12. G.A. Res. 1721, U.N. GAOR, 16th Sess., Supp. No. 17 at 6, U.N. Doc. A/5100 (1962). The resolution offered guiding principles including a recommendation to all states that "[o]uter space and celestial bodies are free for exploration and use by all States in conformity with international law and are not subject to national appropriation." *Id.* See 1 MANUAL ON SPACE LAW, *supra* note 11 at 5 (discussing the developments leading up to Resolution 1721).

13. G.A. Res. 1962, U.N. GAOR, 18th Sess., Supp. No. 15 at 15, U.N. Doc. A/5515 (1963). Entitled "Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space," Resolution 1962 declared that "[o]uter space and celestial bodies are free for exploration and use by all States on a basis of equality and in accordance with international law." *Id.*

space science are not preempted by a few nations . . . ."<sup>14</sup> Four years later, President Lyndon Johnson declared that among the "essential elements" of the nascent Outer Space Treaty were "freedom of scientific investigation,"<sup>15</sup> international cooperation, and a prohibition of claims of sovereignty in space.<sup>16</sup>

The access principles of Resolutions 1962 and 1721 were incorporated into the 1967 Outer Space Treaty without much debate.<sup>17</sup> However, the history of the negotiations that led to the treaty demonstrate that its free access provision was intended to protect the rights of countries that did not yet have space capabilities. For example, during discussions about the treaty's free access clause, the United States initially argued that the phrases "on the basis of equality" and "without discrimination of any kind" were redundant. However, the Americans were persuaded that the inclusion of both phrases would appropriately emphasize the rights of all countries to freely enter and use outer space.<sup>18</sup> Ultimately, then-U.S. Ambassador Arthur J. Goldberg expressly endorsed the apparent redundancy, which, he said, would

make clear the intent of the treaty that outer space and celestial bodies are open not just to the big powers or the first arrivals but shall be available to all, both now and in the future. This principle is a strong safeguard for the interests of those states which have, at the present time, little or no active space program of their own.<sup>19</sup>

Complementing the nondiscrimination principle is a second component of the right of free access to outer space. Article II of the Outer Space Treaty provides that "[o]uter space, including the moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means."<sup>20</sup> By banning all claims of sovereignty in space, the treaty's drafters strengthened the free access provision, for "[i]f an individual nation cannot claim sovereignty to any particular area of outer space . . . , it

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14. Adlai E. Stevenson, U.S. Ambassador to the U.N., Address Before the U.N. (Dec. 4, 1961), in 46 DEP'T. ST. BULL. 180 (1962).

15. Pres. Lyndon B. Johnson (May 7, 1966), in 56 DEP'T ST. BULL. 900 (1966).

16. *Id.* See 1 MANUAL ON SPACE LAW, *supra* note 11, at 6 (discussing President Johnson's aspirations for the Outer Space Treaty).

17. Paul G. Dembling & Daniel M. Arons, *The Evolution of the Outer Space Treaty*, 33 J. AIR L. & COM. 419, 429 (1967).

18. *Id.* at 430.

19. Arthur J. Goldberg, U.S. representative to the U.N. General Assembly, Address Before the U.N. Gen. Assembly (Dec. 17, 1966), in 56 DEP'T ST. BULL. 78, 81 (1967).

20. Outer Space Treaty, *supra* note 1, art. II. This provision restates one of the nine guiding principles governing space activities set forth in Resolution 1962. See Dembling & Arons, *supra* note 10, at 335.

cannot deny access to that area.”<sup>21</sup> Significantly, there was no debate over the meaning of the phrase “any other means,” leaving open the question of what actions may constitute an illegal appropriation of space.<sup>22</sup>

The Outer Space Treaty also contains other provisions that support the rights of all states to freely enter and use outer space for civilian or peaceful military purposes. Article I promotes the notion of international cooperation, stating that “States shall facilitate and encourage international cooperation in [scientific] investigation [of outer space].”<sup>23</sup> Article III provides that activities carried on “in the exploration and use of outer space”<sup>24</sup> must be peaceful and in accordance with international law.<sup>25</sup> Although this provision regulates behavior in space, it does not restrict any state’s *access to space*.

## B. Dual-Use Technologies Are Not Prohibited in Space

Whether a particular technology is permitted in space depends both upon the intended use of the technology and whether it is to be used in the vacuum of outer space or on the surface of a celestial body such as the moon.<sup>26</sup> The military origin or potential military use of a particular technology is not a factor.<sup>27</sup> Thus, under the Outer Space Treaty, all spacefaring states are entitled to utilize military technologies in their peaceful space activities.<sup>28</sup> Weapons of mass destruction are considered aggressive and are therefore prohibited in space and on celestial bodies.<sup>29</sup> However, non-aggressive military uses of outer space (as opposed to celestial bodies) are *not* prohibited,<sup>30</sup> and military equipment and personnel may be used for peaceful purposes even on the moon and other celestial bodies.<sup>31</sup>

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21. Dembling & Arons, *supra* note 17, at 431. See Goldberg statement, *supra* note 19, at 81 (the prohibition of appropriation of outer space is one of the key provisions emphasizing Article I’s protection of the interests of non-space powers).

22. See *infra* notes 142-44 and accompanying text.

23. Outer Space Treaty, *supra* note 1, art. I.

24. *Id.* art. III.

25. *Id.*

26. *Id.* art IV. See Dembling & Arons, *supra* note 17, at 432-35.

27. Outer Space Treaty, *supra* note 1, art IV. See Dembling & Arons, *supra* note 17, at 432-35.

28. Outer Space Treaty, *supra* note 1, art IV. See Dembling & Arons, *supra* note 17, at 432-35.

29. Outer Space Treaty, *supra* note 1, art. IV, para. 1.

30. *Id.* art. IV, para. 2. Although the Outer Space Treaty failed to delineate precisely which “peaceful purposes” were permissible, “one might conclude [from the Outer Space Treaty] that any military use of outer space must be restricted to nonaggressive purposes . . . .” Dembling & Arons, *supra* note 17, at 434.

31. Outer Space Treaty, *supra* note 1, art IV, para. 2 (“The use of any equipment or facility necessary for peaceful exploration of the moon and other celestial bodies shall . . . not be prohibited.”). See *Hearings Before the Senate Comm. on Foreign Relations*,

The question of whether to permit military equipment and personnel in space and on celestial bodies sparked a lively debate at the Outer Space Treaty conference. Several delegations, including that of the Soviet Union, initially opposed even the peaceful use of military assets on celestial bodies.<sup>32</sup> The United States, however, maintained that "the use of military personnel and equipment for scientific research or any other peaceful purpose should not be prohibited"<sup>33</sup> because military resources "played an indispensable role [in space activity] and would continue to be an essential part of future space programmes."<sup>34</sup> The British delegate agreed, arguing that equipment should be judged only by its actual end-use, because "[m]ilitary needs frequently [lead] to important technological advances" and "[t]he fact that a piece of equipment owed its origin to military development should not preclude its use for peaceful purposes."<sup>35</sup> Ultimately, the Anglo-American view prevailed. The final treaty embodied the understanding that the actual end-use of a piece of equipment used in space is more important than its military origin or potential military capabilities.<sup>36</sup> Thus, the practical effect of Article IV is that under the Outer Space Treaty, "dual-use" equipment with both

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90th Cong., 1st Sess. 81 (1967) [hereinafter Outer Space Treaty Hearings] (testimony of Cyrus Vance, Dep. Sec. of Defense) ("The treaty does not mean that military personnel or equipment will be excluded from space. Only weapons of mass destruction are barred from space."); Dembling & Arons, *supra* note 17, at 433-34.

32. See U.N. GAOR, COPUOS, Legal Subcomm., 5th Sess., 70th mtg. at 3, U.N. Doc. A/AC.105/C.2/SR.70 (1966) (statement by the Soviet delegate), reprinted in 3 MANUAL ON SPACE LAW, *supra* note 8, at 62 (The USSR "could not agree to the use of military equipment on celestial bodies even on the pretext of carrying out scientific research or other peaceful undertakings, for that might result in activities which would run directly counter to the principle of the use of celestial bodies exclusively for peaceful purposes."). See also Dembling & Arons, *supra* note 17, at 434 (discussing Soviet-led opposition to permitting use of military equipment on celestial bodies).

33. U.N. GAOR, COPUOS, Legal Subcomm., 5th Sess., 62nd mtg. at 6, U.N. Doc. A/AC.105/C.2/SR.62 (1966) (statement by U.S. Amb. Goldberg), reprinted in 3 MANUAL ON SPACE LAW, *supra* note 11, at 59.

34. *Id.* See Dembling & Arons, *supra* note 17, at 435 (the U.S. delegation favored liberal allowance of military assets in space for peaceful purposes).

35. U.N. GAOR, COPUOS, Legal Subcomm., 5th Sess., 71st mtg., U.N. Doc. A/AC.105/C.2/SR.71 (1966) (statement by the British delegate), reprinted in 3 MANUAL ON SPACE LAW, *supra* note 11, at 63. See Dembling & Arons, *supra* note 17, at 435 (the British delegation argued in favor of allowing dual-use equipment on celestial bodies). This strong defense of dual-use space technologies has been ignored by the U.S. in its implementation of the space technology export controls. See *infra*, notes 144-45 and accompanying text.

36. See Dembling & Arons, *supra* note 17, at 435 (Article IV emphasizes "the purpose for which a piece of military equipment is to be used on a celestial body").

military and non-military applications may be deployed for peaceful purposes anywhere in space.<sup>37</sup>

### C. The Free Access Principle As International Law

Although treaties are generally said to bind their signatories as a matter of international law,<sup>38</sup> it is sometimes unclear whether a particular treaty provision states a legally binding obligation or merely a hortatory policy pronouncement. The free access principles articulated in the Outer Space Treaty, however, constitute legally binding, self-executing international law under both American and international textual analyses, or alternatively, as customary international law.<sup>39</sup>

In matters of treaty interpretation, the United States Congress, courts, and agencies "are generally more willing than [courts] of other states to look outside the instrument to determine its meaning."<sup>40</sup> There is no indication in the legislative history of the ratification of the Outer Space Treaty that the free access provision was ever considered hortatory. During its hearings on the matter, the U.S. Senate questioned whether a portion of Article I created a binding obligation on the part of the United States. Its concerns focused on the first paragraph of Article I, which provides that the exploration and use of space shall "be carried out for the benefit and in the interests of all countries"<sup>41</sup> and shared among all nations as the "province of all mankind."<sup>42</sup> Specifically, Sen. Albert Gore, Sr., feared that these clauses would obligate the United States to make its communications satellites available to all nations.<sup>43</sup> Ambassador

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37. An opposing view was represented by the Japanese delegate, who argued that "the provision to the effect that celestial bodies should be used exclusively for peaceful purposes . . . should be extended to include outer space as a whole." U.N. GAOR, COPUOS, Legal Subcomm., 5th Sess., 71st mtg., U.N. Doc. A/AC.105/C.2/SR.71 (1966) (statement by the Japanese delegate), reprinted in 3 MANUAL ON SPACE LAW, *supra* note 11, at 70.

38. The fundamental international legal doctrine of *pacta sunt servanda* establishes that "[e]very treaty in force is binding upon the parties to it and must be performed by them in good faith." Vienna Convention on the Law of Treaties, May 23, 1969, entered into force Jan. 27, 1980, U.N. Doc. A/CONF.39/27 §26. The Vienna Convention, however, is not controlling with respect to the Outer Space Treaty both because the Outer Space Treaty entered into force before the Vienna Convention took effect and also because the United States has not ratified the Vienna Convention.

39. See Dembling & Arons, *supra* note 17, at 456 ("[P]arties [to the Outer Space Treaty] are now contractually obligated to carry out their activities in outer space . . . in accordance with accepted norms and goals validated in a legal form significantly more binding upon the parties than the United Nations resolutions and utterances of individual nations that preceded the Treaty.").

40. RESTATEMENT (THIRD) OF FOREIGN RELATIONS LAW OF THE UNITED STATES, § 325 cmt. g (1987). See CARTER & TRIMBLE, *supra* note 6, at 103-06.

41. Outer Space Treaty, *supra* note 1, art. I, para. 1.

42. *Id.*

43. Outer Space Treaty Hearings, *supra* note 31, at 12 (remarks Senator Gore).

Goldberg responded that "Article I, paragraph 1 of the space Treaty does not . . . create legal obligations with respect to the terms of international cooperation on any existing or future space projects."<sup>44</sup> The discussion, however, was limited to the paragraph containing the clauses about using space "for the benefit of mankind," and did not touch on the notion of open, nondiscriminatory access to space.<sup>45</sup>

The free access provisions have been even more broadly interpreted by other members of COPUOS in the years since the Outer Space Treaty. Some COPUOS delegations have gone so far as to propose a formal Committee declaration that spacefaring states are affirmatively obligated by Article I to promote "the development by all States of *indigenous capability* in space science and technology and their applications."<sup>46</sup> To this end, the proposal calls for space powers to "promote and facilitate the exchange of expertise and technology" as well as "material and equipment . . . within just and equitable parameters of price and payment."<sup>47</sup>

Finally, the free access principles articulated in the Outer Space Treaty constitute binding international law independent of the Outer Space Treaty. Commentators have noted that, based on the behavior of states in the international community, there is ground for the assumption that "all the members of the international community are bound by the fundamental principles and rules contained in [the Outer Space Treaty] because these principles and rules have acquired the status of general

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44. Outer Space Treaty Hearings, *supra* note 31, at 53 (testimony of Arthur J. Goldberg).

45. See Nandasiri Jasentuliyana, *Article I of the Outer Space Treaty Revisited*, 17 J. SPACE L. 129, 140 (1989) ("Article I, paragraph 1 is formulated rather vaguely and could give the impression that it was meant to lay down only a general principle with no legally binding force.").

46. *Report of the Legal Subcommittee*, U.N. Doc. A/AC.105/544 Apr. 15, 1993, at 34 (emphasis added).

47. *Id.* See Arthur L. Levine, *Commercialization of Space: Implications for U.S. Relations with Developing Countries*, in *INTERNATIONAL SPACE POLICY: LEGAL, ECONOMIC, AND STRATEGIC OPTIONS FOR THE TWENTIETH CENTURY AND BEYOND* 119, 133 (Daniel S. Papp & John R. McIntyre eds., 1987) (advocating active promotion of indigenous "capacity for space research and management").

Activist proposals such as this, which stand little chance of acceptance as international law by the leading space powers, may contribute to the diminished effectiveness of COPUOS, which is no longer "the most important single source of international law relating to space activities." GLENN H. REYNOLDS & ROBERT P. MERGES, *OUTER SPACE: PROBLEMS OF LAW AND POLICY* 47 (1989).

customary [international] law."<sup>48</sup> Customary international law applies to all states, including those not parties to the Outer Space Treaty.<sup>49</sup>

For a principle or practice to become recognized as customary international law, three basic conditions must be met. First, the practice must be widespread.<sup>50</sup> Second, it must arise from a sense of legal obligation.<sup>51</sup> Finally, it must be long-standing in practice,<sup>52</sup> as determined by an appropriate international authority.<sup>53</sup> The first requirement—widespread adherence to an international norm—may be satisfied by states' explicit acceptance of the rule or by states' acquiescence to it.<sup>54</sup> The right of free and equal access to space is widely recognized under this standard, since most of the world's nations explicitly accepted the norm by voting for Resolutions 1721 and 1962 and by signing the Outer Space Treaty.<sup>55</sup>

With regard to the second requirement, the free access principles set forth in the Outer Space Treaty were generally considered to be legally binding obligations even before the treaty was drafted. Subsequent statements by signatories indicate that the treaty is commonly viewed, in

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48. Vladlen S. Vereshchetin & Gennady M. Danilenko, *Custom as a Source of International Law of Outer Space*, 13 J. SPACE L. 22, 32 (1985) ("It follows that, independent of the formal participation in the 1967 Outer Space Treaty, all states should observe the obligations arising from its provisions because these provisions are binding as rules of customary law.").

49. *Id.* See generally CARTER & TRIMBLE, *supra* note 6 at 109-22.

50. See Colleen Driscoll Sullivan, *The Prevention of an Arms Race in Outer Space: An Emerging Principle of International Law*, 4 TEMPLE INT'L & COMP. LJ. 211, 227 (1990) (citing M. HUDSON, THE PERMANENT COURT OF INTERNATIONAL JUSTICE 526 (1934)).

51. *Id.*

52. See CARTER & TRIMBLE, *supra* note 6, at 109-114 (discussing the elements of customary international law).

53. See Sullivan, *supra* note 50, at 227.

54. *Id.* at 229 (citing Louis Sohn, *Generally Accepted International Rules*, 6 WASH. L. REV. 1073, 1074 (1986)). U.N. General Assembly Resolutions do not create customary international law, but may be considered evidence of widespread explicit acceptance of an international legal principle. See CARTER & TRIMBLE, *supra* note 6, at 114-21 (discussing the legal force of U.N. resolutions).

55. See, e.g., Vereshchetin & Danilenko, *supra* note 48, at 33 (quoting R.S. Jakhu, *Developing Countries and the Fundamental Principles of International Space Law*, in NEW DIRECTIONS IN INTERNATIONAL LAW 362 (1982)) ("[T]he fundamental principles of international space law, confirmed and declared by the Outer Space Treaty, have been formulated and recognized and accepted by express consent or acquiescence by virtually all countries, developed as well as developing."). Assertions by non-signatories that the Outer Space Treaty does not represent binding customary international law have been consistently rejected. See *id.* at 32 (arguments by "[s]ome of the equatorial states which are not parties to the 1967 Outer Space Treaty . . . that they are not bound by the principles embodied in the treaty" have been rejected by "the overwhelming majority of states. . . .").

large part, as a codification of principles which had already evolved into binding customary international law.<sup>56</sup>

Some commentators have questioned the continued vitality of the third traditional requirement—that a rule be “long-standing” before rising to the level of customary international law.<sup>57</sup> Given the rapid and open development of national activities in space, “the development of customary legal principles has become an accelerated process rather than a gradual evolution.”<sup>58</sup> Consequently, “[t]he passage of only a short period of time after the beginning of the exploration and use of outer space did not prevent the customary norms of the international law of outer space from coming into existence.”<sup>59</sup>

Thus, the fundamental principles set forth in the Outer Space Treaty, including freedom of use and exploration, prohibition of national appropriation, and non-prohibition of military equipment, bind *all nations* as customary international law, notwithstanding any one state’s interpretation of the terms of the treaty.<sup>60</sup> These concepts had crystallized into customary international law even before the drafting of the 1967 treaty.<sup>61</sup>

To summarize, the 1967 Outer Space Treaty articulated pre-existing norms of customary international law, including the right of all states to enter space freely for exploration, use, and scientific investigation, without discrimination or national appropriation, and in accordance with general principles of international law. Moreover, the treaty established that states are free to employ any technology, civilian or military in origin, for peaceful activities in space or on celestial bodies. The United

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56. See Vereshchetin & Danilenko, *supra* note 48, at 32 (citing statements by COPUOS delegates from Czechoslovakia, Italy, and Japan which demonstrate their understanding that the basic principles of the Outer Space Treaty were intended to codify existing binding international law).

57. See Sullivan, *supra* note 50, at 229; Vereshchetin & Danilenko, *supra* note 48, at 25.

58. Sullivan, *supra* note 53, at 229.

59. Vereshchetin & Danilenko, *supra* note 48, at 25. Vereshchetin and Danilenko assert that “international law does not require the existence of practice from ‘times immemorial’ for the creation of its customary rules.” *Id.* at 26. In support of this view, they cite the International Court of Justice, which has stated that “the passage of only a short period of time is not necessarily, or of itself, a bar to the formation of a new rule of customary international law.” *Id.* (quoting 1969 I.C.J. REPORTS 43).

60. See Report of the 58th Conference of the International Law Association 2 (Manila 1978) (“the freedom of outer space for exploration and use is a principle of general international law and thus a principle valid independently of any treaty”); Vereshchetin & Danilenko, *supra* note 48, at 33 (“the doctrine of international law is unanimous on the question of the universally binding character of the fundamental principles laid down by the 1967 Outer Space Treaty”).

61. See Vereshchetin & Danilenko, *supra* note 48, at 31 (“It is generally recognized that treaty and custom interrelate on the following two main levels. . . . A treaty may incorporate and confirm the existing customary law” or may “contain new rules which regulate new problems or change the existing norms”).

States fully supported all of these principles and is bound by them either as a treaty signatory or under customary international law.

### III. THE DUAL-USE PROBLEM OF NON-PROLIFERATION, SPACE EXPLORATION AND EXPORT CONTROLS

At first glance, attempts by some nations to stem the proliferation of nuclear weapons may appear unrelated to the rights of other countries to develop civilian space programs. In fact, however, the nuclear powers' non-proliferation goals collide head-on with the rights of emerging countries to obtain space technologies as a result of trade restrictions intended to prevent the international transfer of certain militarily significant equipment and technologies. Export control regulations either prohibit or impose restrictive export licensing requirements on international transfers of certain commodities and technical data in order to promote foreign policy, national security, or economic objectives. However, due to the "dual-use" nature of many technologies, export controls aimed at military systems may also restrict the flow of civilian space technologies.

#### A. Summary of U.S. Technology Export Control Laws

The present state of U.S. technology export controls results from both national security and foreign policy concerns. The national security concerns arose from the technology-driven arms race that occurred during the Cold War.<sup>62</sup> Foreign policy considerations generated the non-proliferation movement which sought to contain the scope of the arms race by ensuring that it remained a largely bipolar affair.<sup>63</sup> Both policy objectives have been addressed by restricting the international availability of numerous technologies with potential military applications.

U.S. export control law is divided into two major branches. First, exports of purely military articles and services are controlled by the Arms Export Control Act (AECA).<sup>64</sup> The AECA is administered by the State

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62. The arms race simultaneously generated "increased [U.S.] Government concern over the risk that exported high-technology equipment may fall into Communist, particularly Soviet, hands where it might be used for military purposes." OFFICE OF TECHNOLOGY ASSESSMENT, U.S. CONGRESS, PUB. NO. OTA-ISC-239, INTERNATIONAL COOPERATION AND COMPETITION IN CIVILIAN SPACE ACTIVITIES 192 (1985) [hereinafter OTA Report].

63. The Treaty on the Non-Proliferation of Nuclear Weapons, July 1, 1968, 21 U.S.T. 483, T.I.A.S. No. 6839, 729 U.N.T.S. 161, was intended to deny developing states the technological capabilities necessary to develop and deploy nuclear weapons. See *infra* note 72.

64. 22 U.S.C. §§ 2751-2796 (1993). See generally Arthur M. Dula, *Export Controls Affecting Space Operations*, 51 J. AIR L. & COM. 927, 944-48 (1986); Dan Haendel & Amy L.

Department's Office of Defense Trade Controls (ODTC),<sup>65</sup> which promulgates International Traffic in Arms Regulations (ITARs).<sup>66</sup> The ITARs list specific military articles and services for which potential exporters must obtain export licenses.<sup>67</sup>

The Export Administration Act of 1979 (EAA) established the second major branch of U.S. export controls.<sup>68</sup> The EAA is administered by the Commerce Department's Bureau of Export Administration (BXA), which is responsible for regulating the flow of a vast category of technologies not covered by the ITARs. The BXA promulgates Export Administration Regulations (EARs),<sup>69</sup> which reflect decisions to restrict particular technologies that may be used for undesirable purposes, such as contributing to the proliferation of nuclear or other weapons of mass destruction.<sup>70</sup>

## B. Dual-Use Technology Export Controls

The EARs contain the Commerce Control List<sup>71</sup> which sets forth certain technologies which, while not inherently military in nature, are deemed to have potentially undesirable applications for either national security or foreign policy reasons.<sup>72</sup> These so-called "dual-use" technologies, which have both civilian and military applications, potentially include "[m]ost commercial technology,"<sup>73</sup> including civilian space launch vehicles and components.

In the national security area, the EAA authorizes dual-use export controls where necessary "to restrict the export of goods and technology which would make a significant contribution to the military potential of any . . . countries which would prove detrimental to the national security

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Rothstein, *The Shifting Focus of Dual Use Export Controls: An Overview of Recent Developments and a Forecast for the Future*, 25 INT'L LAW. 267, 268 (1991) (summarizing the operation of AECA).

65. 22 C.F.R. § 120.12 (1993). Formerly Office of Munitions Control. 58 Fed. Reg. 39,280 (1993).

66. 22 C.F.R. §§ 120-30 (1993). The ITARs were extensively revised in 1993. 58 Fed. Reg. 39,280-326 (1993).

67. See 22 C.F.R. § 121 (1993) ("The United States Munitions List") (setting forth defense articles covered by AECA, including firearms, military vehicles, munitions, and components); 22 U.S.C. § 2278(b) (1993); 22 C.F.R. § 120.20 (1993) (the export licensing requirement).

68. 50 U.S.C. app. §§ 2401-19 (1993). See generally Dula, *supra* note 64, at 938-44 and Haendel & Rothstein, *supra* note 64, at 268-73 (discussing the operation of the EAA).

69. 15 C.F.R. §§ 768-99 (1993).

70. Haendel & Rothstein, *supra* note 64, at 268-69.

71. See 50 U.S.C. app. § 2404(c) (Supp. 1993) (mandating the implementation of a list of technologies controlled by the EAA).

72. Haendel & Rothstein, *supra* note 64, at 268-69.

73. *Id.* at 268.

of the United States.<sup>74</sup> Historically, these controls have been directed at Eastern Bloc nations.<sup>75</sup> Until recently, the content and scope of the Commerce Control List has been determined in cooperation with the Coordinating Committee for Multilateral Export Controls (COCOM), an organization of Western nations created to restrict the flow of Western technologies to communist countries by harmonizing national security-based export control policies.<sup>76</sup>

The EAA also authorizes BXA to impose export controls which "further significantly the foreign policy of the United States."<sup>77</sup> Export controls to promote policy objectives such as non-proliferation are authorized by this section.<sup>78</sup> Just as the Western industrial powers facilitated large-scale international coordination of national security-based export controls through COCOM, they have similarly tried to harmonize their diverse restrictions on the international transfer of missile technologies. The Missile Technology Control Regime is the result.

#### IV. THE MISSILE TECHNOLOGY CONTROL REGIME

In 1987, the governments of the leading industrial nations adopted the Missile Technology Control Regime (MTCR)<sup>79</sup> in order to coordinate their export controls aimed at controlling nuclear proliferation.<sup>80</sup> The then-existing non-proliferation system, largely based on the 1968 Nuclear Non-Proliferation Treaty,<sup>81</sup> was intended to keep strategic nuclear

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74. 50 U.S.C. app. § 2402(2)(A) (Supp. 1993).

75. Haendel & Rothstein, *supra* note 64, at 269.

76. *Id.* at 269-70. The end of the Cold War brought massive changes to COCOM, which ultimately disbanded in April 1994, after liberalizing restrictions on exports to the newly democratic states of Eastern Europe. See U.S., *Allies Agree to Dismantle COCOM by April 1, 1994, and Set Up New Regime*, 10 INT'L TRADE REP. 1960, Nov. 24, 1993. However, the demise of COCOM does not mean the end of national security export controls. See *infra* notes 170-73 and accompanying text (COCOM to be replaced by a new, broader export control system).

77. 50 U.S.C. app. § 2402(2)(B) (Supp. 1993).

78. Haendel & Rothstein, *supra* note 64, at 272-73.

79. Canada-France-Federal Republic of Germany-Italy-Japan-United Kingdom-United States: Agreement on Guidelines for the Transfer of Equipment and Technology Related to Missiles [hereinafter MTCR Guidelines and MTCR Equipment and Technology Annex], *exchange of letters announced Apr. 16, 1987*, 26 I.L.M. 599 (1987).

80. MTCR Guidelines, *supra* note 79, at 600. But see Martha Fitzpatrick, Note, *Arms Control: Export Controls on Missile Technology*, 29 HARV. INT'L L.J. 142, 145-46 (1988) ("As a system of voluntary supplier restraint, the [MTCR] has been likened to [COCOM].") However, Fitzpatrick explains, the two regimes exhibit differences in structure and operation that call into question the long-term effectiveness of the MTCR.).

81. Under the Treaty on the Non-Proliferation of Nuclear Weapons, *supra* note 63, the nuclear powers agreed not to assist or encourage non-nuclear states in obtaining nuclear weapons, and non-nuclear states agreed not to seek such weapons. Fitzpatrick, *supra* note 80, at 144 n.31.

materials out of the hands of developing countries. Responding to the apparent inadequacy of the earlier non-proliferation regime, the seven initial MTCR adherents<sup>82</sup> informally agreed in an exchange of letters to "address the problem of global nuclear proliferation through export controls on weapons *delivery systems*, rather than on nuclear materials and technology,"<sup>83</sup> in order to "[control] transfers that could make a contribution to nuclear weapons delivery systems other than manned aircraft."<sup>84</sup> Thus, the MTCR added a second level of restrictions to supplement already existing controls on the transfer of nuclear materials and technologies. The new two-tiered approach to non-proliferation was based on the premise that even renegade nuclear-armed countries cannot threaten world peace if they lack the technical means to strike at their adversaries.<sup>85</sup>

### A. MTCR Provisions

The MTCR places strict controls on exports of space launch vehicles, components, and the production technologies used in civilian space programs. Under the MTCR, all "missile-related" technologies are divided into two categories, that distinguish the most strictly controlled articles from less restricted ones.

Category I, the most restricted group, includes "[c]omplete rocket systems (including ballistic missile systems, *space launch vehicles*, and sounding rockets) and unmanned air vehicle systems . . . [of a certain range]<sup>86</sup> as well as the specially designed production facilities for these

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82. The original members of the MTCR were the "G-7" countries, including Canada, Federal Republic of Germany, France, Italy, Japan, United Kingdom, and United States. MTCR Guidelines, *supra* note 79, at 599.

83. Fitzpatrick, *supra* note 80, at 144, citing 23 WEEKLY COMP. PRES. DOC. 395 (Apr. 20, 1987) (emphasis added). The shift from controlling nuclear weapons themselves to payload delivery systems marked a "new dimension of arms control . . . developed in response to growing concerns that developing states could adapt conventional missiles and launch systems to the delivery of nuclear devices, thereby dramatically increasing the destabilizing effects of their emerging nuclear capabilities." *Id.* Thus, "efforts to control the transfer of weapons delivery systems to fledgling nuclear states provide a significant complement to the existing non-proliferation regime." *Id.*

84. MTCR Guidelines, *supra* note 79, at 600.

85. Aaron Karp, *The Commercialization of Space Technology and the Spread of Ballistic Missiles*, in INTERNATIONAL SPACE POLICY: LEGAL, ECONOMIC, AND STRATEGIC OPTIONS FOR THE TWENTIETH CENTURY AND BEYOND 179, 189 (Daniel S. Papp & John R. McIntyre eds., 1987).

86. The MTCR Guidelines were later broadened in scope to include all nuclear, chemical, and biological weapons delivery systems of any range. *Munich Economic Summit Political Declaration: Shaping the New Partnership*, 28 WEEKLY COMP. PRES. DOC. 1213, 1219 (July 13, 1992). U.S. missile technology policy was revised in accordance with the new consensus among MTCR members. *Controlling Missile Technology: Guidelines Extended to Cover Biological and Chemical Weapons* (statement by Richard Boucher, U.S. Dep't of State spokesman, Jan. 7, 1993), reprinted in 3 FOREIGN POL'Y BULL. 97 (Jan.-Apr. 1993).

systems.<sup>87</sup> Category I also includes "complete subsystems usable in"<sup>88</sup> such rocket systems.<sup>89</sup>

Category I technology transfers, and thus all proposed transfers of space launch vehicles, components, and production facilities, are strictly controlled under the MTCR. The regime imposes a "strong presumption to deny" export applications for the listed Category I items.<sup>90</sup> This presumption may be rebutted only when the recipient state provides binding assurances that "[t]he items will be used only for the purpose stated"<sup>91</sup> and that the item will not be retransferred without permission.<sup>92</sup> The exporting state, in turn, must "assume[] responsibility for taking all steps necessary to ensure that the item is put only to its stated end-use."<sup>93</sup>

Category II comprises an extensive list of dual-use technologies which may have potential uses in MTCR-controlled projects, such as propulsion components, propellants, structural materials, communications equipment, avionics equipment, and certain computers.<sup>94</sup> These transfers are presumptively permitted, provided they do not contribute to a "project of concern."<sup>95</sup> Projects of concern are identified case-by-case by evaluating the risks of nuclear proliferation, the status of the recipient state's missile and space programs, whether the transfer will contribute to the development of a delivery system, the proposed end-use of the item, and any other "relevant multilateral agreements."<sup>96</sup> Transfers which may contribute to projects of concern

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87. MTCR Equipment and Technology Annex, *supra* note 79, at 604 (emphasis added). Category I includes most potential space technology exports from the United States. *Missile Proliferation: The Needs for Controls (Missile Technology Control Regime): Hearings Before the Subcomm. on Arms Control, International Security and Science, and on International Economic Policy and Trade of the House Comm. on Foreign Affairs*, 101st Cong., 1st Sess. 55 (1989) [hereinafter MTCR Hearings] (testimony of James M. LeMunyon, Dep. Ass't Sec. of Commerce for Export Admin.).

88. MTCR Equipment and Technology Annex, *supra* note 79, at 604.

89. *Id.* Category I "complete subsystems" include rocket stages, reentry vehicles, rocket engines, certain guidance systems, thrust vector controls, and certain warhead mechanisms. *Id.* at 604-05.

90. MTCR Guidelines, *supra* note 79, at 600. Transfers of production facilities for Category I systems are generally prohibited. *Id.*

91. *Id.* at 601.

92. *Id.*

93. *Id.* at 600. The MTCR thus places a large burden on the supplier state. "This provision—putting the burden on the supplier and not just on the recipient... has no precedent in the international nonproliferation regime." Richard H. Speier, *The Missile Technology Control Regime*, in *CHEMICAL WEAPONS & MISSILE PROLIFERATION* 115, 120 (Trevor Findlay ed., 1991).

94. MTCR Equipment and Technology Annex, *supra* note 79, at 605-13.

95. Speier, *supra* note 93, at 120.

96. MTCR Guidelines, *supra* note 79, at 600-01. See MTCR Hearings, *supra* note 87, at 32 (testimony of James M. LeMunyon, Dep. Ass't Sec. for Export Admin., U.S. Dep't of Commerce) (considerations for Category II transfers include "whether the item is within

may still be approved if the recipient state provides sufficient assurances of the end-use and end-user.<sup>97</sup>

## B. The Dual-Use Problem of Missile and Space Technologies

Although the MTCR Guidelines "are not designed to impede national space programs or international cooperation in such programs [which] could not contribute to nuclear weapons delivery systems,"<sup>98</sup> nothing in the MTCR Guidelines expressly excludes purely civilian or non-aggressive military space projects from export controls.<sup>99</sup> The MTCR's stringent Category I controls have been strictly applied, particularly by the United States, with respect to space launch vehicle projects. The dual-use nature of space launch technology ensures that virtually all national space launch vehicle programs may be found to contribute to nuclear weapons delivery systems.<sup>100</sup>

As a technical matter, there is no bright line between military "missiles" and civilian "space launch vehicles." In fact, early civilian space projects simply adopted military technologies.<sup>101</sup> The U.S. strongly argued in 1967 that military technologies were essential to all aspects of space activity.<sup>102</sup> More recently, the dual-use nature of space launch technology has generated more cautious commentary:

The only essential differences between [a civilian space launch vehicle] and a ballistic missile are its trajectory and the payload it carries. Suppliers cannot "denature" space-launch technology and be certain that it will be used only for civilian purposes. Once a nation has the ability to place a satellite in orbit it is, at most, only a few

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the technical parameters of the Annex," "whether the country of destination is actually developing its missile capability," "whether the end-user is a project of concern," and whether the transfer would "make a significant contribution to a missile development program.")

97. MTCR Guidelines, *supra* note 79, at 601. See Speier, *supra* note 93, at 120 ("there is a great deal of flexibility in the treatment of Category II exports").

98. MTCR Guidelines, *supra* note 79, at 600.

99. See Speier, *supra* note 93, at 116 ("The regime aims at the control of all devices with the defined capability. It makes no exceptions for so-called peaceful vehicles, alleged to be for military purposes other than weapons delivery, or vehicles sought by nations which do not currently have nuclear weapons programs.").

100. See Dula, *supra* note 64, at 937-38 ("The high technology components of military space systems, such as sensors, computers, and computer programs that operate remote sensing, communication, and navigation satellites constitute the critical military technology of the late 20th century. The components of launch vehicles that transport these spacecraft into orbit are the national munitions of the modern age.").

101. Jack H. McCall, Jr., "*The Inexorable Advance of Technology?*: American and International Efforts to Curb Missile Proliferation," 32 JURIMETRICS J. 387, 398 (1992) ("Historically, the nations that have taken the lead in space exploration have done so by utilizing what were essentially military missiles or military booster rockets to loft the first satellites, space probes, and manned space capsules.").

102. See *supra* notes 33-36 and accompanying text (discussing the early U.S. position that military technologies are essential to all space activities).

years from being able to launch an intermediate range ballistic missile. . . . The differences relate to intentions, not capabilities.<sup>103</sup>

Astronaut John Glenn reportedly told President Kennedy that the difference between his manned rocket and a ballistic missile was nothing more than "[a]ttitude."<sup>104</sup>

The notion that ballistic missile systems are inherently indistinguishable from civilian space launch vehicles is widely held, but not universally accepted. Differences between space launch vehicles and missiles include "trajectory, rocket size, guidance, propulsion, launch facilities and infrastructure, . . . payload,"<sup>105</sup> and the use of heat shields on missiles, which are unnecessary on most unmanned space launch vehicles.<sup>106</sup> Nonetheless, the more cautious view, that the differences between missiles and space launch vehicles are minimal, has prevailed in the formation and application of non-proliferation policy.

### C. The Strict American Interpretation

The potential for diversion of dual-use space technologies has resulted in a strict and cautious U.S. interpretation of the MTCR. Because of the dual-use problem and the perceived difficulties in ascertaining the intentions of potential recipient states, "[t]he U.S. does not export equipment and technology for space launch vehicles to countries with ballistic missile programs."<sup>107</sup> This approach ignores the purported end-use of the transferred technology. The U.S. has attributed its rigid stance, which may impede even purely civilian projects in some states, to findings that "civilian space programs have been used as a conduit for materials and equipment destined for ballistic missiles."<sup>108</sup> Thus, in practice, the U.S. has limited the scope of its international cooperation in space activities by selectively denying some states access to space launch technologies.<sup>109</sup>

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103. Karp, *supra* note 85, at 180. See generally, BRIAN CHOW, EMERGING NATIONAL SPACE LAUNCH PROGRAMS: ECONOMICS AND SAFEGUARDS (Rand Corp. R-4179-USDP, 1993).

104. Speier, *supra* note 93, at 117.

105. Lora Lumpe, *Zero Ballistic Missiles and the Third World*, 14 ARMS CONTROL: CONTEMP. SECURITY POL'Y 208, 216 (1993).

106. *Id.*

107. MTCR Hearings, *supra* note 87, at 143 (testimony of Richard A. Clarke, Ass't Sec. of State for Politico-Military Affairs).

108. U.S. GENERAL ACCOUNTING OFFICE, PUB. NO. GAO/NSIAD-90-176, ARMS CONTROL: U.S. EFFORTS TO CONTROL THE TRANSFER OF NUCLEAR-CAPABLE MISSILE TECHNOLOGY 17 (1990) [hereinafter GAO Report]. See MTCR Hearings, *supra* note 87, at 144 (testimony of Richard A. Clarke, Ass't Sec. of State for Politico-Military Affairs) ("We believe that the risk of diversion from civilian space programs to missile programs is unacceptable.").

109. See MTCR Hearings, *supra* note 87, at 184 (testimony of Norman A. Wulf, Dep. Ass't Dir., Nuclear Weapons Control, U.S. Arms Control and Disarmament Agency) ("Certainly, the U.S. supports space exploration and use, as evidenced by our extensive

In 1990, Congress codified much of the U.S. implementation of the MTCR.<sup>110</sup> The 1990 law articulated the U.S. policies of discouraging transfers of technology which "can deliver weapons of mass destruction,"<sup>111</sup> and strengthening multilateral arrangements such as the MTCR.<sup>112</sup> It also amended both the AECA and EAA to allow sanctions against U.S. or foreign persons or firms which transfer MTCR-related technologies without prior U.S. approval.<sup>113</sup> As a result, the U.S. interpretation of the MTCR may be applied extraterritorially, since foreign firms which refuse to adhere to the U.S. view can be shut out of the lucrative U.S. market.<sup>114</sup>

Congress further clarified its strict interpretation of MTCR-related export controls in the 1994 National Defense Authorization Act.<sup>115</sup> The 1994 Act included a "Sense of Congress" statement that reiterated the Congressional view that "[m]issile technology is indistinguishable from and interchangeable with space launch vehicle technology,"<sup>116</sup> and that all emerging national space programs should be unequivocally opposed.

In the 1994 Act Congress also noted that "[i]t has been United States policy since agreeing to the guidelines of the [MTCR] to treat the sale or transfer of space launch vehicle technology as restrictively as the sale or transfer of missile technology"<sup>117</sup> and that "it has been [U.S.] policy not to

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international cooperation in peaceful space programs, including making launch services available to other countries. Cooperation in the development of space launch technologies, however, is quite another matter.").

110. National Defense Authorization Act for Fiscal Year 1991, 104 Stat. 1485, 1738-50, Pub. L. No. 101-510 §§ 1701-04. This strengthening of MTCR controls was in response to a 1989 State Department report that recommended U.S. aid to emerging space programs. See 139 Cong. Rec. H7114-15 (1993).

111. Pub. L. No. 101-510 § 1701, 104 Stat. 1738-39 (1990).

112. See H.R. CONF. REP. NO. 923, 101st Cong., 1st Sess., reprinted in 1990 U.S.C.C.A.N. 3236-37 (1991 policy statement and amendments EEA and AECA would strengthen MTCR export controls).

113. See 50 U.S.C. app. § 2410b (amending EAA) and 22 U.S.C. §2797a (amending AECA).

114. The 1991 sanction provisions provide that persons or firms transferring MTCR-controlled technologies without U.S. approval are barred for two years from obtaining U.S. government contracts for missiles or missile equipment and are ineligible for U.S. technology transfer licenses for the same period. *Id.*

115. National Defense Authorization Act for Fiscal Year 1994, Pub. L. No. 103-160. The bill was signed by President Clinton on November 30, 1993. 139 Cong. Rec. S17242 (1993).

116. *Id.* § 1614(a)(2) ("Sense of Congress Relating to the Proliferation of Space Launch Vehicle Technologies"). The provision began as a Senate concurrent Resolution introduced by Sens. Bingaman, McCain, and Glenn. See S. CON. RES. 37, reprinted in 139 Cong. Rec. S10935 (1993). See also H.R. REP. NO. 252, 103rd Cong., 1st Sess. 20 (1993) (proposing to amend the House Defense Authorization bill to include the Sense of Congress resolution). The Senate resolution was prompted by Congressional fears that President Clinton would implement sweeping MTCR liberalizations recommended by the State Department in 1989. 139 Cong. Rec. H7114 (1993) and 139 Cong. Rec. S11424 (1993).

117. Pub. L. No. 103-160 § 1614(a)(4).

increase the number of nations acquiring space launch vehicles . . ."<sup>118</sup> In addition, the Act states that "[t]he United States has successfully dissuaded other MTCR adherents, and countries who have agreed to abide by MTCR guidelines, from providing assistance to emerging national space launch vehicle programs in the Third World."<sup>119</sup> However, Congress also acknowledged the need to offset the blunt U.S. refusal to cooperate in emerging space launch vehicle programs: It found that the United States has "successfully dissuaded countries from pursuing space launch vehicle programs by offering to cooperate with them in other areas of space science and technology."<sup>120</sup>

Thus, through its codification of the "strict interpretation"<sup>121</sup> of the MTCR with regard to space launch technologies, Congress has clearly stated its opposition to all emerging national space launch vehicle programs.

## V. MTCR AND THE OUTER SPACE TREATY

While the Outer Space Treaty and the MTCR are not, by their explicit terms, related, the two documents are in fact connected by the practical reality that MTCR-controlled technologies include dual-use space launch vehicles and components. But the debate concerning the future of emerging national civilian space programs cannot be limited to the question of whether space launch technologies are inherently dual-use—most technologies are. Rather, we must further ask whether dual-use potential alone justifies the selective denial of access to technologies needed by countries—including those willing to provide end-use assurances—in order to realize their rights to explore and use space under the 1967 Outer Space Treaty.

The Outer Space Treaty recognized the dual-use nature of space technology. The treaty prohibits weapons of mass destruction from space, but permits the use, for peaceful purposes, of military equipment in space and on celestial bodies.<sup>122</sup> Under the treaty, access to space may not be denied solely on the basis of the dual-use nature of the technologies sought to be used. During the treaty negotiations the U.S. took the position that military technologies are legitimate, if not essential,

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118. 139 Cong. Rec. H7114 (1993) (statement by Rep. Jon Kyl (R-Ariz.)).

119. Pub. L. No. 103-160 §1614. Some lawmakers believe that the U.S. policy should apply to MTCR members and adherents as well as Third World states. See 139 Cong. Rec. S11424 (1993) (statement by Sen. Jeff Bingaman) ("We should not be providing space launch technology even to most adherents of the MTCR.").

120. Pub. L. No. 103-160 §1614.

121. *Id.* §1614(b).

122. Outer Space Treaty, *supra* note 1, art. IV.

components of civilian space activities.<sup>123</sup> The present U.S. interpretation of the MTCR ignores this reality, and it also overlooks the caveat of the MTCR Guidelines, which provide that the MTCR is "not designed to impede national space programs . . .".<sup>124</sup>

In short, the critical question is whether, by lumping together "good" and "bad" space projects (and denying technology transfers to both), the United States has fulfilled its obligations under the 1967 Outer Space Treaty to promote open, non-discriminatory access to space, without regard to the nature of the technologies used, and to facilitate international cooperation to achieve that end.<sup>125</sup>

### A. Relative Status of the MTCR and the Outer Space Treaty

The most important feature of the MTCR's relationship to the Outer Space Treaty is that, unlike the Treaty, the MTCR does not represent international law. Even if MTCR controls are deemed to be justified under the U.N. Charter as necessary international security measures, the MTCR itself is neither a "treaty" nor even an international "agreement."<sup>126</sup> It has instead been described as a "set of identical policies . . . to be implemented in parallel."<sup>127</sup> Thus, as a matter of international law, the MTCR does not supersede either the Outer Space Treaty or the customary international law articulated by the treaty.<sup>128</sup>

The MTCR Guidelines are, however, binding U.S. domestic law. MTCR policies have been incorporated into federal law in the EAA and AECA. U.S. constitutional law dictates that treaties and statutes have equal status as enforceable domestic law.<sup>129</sup> When a U.S. statute conflicts

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123. See *supra* notes 33-37 and accompanying text (discussing long-held U.S. position that military technologies are appropriate and necessary for all aspects of its national space activities).

124. MTCR Guidelines, *supra* note 79 at 600.

125. See *supra* notes 4-37 and accompanying text.

126. Speier, *supra* note 93, at 115. See Pericles Gasparini Alves, United Nations Institute for Disarmament Research, Research Paper No. 15, *Access to Outer Space Technologies: Implications for International Security* 111 (1992) ("the MTCR is not a formal agreement").

127. Speier, *supra* note 93, at 115-16.

128. See *id.* at 120-21 ("The MTCR recognizes that, under international law, a policy cannot supersede a treaty. Therefore, the regime is subject to international treaty obligations. When there is a conflict between the MTCR and such treaty arrangements as NATO or the European Space Agency, the treaty prevails.").

129. *Tag v. Rogers*, 267 F.2d 664, 667 (D.C. Cir. 1959) (citing *The Cherokee Tobacco*, 78 U.S. (11 Wall.) 616, 620-21 (1870)), cert. denied, 362 U.S. 904 (1960). See *CARTER & TRIMBLE*, *supra* note 6, at 148 ("Treaties are made 'law of the land' by Article IV of the Constitution. By virtue of this provision, an Article II treaty therefore has status as U.S. domestic law."). Customary international law, meanwhile, is treated as part of the federal common law. See *The Paquete Habana*, 175 U.S. 677, 700 (1900) ("international law is part of our law, and must be ascertained and administered by the courts of justice of appropriate jurisdiction").

with a treaty, the later-promulgated instrument controls.<sup>130</sup> Under this last-in-time rule, MTCR-related export controls affecting emerging national space launch vehicle programs are valid U.S. law whether or not they violate the earlier Outer Space Treaty. Domestic U.S. law may, therefore, be inconsistent with its international legal commitments. The critical question is whether the MTCR is *necessarily* in conflict with U.S. obligations under the Outer Space Treaty.

### B. The U.S. Implementation of the MTCR Violates the Outer Space Treaty by Denying Free Access to Outer Space

The strict U.S. implementation of the MTCR has led to restrictive, discriminatory access to outer space and a de facto appropriation of outer space for the benefit of a few nations. This result violates the free access principles of the Outer Space Treaty and contradicts the U.S. affirmation in 1967 that "outer space . . . [is] not open just to the big powers or the first arrivals but shall be available to all, both now and in the future."<sup>131</sup>

As implemented by the U.S., the MTCR has severely limited international civilian and non-aggressive military access to outer space. Indeed, the MTCR is arguably "the most stringent barrier to the acquiring of outer space capabilities by emerging outer-space-competent states . . . despite the fact that its basic objectives are not designed to hinder national programmes and international cooperation in this field."<sup>132</sup> It has even been suggested that the MTCR has, over time, "acquired the goal of preventing developing countries from gaining access to space through independent space-launch programmes."<sup>133</sup> The detrimental effect of the MTCR on national space programs is largely a result of the strict U.S. export control laws, considered the most stringent of any MTCR member.<sup>134</sup>

The effectiveness of the MTCR in impeding national space programs is well-documented.<sup>135</sup> Argentina's Condor program, which was to develop both missiles and space launch vehicles, was cancelled in

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130. *Reid v. Covert*, 354 U.S. 1, 18, and n.34 (1957) ("[W]hen a statute which is subsequent in time is inconsistent with a treaty, the statute to the extent of the conflict renders the treaty null.").

131. Arthur J. Goldberg, U.S. representative to the U.N. General Assembly, Address Before the U.N. Gen. Assembly (Dec. 17, 1966), in 56 DEPT ST. BULL. 78, 81 (1967).

132. Alves, *supra* note 126, at 111 (emphasis added).

133. Lumpe, *supra* note 105, at 210.

134. Alves, *supra* note 126, at 112.

135. See generally *id.* at 112-15 (assessing the impact of MTCR-related restrictions on newly emerging national space programs). See also MTCR Hearings, *supra* note 87, at 105 (testimony of W. Seth Carus, fellow, Washington Institute for Near East Policy) ("There is reason to believe that the [MTCR] has worked. In several cases, the MTCR has derailed programs that otherwise might have been brought to completion. It has also restrained some countries from exporting missiles.").

1992 after MTCR members restricted technology transfers for the project.<sup>136</sup> Obstacles placed by the U.S. reportedly caused delays in Brazil's space efforts and prevented it from entering the satellite launching market.<sup>137</sup> The threat of U.S.-imposed MTCR sanctions also scuttled Indian plans to purchase a cryogenic rocket booster from Russia,<sup>138</sup> even though India had provided Russia with the end-use assurances required by the MTCR Guidelines.<sup>139</sup> South Africa and Taiwan both scrapped their space launch vehicle programs entirely in response to MTCR pressure and the specter of U.S.-imposed sanctions.<sup>140</sup>

Thus, by persuading or coercing states to cancel space launch vehicle projects, the MTCR restricts *independent* access to outer space. MTCR proponents argue that since states may still pay to have their payloads launched into outer space by one of the existing spacefaring powers, "access" to space has not been abridged.<sup>141</sup> Such a narrow, interpretation of "access" is irreconcilable with the sweeping language of the Outer Space Treaty, with its emphasis on cooperation and equity, and with U.S. policy statements regarding the treaty.<sup>142</sup>

Even assuming that "access" to space through a launch services cartel is a suitable substitute for an independent space launch capability,

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136. Alves, *supra* note 126 at 113. See also MTCR Hearings, *supra* note 87, at 105 (testimony of W. Seth Carus, fellow, Washington, Institute for Near East Policy) (risk of U.S. sanctions convinced Condor's suppliers to abandon the program in order to keep "more lucrative U.S. defense contracts") and 139 Cong. Rec. S10935 (1993) (listing the cancellation of the Condor II program among "important successes" for MTCR).

137. Alves, *supra* note 126, at 114.

138. Andrew Lawler, *Russians OK Missiles Export Control*, DEFENSE NEWS, Sept. 6, 1993, at 6; 139 Cong. Rec. S10935 (1993) (U.S. and Russia agreed, in July 1993, that Russia would freeze the proposed rocket sale to India. Russia ultimately agreed to adhere to the MTCR Guidelines). See Alves, *supra*, note 123, at 114 (discussing MTCR's impact on India's space program); Lumpe, *supra* note 105, at 210 (same).

139. Lumpe, *supra* note 105, at 210. See MTCR Guidelines, *supra* note 79, at 601 (binding end-use assurances required for Category I transfers).

140. The U.S. ultimately imposed sanctions on South Africa in 1991 for its Armscor program. Alves, *supra* note 126, at 114 n.95. Taiwan voluntarily abandoned its space launch vehicle program in response to MTCR pressures. *Taiwan Scraps Booster Plans*, AVIATION WK. & SPACE TECH. Oct. 22, 1990, at 11. See 139 Cong. Rec. S10935 (1993); 139 Cong. Rec. H7115 (1993).

141. See Speier, *supra* note 93, at 117 (MTCR permits "continued international cooperation in the peaceful uses of space (that is, satellites and the information they handle, as opposed to launch vehicles), manned aircraft, and tactical defense projects"). Brian Chow's RAND Corp. report fueled the hard-line U.S. view by endorsing this notion of a launch services cartel administered by the traditional space powers. Chow urged MTCR members to deny space launch technologies to other countries but recommended that MTCR countries "make a commitment to launch any country's payload at a reasonable price and in a timely manner." CHOW, *supra* note 103, at xiii (quoted in 139 Cong. Rec. S11424, Sept. 10, 1993 (remarks by Sen. Bingaman)).

142. See *supra* notes 10-16 and accompanying text (discussing the U.S. interpretation of the free access principle in the years preceding the Outer Space Treaty and during the treaty negotiations).

such a result would still violate the Outer Space Treaty. The exclusive launch service suppliers' cartel suggested by MTCR would constitute a de facto appropriation of space for the benefit of the launching states in violation of Article II of the treaty, which prohibits national appropriation of space "by claim of sovereignty, by use or occupation, or by *any other means*."<sup>143</sup> Indeed, it would be difficult to more effectively appropriate outer space than to exclude states by denying them the technologies they need to develop independent access and then selectively selling them the same access for a profit.<sup>144</sup> In practice, therefore, the MTCR runs afoul of the Outer Space Treaty's free access guarantee regardless of how one defines "access" to space.

### C. The MTCR Is Discriminatory

Some commentators have argued that the MTCR is discriminatory and inequitable, in violation of the Outer Space Treaty.<sup>145</sup> MTCR restrictions discriminate against specific countries and also against certain dual-use technologies. By analogy to U.S. constitutional and civil rights law, any assessment of "discrimination" under the Outer Space Treaty should consider two key indicia. First, the activity under consideration must have a discriminatory effect, or lead to disparate treatment of different countries. Second, the activity must be carried out with discriminatory intent.<sup>146</sup>

Under the U.S. implementation of the MTCR, export controls have been applied selectively to promote U.S. national security and foreign policy objectives by discriminating against countries which are not favored allies. In theory, the MTCR "is not directed towards specific countries, but is based on the control of the transfer of specific rocketry

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143. See Outer Space Treaty, *supra* note 1, art. II.

144. This result is analogous to a person blocking a public highway and charging a "toll" to passersby. The person would unquestionably have "appropriated" the highway for his benefit.

Moreover, the notion of MTCR states selling launch services to all comers at reasonable prices may be unrealistic. The rapid commercialization of space launch services in the U.S. and other countries may lead to market prices beyond the reach of developing states. Arthur L. Levine, *Commercialization of Space: Implications for U.S. Relations with Developing Countries*, in *INTERNATIONAL SPACE POLICY: LEGAL, ECONOMIC, AND STRATEGIC OPTIONS FOR THE TWENTIETH CENTURY AND BEYOND* 126, 129 (Daniel S. Papp & John R. McIntyre eds., 1987).

145. See Outer Space Treaty, *supra* note 1, art. I.

146. These two aspects of discrimination are found in U.S. constitutional and civil rights law. See, e.g., *Arlington Heights v. Metropolitan Hous. Dev. Corp.*, 439 U.S. 252 (1977); *Griggs v. Duke Power Co.*, 401 U.S. 424 (1971).

technologies.<sup>147</sup> In practice, however, the projects of favored nations are distinguished from those of non-allies.<sup>148</sup>

The problem once again lies in the U.S. interpretation of the MTCR Guidelines. It has been understood that MTCR members and non-member "adherents" are generally permitted to import controlled technologies.<sup>149</sup> The United States, however, recognizes as "adherents" only those countries which sign bilateral agreements with the U.S.<sup>150</sup> Thus, no unilateral action by one country can guarantee that it will be permitted to import the same technologies offered to an officially-recognized MTCR "adherent." The losers are typically developing countries and their nascent space programs.<sup>151</sup> The effect of the U.S. definition of "adherents" is discriminatory, and impedes the "legitimate right [of Third World nations] to develop civilian space-launch vehicles."<sup>152</sup>

Without more, a mere disparity in treatment among countries should not be considered "discrimination" under the Outer Space Treaty. Such an interpretation would imply that all countries are entitled to all space technologies, under identical terms and conditions, regardless of their malevolent plans for the technologies. Prohibiting all disparate treatment would make it impossible for an exporting country like the U.S. to implement any non-proliferation policy aimed at keeping militarily significant technologies away from undesirable ballistic missile programs. Thus, disparate treatment should not be considered discriminatory when it is merely an incidental consequence of a non-discriminatory policy decision.

The concept of "intent" distinguishes incidental disparate impact from policy decisions aimed specifically at impeding emerging civilian national space programs. The U.S. implementation of the MTCR intentionally impedes civilian national space programs by assuming that

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147. Alves, *supra* note 126, at 111. See Speier, *supra* note 93, at 117 (MTCR "is not aimed at particular nations, but at specific missile and rocket projects . . .").

148. See Paul Freedenberg, *The Commercial Perspective*, in EXPORT CONTROLS IN TRANSITION: PERSPECTIVES, PROBLEMS, & PROSPECTS 57 (Gary K. Bertsch & Steven Elliot-Gower, eds. 1992) ("North-South technology control is based more on the foreign policy goals of particular countries than on the national security of the COCOM countries as a whole.").

149. Lumpe, *supra* note 105, at 211.

150. *Id.*

151. Andrew Mack, *Beyond MTCR: Additional Responses to the Missile Proliferation Problem*, in CHEMICAL WEAPONS & MISSILE PROLIFERATION 123, 124 (Trevor Findlay ed., 1991).

152. Karp, *supra* note 85, at 189. Although Karp argues for a strong export control regime, he recognizes the legitimacy of developing states' activities in space launch technology research and deployment. Effective controls must therefore "offer incentives to Third See World nations intent upon maximizing their national capabilities." *Id.*

all such programs are inherently destabilizing.<sup>153</sup> In practice, the MTCR regime focuses almost entirely on technology transfers to developing countries.<sup>154</sup> This focus is not accidental. The U.S. and other industrialized states view their own possession of MTCR-related technologies as critical components of stability and deterrence, but consider possession of the same technologies by developing countries to be dangerous and destabilizing.<sup>155</sup> The inequity inherent in this view has not gone unnoticed in the developing countries.<sup>156</sup>

The foregoing discussion has demonstrated that the MTCR, as implemented by the United States, restricts other states' access to space in violation of the Outer Space Treaty. In practice, the MTCR is inequitable and discriminatory, and effectuates an appropriation of space by a launch services cartel composed of MTCR-member states. Of course, stemming the international proliferation of weapons of mass destruction is an important goal. However, by signing the Outer Space Treaty, the U.S. committed itself to a course of conduct which does not permit the breadth of the means it currently uses to further its legitimate non-proliferation objectives.

## VI. OTHER FLAWS IN THE MTCR

In addition to its abrogation of the free access principles of the Outer Space Treaty, the rigid U.S. interpretation of the MTCR suffers from other serious theoretical weaknesses in the areas of international security, foreign policy, and economics.

As a security matter, an MTCR implementation that restricts all dual-use space launch technology is overbroad and misdirected. The MTCR's focus on delivery systems was a major shift from prior nonproliferation efforts that concentrated on nuclear materials and

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153. See *supra* notes 107-109 and accompanying text.

154. See McCall, *supra* note 101, at 420 ("MTCR's application to focus almost entirely on developing countries has been criticized as 'insensitive,' displaying an inconsistent and hypocritical cultural bias in technology-related transactions, and may also be viewed as implicitly threatening their sovereignty.").

155. Mack, *supra* note 151, at 123.

156. See *International Cooperation in Space Activities for Enhancing Security in the Post-Cold War Era: Report of the Secretary-General* at 6, U.N. Doc. A/48/221 (1993) [hereinafter U.N. Report]. See also Lumpe, *supra* note 105, at 211-12 (discrimination between "good proliferators" and "bad proliferators" promotes opposition to the MTCR, which "is seen as another discriminatory regime in which the North is allowed a certain category of weaponry and the South is not"); U.N. Report, *supra* at 6 ("any [missile technology] controls must be non-discriminatory and generally acceptable, if they are to be effective"); Shakram Chubin, *The South and the New World Order*, 16 WASH. QTRLY. 84 (1993), (the "MTCR is hardly the stuff of worldwide consensus"); Fitzpatrick, *supra* note 80, at 147 ("real progress toward controlling the proliferation of nuclear weapons capabilities in developing states must include efforts by the developing states themselves").

weapons systems. By developing the MTCR, member nations implicitly conceded the inadequacy of then-existing controls.<sup>157</sup> However, even proponents of a strict MTCR acknowledge that delivery systems are of little concern in the absence of nuclear or chemical warheads.<sup>158</sup> The earlier weapons-based controls, in turn, implicitly acknowledged the failure of international politics and diplomacy to restrain aggressive states and defuse regional conflicts. Consequently, MTCR export controls are attenuated from the underlying international security problems. Furthermore, the MTCR is ineffective with respect to indigenous development of MTCR-related technologies,<sup>159</sup> which in fact may be encouraged by stringent export controls.<sup>160</sup> Thus, international security might be better served by measures which focus on the underlying political and diplomatic problems instead of those which attempt to prevent the inevitable spread of advanced technologies.<sup>161</sup>

Since long-term solutions to underlying international security problems are based on mutual understanding, a supplier cartel like the MTCR is unlikely to enhance long-term security. "Probably the greatest

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157. See Fitzpatrick, *supra* note 80, at 144 (discussing MTCR's new emphasis on controlling delivery systems rather than particular weapons systems).

158. See Karp, *supra* note 85, at 189 ("So long as a nation does not have nuclear weapons, it cannot effectively arm a ballistic missile. Missile and space-launch technology pose no major threat to international security if they cannot be used to deliver nuclear warheads.").

159. Speier, *supra* note 93, at 117. See McCall, *supra* note 101, at 420-21 ("[F]or many developing nations with relatively greater independent technological bases . . . , the MTCR's external constraints upon such programs may be minimal at best, as a great deal of the necessary scientific skills and technology are already extant."). Theoretically, nonproliferation controls could be further extended another step beyond delivery systems, should the MTCR prove inadequate in deterring indigenous development of MTCR-related technologies. The future could include harsh restrictions on mass communications and scholarly exchanges or may involve inducements and threats which lead non-spacefaring states to abandon high technology programs altogether.

160. See REYNOLDS & MERGES, *supra* note 47, at 239 (strict technology controls "encourage foreign nations reliant on that technology to work harder to achieve independence . . .").

161. See generally McCall, *supra* note 101, at 388 (the rapid spread of advanced technologies and the failure of existing control regimes to stop it presents "vexing" policy problems). Proponents of the MTCR simply assume that secondary delivery systems controls are essential to achieving non-proliferation goals. See CHOW, *supra* note 119, at 2 (with weapons-based controls alone, "proliferation can only be limited and slowed, not stopped"). Chow asserts that the MTCR is the key to a completely successful non-proliferation policy. But see REYNOLDS & MERGES, *supra* note 47, at 240 (MTCR cannot be completely effective in stopping technology transfers, because "seepage" is inevitable). Scholars and commentators have offered various alternative proposals. See, e.g., Lumpe, *supra* note 105, at 215 (advocating a Zero Ballistic Missile (ZBM) program of radical disarmament to promote international security and eliminate MTCR's discrimination) and U.N. Report, *supra* note 156, at 10-12 (suggesting broad "confidence-building measures," such as an international space launch monitoring agency to promote the development of new national space programs).

weakness of the MTCR is that it is only a suppliers' cartel and does nothing to address the demand for missiles, born of regional political tension and local arms races."<sup>162</sup> The discrimination and exclusiveness inherent in the MTCR may only increase these tensions, by heightening Third World resentment and encouraging indigenous development of the same controlled technologies.<sup>163</sup> Thus, as one commentator notes,

it is clear that real progress toward controlling the proliferation of nuclear weapons capabilities in developing states must include efforts by the developing states themselves. Moreover, although supplier restraint is necessary to further a nonproliferation policy, the recent trend towards indigenous production capabilities in developing states suggests that supplier restraint alone may prove insufficient for the task.<sup>164</sup>

The MTCR's launch service cartel also raises serious economic questions, particularly with regard to the international trade consequences of space-launch technology controls.<sup>165</sup> Proponents of the current U.S. interpretation of the MTCR unduly trivialize the significant trade benefits of technology exports associated with space launch vehicles.<sup>166</sup> However, exporters of such technology, such as the satellite industry, complain that the MTCR fails to recognize the economic value of lost export opportunities, and support liberalization of MTCR

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162. Lumpe, *supra* note 105, at 212. See Mack, *supra* note 151, at 125 ("Designed to check the *supply* of missile technology to Third World states, the MTCR fails to address the question of *demand*—the often powerful political and security incentives which lead Third world states to seek missiles or missile technology in the first place.") (emphasis in original). Mack likens the MTCR to the U.S. "war on drugs," another policy which illustrates that "supply-side attempts to halt the flow of goods for which there is high demand is problematic." *Id.*

163. See *supra* note 135-140 and accompanying text (on indigenous development of space launch technologies). See also Karp, *supra* note 85, at 180-81 (Third World states seek space launch and ballistic missile technologies not only for legitimate military, scientific, and economic reasons, but also for self-respect, international prestige, and political leverage). Elitist or discriminatory practices by MTCR member states may intensify the "Third World's pathological inferiority complex." *Id.* at 181 (arguing for technology controls as a means of offsetting Third World interests).

164. Fitzpatrick, *supra* note 80, at 147.

165. This prudent view had been espoused by the Office of Technology Assessment before the advent of the MTCR. See OTA Report, *supra* note 62, at 193 ("[T]he national security and foreign policy benefits of export controls need to be weighed against the loss in export competitiveness to which they may sometimes lead.").

166. See Brian Chow, *Keep Controls on Space Launch Technology*, WALL ST. J., Sept. 20, 1993, at A14 ("The economic benefits of exporting space launch technology are not anywhere near as large [as the benefits of commercial aircraft sales]. . . . The American share of space launch technology sales is unlikely to exceed \$200 million a year."). Chow apparently believes that \$200 million is insignificant merely because it pales in comparison to the commercial aircraft business, among the largest exporting industries in the U.S. By this standard, hundreds of other U.S. exporting industries would also be found unworthy of political support.

controls.<sup>167</sup> In any case, truly comprehensive dual-use technology controls are technically infeasible in the modern industrial world and would amount to "market suicide" in the international trade arena.<sup>168</sup> The MTCR effectively subsidizes space *launch service providers* at the expense of technology manufacturers and exporters by denying space launch vehicle exports that would divert launch business away from the traditional spacefaring powers.<sup>169</sup>

Thus, even by depriving states of their right of access to outer space, the U.S. implementation of the MTCR cannot fully achieve its basic national security and foreign policy objectives. In addition, it has serious negative economic consequences. A reformed MTCR, however, may be brought into compliance with the free access provisions of the Outer Space Treaty at the same time it addresses long-term U.S. policy concerns.

## VII. THE FUTURE OF THE MTCR AND THE FREE ACCESS PRINCIPLES OF THE OUTER SPACE TREATY

The U.S. and the international community have three options with regard to the relationship between the MTCR and the Outer Space Treaty. First, the status quo may be deemed acceptable despite the apparent inconsistency between the practices of the MTCR and the principle of free, nondiscriminatory access to outer space. Second, the Outer Space Treaty may be amended or superseded to reflect a new approval of limited access to space for non-MTCR members, controlled by a launch services suppliers' cartel. Third, MTCR-related policies may be modified to safeguard free access principles.

### A. Reconciling the MTCR and Outer Space Treaty

The status quo, under which the MTCR and Outer Space Treaty remain inconsistent in their treatment of national space launch vehicle programs, is unacceptable under international law. Allowing the

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167. *Satellite Industry Supports Proposed Lifting of Sanctions Against China*, COMMUNICATIONS DAILY, Nov. 15, 1993.

168. REYNOLDS & MERGES, *supra* note 47, at 240. Reynolds and Merges list indigenous technological development and the inevitability of technology transfers ("seepage") as reasons to doubt the long-term efficacy of the MTCR. *Id.*

169. The strict U.S. application of the MTCR bolsters the U.S. launch services business, which is accustomed to substantial federal assistance. Widespread international development of commercial space launch vehicles could present formidable competition for the existing space launch entities. See Chow, *supra* note 166, WALL ST. J. at A14 (quoted in 139 Cong. Rec. H7114 (1993)) ("after other countries succeed in developing their own space launch capability, they will no longer ask the U.S. for launch services"). In fact, commercial U.S. launchers have already appealed for U.S. government subsidies in order to compete against launch service providers in other MTCR countries. John Mintz, *Launching a Drive for Federal Help*, WASH. POST, Jan. 12, 1994, at F1.

inconsistency to continue undermines the legitimacy of far-reaching international agreements such as the Outer Space Treaty.

It would also be undesirable for the U.S. interpretation of the MTCR to prevail over the free access principles of the Outer Space Treaty as international law. The MTCR does not represent international law, and thus may not automatically nullify inconsistent provisions of prior treaties.<sup>170</sup> The Outer Space Treaty's free access principles may be superseded only by the emergence of a new peremptory norm of international law<sup>171</sup> or by amending the treaty. Neither course is likely. First, the policies underlying the MTCR are by no means "accepted and recognized by the international community of States as a whole as a norm from which no derogation is permitted."<sup>172</sup> Thus there is no indication that a new peremptory norm is emerging based on the MTCR. Second, the free access concept is strongly supported in the international community, making any amendment highly unlikely.<sup>173</sup> Furthermore, repudiating part of the Outer Space Treaty might well jeopardize future attempts to establish comprehensive international legal regimes in new areas.

The most desirable option is to liberalize interpretation of the MTCR, allowing free access to space while denying technological assistance to ballistic missile programs. The U.S. MTCR implementation could be brought into compliance with the Outer Space Treaty if the U.S. were more willing to accept end-use assurances from importing states. As a practical matter, the United States currently assumes that all space programs are disguised ballistic missile programs.<sup>174</sup> However, some European MTCR members, including France, "have adopted a policy to promote what they consider legitimate space programs and often do not draw a connection to military-related ballistic missile programs."<sup>175</sup>

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170. *See supra* notes 126-28 and accompanying text.

171. *See supra* notes 38-55. Vienna Convention on the Law of Treaties, May 23, 1969, entered into force Jan. 27, 1980, U.N. Doc. A/CONF.39/27, art. 64 ("If a new peremptory norm of general international law emerges, any existing treaty which is in conflict with that norm becomes void and terminates.").

172. *Id.* art. 53.

173. Indeed, there is considerable support among signatories of the Outer Space Treaty to enhance the guarantee of free, nondiscriminatory access to space. *See Report of the Legal Subcommittee, supra* note 46 at 34 (proposing a binding legal obligation on all states to promote the indigenous development of space launch capabilities in states which do not yet have such resources).

174. *See supra* notes 107-09 and accompanying text.

175. GAO Report, *supra* note 108, at 17. *See Alves, supra* note 126, at 116 (discussing interpretative disagreements among MTCR member countries).

Adoption of a similar policy by the U.S. would eliminate or significantly curtail the MTCR's detrimental effects on legitimate space programs.<sup>176</sup>

Any MTCR reform must be accompanied by several other steps, particularly the expanded involvement of Third World states in weapons non-proliferation regimes,<sup>177</sup> the commitment of substantial resources to the resolution of regional conflicts and local arms races,<sup>178</sup> and the strengthening of organizations responsible for verifying and monitoring compliance with weapons-based non-proliferation regimes.<sup>179</sup> All of these steps will decrease the need for secondary delivery systems-based controls such as the MTCR. In addition, a more effective end-use monitoring system must be established to spot and react to any diversions from civilian projects to ballistic missile programs.<sup>180</sup> The U.S. could then liberalize space launch technology controls without sacrificing national security or non-proliferation goals.

## B. Recent MTCR Developments

Despite the continuing post-Cold War escalation of North-South tensions and demonstrated weaknesses in the MTCR, the present policy remains firmly entrenched. Recent developments in the MTCR arena do not bode well for the Outer Space Treaty or its free access provisions.

Spacefaring MTCR states have continued to pursue their non-proliferation policies by denying space access to other countries, while enlarging and strengthening the present MTCR system. As previously discussed, the strict U.S. interpretation was codified in the Defense Authorization Act for 1994.<sup>181</sup> In addition, the Clinton administration has announced its continued support for the strict U.S. view of the MTCR and reaffirmed that "United States will not support

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176. States with newly-established space programs or programs of questionable legitimacy could be required to submit to intense international supervision and monitoring, which would permit free access to outer space by such states, without compromising the non-proliferation goals of the MTCR. By imposing legal rather than political standards to emerging national space programs, improper discrimination may be prevented.

177. Fitzpatrick, *supra* note 80, at 147.

178. See Lumpe, *supra* note 105, at 212.

179. A monitoring agency, the International Atomic Energy Agency, already exists for monitoring nuclear weapons-related transfers. See McCall, *supra* note 101, at 428 ("any 'internationalization' of the MTCR should be accompanied by an evaluation as to whether its purposes could be better served under the aegis of the United Nations or a U.N.-affiliated agency like the IAEA").

180. See U.N. Report, *supra* note 156, at 10-12; McCall, *supra* note 101, at 428 (favoring the creation of an international space and missile technology end-use monitoring agency). But see National Defense Authorization Act for Fiscal Year 1994, Pub. L. No. 103-160 § 1614, *supra* note 115 (end-use monitoring is deemed too late to prevent risks to international security).

181. See *supra* notes 115-120 and accompanying text.

the development or acquisition of space-launch vehicles in countries outside the MTCR.”<sup>182</sup>

In 1994 COCOM was disbanded,<sup>183</sup> with the understanding that it will eventually be replaced by a new regime which will “coexist”<sup>184</sup> with the MTCR.<sup>185</sup> The new arrangement will be aimed at preventing “certain countries of concern from receiving goods and technology that could be used in the development of . . . missile delivery systems.”<sup>186</sup> Thus, the discriminatory nature of the controls will remain. There has also been a renewed effort to expand the MTCR membership.<sup>187</sup> This expansion, especially Russia’s recent commitment to adhere to the MTCR Guidelines,<sup>188</sup> has solidified the North-South polarization promoted by the regime. Finally, the recent diplomatic crisis in North Korea over the monitoring of its nuclear weapons program has highlighted the weakness of the primary weapons-based non-proliferation regime and may further increase support for more attenuated delivery-system controls such as the MTCR.<sup>189</sup>

## VIII. CONCLUSION

The 1967 Outer Space Treaty formally articulated pre-existing principles of customary international law, including the rights of states to enter and use outer space freely, without discrimination, and to do so using both civilian and military equipment and personnel. Subsequently,

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182. White House, Office of the Press Secretary, *Fact Sheet: Nonproliferation and Export Control Policy*, Press Release, Sept. 27, 1993 at 3. The policy remains discriminatory with respect to national space launch programs: “For MTCR member countries, we will not encourage new space launch vehicle programs, which raise questions on both nonproliferation and economic viability grounds. The United States will, however, consider exports of MTCR-controlled items to MTCR member countries for peaceful space launch programs on a case-by-case basis.” *Id.*

183. *Computergram Int'l*, November 8, 1994 (“COCOM . . . was dissolved on March 31.”).

184. *U.S., Allies Agree to Dismantle Cocom by April 1, 1994, and Set Up New Regime*, 10 INT'L TRADE REP. 1960, Nov. 24, 1993.

185. Operating details of the new regime [were] to be finalized in January 1994. U.S. officials have indicated that the new regime will permit “national discretion,” so that exports may be approved by individual countries without prior approval by the entire membership. *Id.*

186. *U.S., Allies Agree to dismantle Cocom by April 1, 1994, and Set Up New Regime*, *supra* note 186.

187. Hungary joined the MTCR on November 25, 1993, becoming the twenty-fourth member state and the first from Eastern Europe. *Hungary East Europe's First to Join Missile Control Regime*, MTI ECONEWS, Nov. 26, 1993.

188. Russia agreed to adhere to the MTCR in 1993. At the time of writing, the United States is attempting to secure China’s adherence. *Christopher Warns North Korea of Sanctions over Nuclear Sites*, [Minneapolis] STAR TRIB., Nov. 18, 1993 at 2A.

189. See *Christopher warns North Korea of sanctions over nuclear sites*, *supra* note 173, at 2A (on North Korea’s refusal to cooperate with the International Atomic Energy Agency).

the Missile Technology Control Regime led to strict export controls on dual-use technologies including space launch vehicles, components, and production facilities. The MTCR has been applied by the United States, to the detriment of legitimate national space launch programs and in violation of the Outer Space Treaty, although it is clear from the text of the MTCR that the agreement was not intended to produce this result.<sup>190</sup> The U.S. implementation has led to a closed, discriminatory cartel of launch service supplier states.

The MTCR, as applied by the United States, is an inefficient and incomplete attempt to promote legitimate national security and foreign policy objectives. The U.S. implementation of the MTCR also sacrifices lucrative high-technology export markets. These same U.S. policy objectives could be better served by addressing the reasons for the growing demand for weapons of mass destruction, easing the North-South polarization of current policies, and promoting legitimate, peaceful national space programs as a means of international social and economic development. Ultimately, the most important difference between the space technology policy of today and a policy that complies with the Outer Space Treaty may be little more than "[a]ttitude."<sup>191</sup>

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190 MTCR Guidelines, *supra* note 79 at 600.

191. See Speier, *supra* note 93, at 117 (quoting John Glenn).



# **ARTICLE**

## **A CALL FOR RECONSIDERATION OF THE STRICT UTILITY STANDARD IN CHEMICAL PATENT PRACTICE**

**SALIM A. HASAN †**

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## I. INTRODUCTION

The strict utility requirement in chemical and biotechnology<sup>1</sup> patent cases has been the subject of considerable criticism and controversy.<sup>2</sup> Section 101 of the patent code provides:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.<sup>3</sup>

In addition, the first paragraph of section 112 of the patent code provides:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.<sup>4</sup>

Sections 101 and 112 combine to create two separate utility requirements under the patent statute. First, the applicant must demonstrate a practical utility for the invention under section 101. Second, the applicant's disclosure must instruct those who read the patent how to use this new invention.<sup>5</sup>

In mechanical and electrical applications, the utility requirement is usually not problematic because both the "practical utility" and the "how

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1. Unless otherwise indicated, for the purposes of this article the term "chemical" as used in phrases such as "chemical research" and "chemical invention" is intended to encompass the field of biotechnology as well. The field of biotechnology is generally considered to encompass "the use of data and techniques of engineering and technology for the study and solution of problems concerning living organisms." WEBSTER'S NEW WORLD DICTIONARY 143 (2nd college ed. 1982). The subject matter of biotechnical inventions generally includes material that is capable of direct or indirect self-replication, as well as nucleotide sequences and/or amino acid sequences. See U.S. DEPT. OF COMMERCE, PATENT AND TRADEMARK OFFICE, MANUAL OF PATENT EXAMINING PROCEDURE §§ 2401, 2403 (Rev. 16, March 1994) [hereinafter MPEP].

2. See Eric P. Mirabel, *Practical Utility is a Useless Concept*, 36 AM. U. L. REV. 811, 822-23 (1987) (summarizing the negative consequences in the chemical and biotechnology fields which flow from a strict utility requirement which denies patents to inventions with uncertain uses); G. Kenneth Smith and Denise M. Kettelberger, *Patents and the Human Genome Project*, 22 AM. INTELL. PROP. L. ASS'N Q.J. 27, 60-62 (1994) (discussing recent proposals and bills introduced to Congress requesting amendment of the U.S. patent statute for separate requirements for biotechnology protection); Comment, *Utility Requirement in Chemical Patents*, 35 GEO. WASH. L. REV. 809, 817 (1967) (the strict utility requirement for chemical inventions will work a hardship on chemical researchers).

3. 35 U.S.C. § 101 (1988).

4. 35 U.S.C. § 112 (1988).

5. 35 U.S.C. § 112. In a sense the § 101 requirement establishes a standard against which the *invention* must be measured. On the other hand, § 112 creates a standard against which the *inventor's disclosure* must be measured.

"to use" requirements are usually easily ascertainable from a description or diagram of the invention itself. Utility in chemical applications, however, is often more elusive because a mere description or diagram of a new chemical compound does not usually reveal its utility.<sup>6</sup> If an invention's utility is not revealed by mere descriptions or drawings, the applicant must assert and support a "practical utility" for the compound, as summarized in the following passage from the Manual of Patent Examining Procedure:

If the asserted utility of a compound is believable on its face to persons skilled in the art in view of the contemporary knowledge in the art, then the burden is upon the examiner to give adequate support for rejections for lack of utility under [Section 101]. On the other hand, incredible statements or statements deemed unlikely to be correct by one skilled in the art in view of contemporary knowledge in the art will require proof on the part of the applicants for patents.<sup>7</sup>

Mechanical and electrical inventions are ordinarily prospectively designed with a particular use in mind, and utility is usually evident.<sup>8</sup> Likewise, many chemical inventions are designed in response to a certain problem in a particular art, and the utility requirement is easily satisfied. For example, a propellant composition may be specifically developed to produce nontoxic combustion gases that inflate an automobile air bag in the event of a collision. Meeting the utility requirements of the patent law for such prospectively designed and specifically applied chemical inventions is routine, paralleling application procedures for mechanical and electrical inventions.

In contrast to most mechanical and electrical inventions, many chemical inventions evolve without a readily discernible utility. Instead, chemical inventions may arise out of research efforts wherein future utility is far less certain or even unknown. For example, an AIDS research foundation may synthesize a new compound during the course of developing a potential vaccine. The foundation may hope that this new compound is useful as part of the desired vaccine, but it may not know the ultimate composition of the drug and how the new compound will fit in that puzzle. Chemical inventions may also be derived from an accidental discovery, in which case the new compound does not even

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6. Indeed, it is noteworthy that the Manual of Patent Examination Procedure devotes what is essentially a one sentence passage to mechanical invention utility. MPEP, *supra* note 1, at § 608.01(p). On the other hand, the Manual devotes an extensive section to chemical utility, entitled "Guidelines for Considering Disclosures of Utility in Drug Cases." *See id.* (citations omitted).

7. *Id.*

8. *See, e.g., id.* ("A complete disclosure should include a statement of utility. This usually presents no problem in mechanical cases.")

have a hoped-for use.<sup>9</sup> In such a case, the new compound may then be the simple object of fundamental use-testing. In contrast, even though accidental uses may arise for mechanical or electrical inventions, the mechanical or electrical device itself is almost always originally created with a particular use in mind.

A chemical invention, therefore, may not have a clear utility initially, but may still be beneficial to society in one of two ways: (1) as an object of scientific research (for example, as a possible building block to a potential vaccine), or (2) as an object of use-testing (for example, as its own starting point in finding some use for somebody). Such research uses for new chemical discoveries have increasing relevance in the field of biotechnology. Currently, scientists are obtaining gene sequence fragments known as cDNA fragments.<sup>10</sup> While only complete cDNA sequences may code for specific proteins, partial fragments of these cDNA sequences also may aid biotechnology research by (1) mapping chromosomes, (2) identifying tissue types, and (3) identifying gene regions associated with diseases.<sup>11</sup>

In *Brenner v. Manson*,<sup>12</sup> the United States Supreme Court responded to a series of inconsistent cases in the area of chemical utility by strictly construing sections 101 and 112. Commentators dispute<sup>13</sup> the wisdom and rationale of the Court's holding in *Manson* that a process yielding a product which either has no known use, or is useful only in the sense that it may be an object of scientific research, is not patentable.<sup>14</sup> In dicta, the Court also suggested that the product itself is not useful if the disclosed utility merely relates to research.<sup>15</sup> The following year, the Circuit Court of Customs and Patent Appeals (CCPA), which preceded the current Court of Appeals for the Federal Circuit (CAFC), embraced *Manson* in the companion cases of *In re Kirk*<sup>16</sup> and *In re Joly*.<sup>17</sup> In *Kirk*, the CCPA expanded the narrow holding of *Manson* to rule that compounds whose

9. See Bob Gatty, *Mishaps that Mothered Invention: Products Created by Accident*, 75 NATION'S BUS. 58 (1987); *Metro Collects Scientific Cream of the Crop: 11 Nobel Winners Here to Honor U of T's Polyani*, Toronto Star, Oct. 31, 1994, at A1 (Announcing a lecture by Michael Smith, a University of British Columbia professor and the 1993 Nobel Prize winner in chemistry: "Smith says his lecture will stress the importance of funding pure academic research as the most socially and economically beneficial form of scientific activities. Most important scientific discoveries, his own included, are made by accident in the course of searching for something else, he said." (emphasis added)).

10. See generally, Smith and Kettelberger, *supra* note 2, at 39-46.

11. ROBERT P. MERGES, PATENT LAW AND POLICY 159 (1992).

12. 383 U.S. 519 (1966).

13. See *In re Kirk*, 376 F.2d 936, 955 (C.C.P.A. 1967) (Rich, J., dissenting).

14. *Manson*, 383 U.S. at 535.

15. *Id.*

16. 376 F.2d 936 (C.C.P.A. 1967).

17. 376 F.2d 906 (C.C.P.A. 1967).

sole disclosed utility lay as an intermediate for the production of other compounds, which in turn have no present known use other than as objects of chemical research, did not satisfy the practical utility requirement of section 101.<sup>18</sup> In *Joly*, the CCPA extended *Kirk* to cover process claims, holding that processes which yield chemical intermediates are also unpatentable where the intermediates are used only to create end products with no known use.<sup>19</sup>

Following these cases, the United States Patent and Trademark Office (Patent Office) adopted a rigorous practical utility policy for chemical inventions.<sup>20</sup> However, while not directly disputing or questioning *Manson*, the CCPA/CAFC apparently allowed certain cracks to appear in the wall of the strict practical utility standard in *Nelson v. Bowler*<sup>21</sup> and *Cross v. Iizuka*.<sup>22</sup> In *Bowler*, the CCPA characterized knowledge of "pharmacological activity" of any compound as being "obviously beneficial to the public"<sup>23</sup> and applied a more relaxed section 112 standard of proving an actual reduction to practice than the Patent Office had been using.<sup>24</sup> In *Iizuka*, the Federal Circuit upheld the patentability of a chemical compound shown only to inhibit certain enzymes *in vitro* (in a test tube) even though no evidence was presented to show that the claimed compound worked *in vivo* (in a living being), implicitly approving a suggestion in the Patent Office Board of Interference's opinion that tests showing pharmaceutical activity may satisfy section 101 even where no specific therapeutic use for the compounds have been established.<sup>25</sup> Thus, even if the practical utility of an invention is research-oriented in the sense that pharmacological results are produced only in a laboratory setting, the invention may nevertheless pass both utility requirements where sufficient section 112 instructions regarding how to achieve those results are included in the application.

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18. *Kirk*, 376 F.2d at 945.

19. *Joly*, 376 F.2d at 908.

20. See MPEP, *supra* note 1, at § 608.01(p) ("Utility must be definite and in currently available form; not merely for further investigation or research.").

21. 626 F.2d 853 (C.C.P.A. 1980).

22. 753 F.2d 1040 (Fed. Cir. 1985).

23. *Bowler*, 626 F.2d at 856.

24. Specifically, the court recognized an *in vivo* rat blood pressure test and an *in vitro* gerbil colon smooth muscle test as sufficiently manifesting the practical utility of substituted prostaglandins and intermediates for preparing these compounds in contradistinction to previous rigorous Patent Office reduction to practice standards. *Bowler*, 626 F.2d at 855-57. See Kenneth D. Sibley, *Practical Utility: Evolution Suspended?*, 32 IDEA 203, 219, n. 92.

25. *Cross*, 753 F.2d at 1043.

Despite these limited cracks in the strict utility requirement, *Manson's* broad dictate remains the law.<sup>26</sup> This Article calls for a reexamination of the strict utility requirement in chemical and biotechnology patent cases. Although *Manson* attempted to bring uniformity and predictability to the law of chemical utility, its demanding standard is inconsistent with the policies underlying the patent statute. These policies recognize that the public benefits from wide dissemination of information in all fields of technology. The current state of the law under *Manson* inhibits the dissemination of information in the chemistry and biotechnology fields by imposing the same rigorous utility standard required of mechanical and electrical inventions before a patent is granted: the standard of development to a point where a "specific benefit exists in currently available form."<sup>27</sup>

This Article critically examines the history of the utility requirement in American patent jurisprudence, and concludes that the strict holding in *Manson* was not inevitable in light of the patent statutes and case precedents and was certainly not necessary to achieve the Constitutional aim to "promote the progress . . . of the useful arts."<sup>28</sup> Unlike their electrical and mechanical counterparts, chemical inventions are beneficial to society in a two-step process, the first step being the discovery or development of a compound with no definitive use and the second step being the discovery or development of a definitive use for that compound. Each step is essential in producing beneficial products for society and, therefore, each step should be the subject of patent incentive and reward. In the chemical and biotechnological arts, then, the patent system should foster progress in a two-step quid pro quo.<sup>29</sup>

This Article further examines the strict chemical utility requirement in light of international patent protection and harmonization considerations.<sup>30</sup> These concerns dictate a need for a relaxed utility standard in the United States allowing scientific research and use-testing as valid utilities under section 101. Germany, Japan, and other nations do not share the stringent chemical utility requirements of the United States. Most other nations recognize research as a valid use for purposes of patentability.<sup>31</sup> Moreover, the chemical utility standard in the United States creates difficulty in obtaining meaningful international protection

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26. See *In re Ziegler*, 992 F.2d 1197, 1203 (Fed. Cir. 1993) ("The utility of a chemical compound may not reside in 'its potential role as an object of use testing.' ") (citing *Manson*, 383 U.S. at 535).

27. *Manson*, 383 U.S. at 534-35.

28. U.S. CONST. art. I, § 8, cl. 8.

29. See discussion *infra* Part III.A.

30. See discussion *infra* Part III.B.

31. See STEPHEN A. BENT, ET AL., INTELLECTUAL PROPERTY RIGHTS IN BIOTECHNOLOGY WORLDWIDE 146 (1987).

for inventors from all over the world due to the United States' inconsistent position relative to most of the world.

Finally, this Article introduces the new concept of "best utility" disclosures as a means to implement a relaxed United States patent utility standard in the chemical arts, either as a separate statutory requirement or as a section 112 "best mode" interpretation.<sup>32</sup>

## II. HISTORICAL DEVELOPMENT OF THE PRESENT CHEMICAL UTILITY STANDARD IN THE UNITED STATES

### A. Case Law Prior to *Manson*

The origins of the judicial interpretation of the utility standard in patent law can be traced to Justice Story, who construed the requirement liberally and viewed a finding of lack of utility as the exception. Justice Story's inclusive standard defined utility in contradistinction to frivolity and immorality:

All that the law requires is, that the invention should not be frivolous or injurious to the well being, good policy, or sound morals of society. The word "useful," therefore, is incorporated in the act in contradistinction to mischievous or immoral. For instance, a new invention to poison people, or to promote debauchery, or to facilitate private assassination, is not a patentable invention.<sup>33</sup>

Other early commentators also viewed utility as an insignificant hurdle.<sup>34</sup> Exemplary of the liberal construction of utility by the judiciary in the first half of the twentieth century was *Potter v. Tone*,<sup>35</sup> a case in which the patent application demonstrated a general utility for the claimed chemical compound by describing the composition's characteristics—a reducing agent and a nonconductor of electricity. The court held that a description of such characteristics was sufficient to satisfy the utility requirement.<sup>36</sup> The court refused to require a commercial application for the chemical invention, which the court felt should be the subject of a separate patent.<sup>37</sup>

Patent Office practice generally agreed with the courts' interpretation. For example, in *Ex parte Watt*<sup>38</sup> the Patent Office Board of Patent Appeals suggested that a composition whose sole use was as an

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32. See discussion *infra* Part III.C.

33. *Lowell v. Lewis*, 15 F. Cas. 1018, 1019 (C.C.D. Mass. 1817) (No. 8568).

34. See CURTIS ON PATENTS § 28 (1849) (explaining degree of utility is irrelevant).

35. 36 App. D.C. 181, 184 (D.C. Cir. 1911).

36. *Id.* at 184-85.

37. *Id.*

38. 63 U.S.P.Q. 163 (Pat. Off. Bd. of App. 1942).

intermediate in the production of other compounds satisfied the utility requirement:

Regardless of whether applicant's compounds could or could not be used in a froth flotation process we are of the opinion that they could be regarded as intermediates in the preparation of other compounds, since it is obvious that any organic compound can be so used.<sup>39</sup>

This relaxed standard in chemical utility cases remained until 1950, when a series of cases, beginning with the CCPA case *In re Bremner*, questioned this liberal standard.<sup>40</sup> The application in *Bremner* claimed compositions and processes for producing hard resins, but the specification did not assert particular uses for the inventions.<sup>41</sup> The application merely disclosed physical characteristics of the compound, just as the *Potter* application did.<sup>42</sup> Nevertheless, the *Bremner* court required some showing of actual utility for the claimed compound:

It is our view that no "hard and fast" ruling properly may be made fixing the extent of disclosure of utility necessary in an application, but we feel certain that the law requires that there be in the application an assertion of utility and an indication of the use or uses intended.<sup>43</sup>

Extending this conclusion to the process claims as well, *Bremner* held that a claimed process must also produce a useful product in order to be patentable.<sup>44</sup> The Patent Office quickly adopted the "assertion of utility" requirement as promulgated by the court in *Bremner*.<sup>45</sup>

Although ostensibly construing section 112 rather than section 101,<sup>46</sup> the Court of Appeals for the District of Columbia expanded the *Bremner* ruling in *Petrocarbon, Ltd. v. Watson*.<sup>47</sup> In this case, the applicant claimed a process for producing a new polymer compound which could form a "film" on a cool surface.<sup>48</sup> The court rejected the application because the face of the application did not teach how to use the invention as required by section 112:

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39. *Id.* at 165.

40. 182 F.2d 216 (C.C.P.A. 1950).

41. *Id.* at 217.

42. Compare *Bremner*, 182 F.2d at 217 (no patent "granted upon a . . . process producing a product, unless such product be useful.") with *Potter*, 36 App. D.C. at 185 (patent upheld even though no specific use disclosed for resulting product).

43. *Id.* at 217 (emphasis in original).

44. *Id.*

45. See, e.g., *Ex parte Tolkmith*, 102 U.S.P.Q. 464, 465-66 (Pat. Off. Bd. App. 1955).

46. *Petrocarbon* illustrates the somewhat blurry line created by the courts between the be useful requirement of section 101 and the "how to use" disclosure requirement of section 112. The court may just as well have rejected the application under section 101 on the grounds that the film did not do anything, but instead rejected the application under section 112 on the grounds that the applicant did not teach a person of ordinary skill in the art "how to use" the product of the claimed invention.

47. 247 F.2d 800 (D.C. Cir. 1957), cert. denied, 355 U.S. 955 (1958).

48. *Id.* at 801.

The examples [disclosed in the application for use of the film] do not indicate whether or not this film adheres to the object on which it forms, whether it falls off in the form of a powder, whether it is detachable in the form of a film-like substance . . . whether the film itself would have to be subjected to further processing before it could form a useful object or fluid, and so on. Some such further indication, it seems to us, should have been given to enable readers of the application to understand how the product is to be used.<sup>49</sup>

Despite the rising momentum toward a strict chemical utility standard, the CCPA reaffirmed the relaxed standard in the 1960 case of *In re Nelson*.<sup>50</sup> In *Nelson*, the applicant claimed steroid compounds asserted to be useful as intermediates in the preparation of other steroids, at least some of which had therapeutic properties.<sup>51</sup> The court held that these intermediate steroid compounds satisfied the utility requirement of section 101.<sup>52</sup> Although commentators have disputed the breadth of the holding in *Nelson*,<sup>53</sup> the court's policy-based rationale suggests that the applicant was not required to specify a use for the final product in order to demonstrate that the intermediate was useful:

We have never received a clear answer to the question "Useful to whom and for what?" Surely a new group of steroid intermediates is useful to chemists doing research on steroids, and in a "practical" sense too. Such intermediates are "useful" under section 101. They are often actually placed on the market before much, if anything, is known as to what they are "good" for, other than experimentation and the making of other compounds in the important field of research. Refusal to protect them at this stage would inhibit their wide dissemination, together with the knowledge of them which a patent disclosure conveys, which disclosure the potential protection encourages. This would tend to retard rather than promote progress.<sup>54</sup>

Thus, *Nelson* recognized that in the chemical industry, pure research often has an intrinsic utility despite no immediate use for the fruits of the

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49. *Id.*

50. 280 F.2d 172 (C.C.P.A. 1960).

51. *Id.* at 180.

52. *Id.* at 180-81.

53. Compare, Note, *Requirements for Patenting Chemical Intermediates: Do They Accomplish the Statutory Goals?*, 29 ST. LOUIS U. L.J. 191, 193 (1984) (interpreting *Nelson* as not requiring that the final product also have a use) with, Note, *Do Chemical Intermediates Have Patentable Utility?*, 29 GEO. WASH. L. REV. 87, 98 (1960) (interpreting *Nelson* narrowly as requiring the product of the subject intermediate to have a known utility). In *Manson*, the Supreme Court followed the former interpretation of *Nelson* by quoting *Nelson* as holding that "a process yielding chemical intermediates [is] 'useful to chemists doing research on steroids,' despite the absence of evidence that any of the steroids thus ultimately produced were themselves 'useful.'" *Manson*, 383 U.S. at 530.

54. 280 F.2d at 180-81.

research. As a result, the court construed utility under section 101 to include utility to the chemical researcher.<sup>55</sup>

*Nelson* also provided guidance with respect to the separate roles of sections 101 and 112 in the utility inquiry.<sup>56</sup> More specifically, it noted that a two-step inquiry is required in determining utility under these different sections:

[It is necessary to] separate the requirement of section 101 that an invention *be* useful from the section 112 requirement that a specification shall so explain "the manner and process of . . . using" the invention so as to "enable any person skilled in the art . . . to use the same."<sup>57</sup>

According to the court, section 112 "is not directed to the *existence* of usefulness but to what an inventor must disclose as a quid pro quo for patent protection."<sup>58</sup> The court explained that "in exchange for and as a condition of the patent protection, it secures a full disclosure of the invention."<sup>59</sup> Discussing section 101, the court concluded that the existence, rather than the degree, of utility was the critical inquiry.<sup>60</sup> As the court noted, "[t]he seemingly little advances are the bread and butter of progress and sometimes turn out to be of much greater importance than at first thought."<sup>61</sup>

Finally, the CCPA in *Nelson* explicitly rejected the D.C. Circuit's decision in *Petrocarbon*.<sup>62</sup> The court took exception to *Petrocarbon* primarily because the specification described a use for film that was not too broad, because one of ordinary skill in the art would understand the use described by the specification.<sup>63</sup> Thus, in addition to clarifying and differentiating the section 101 and 112 utility requirements, the *Nelson* court applied a more relaxed standard for interpreting both of these sections than did *Bremner* and *Petrocarbon*.

In addition to the confusion between sections 101 and 112, courts appeared confused over the distinction between product claims and process claims. Courts provided little clarification regarding the utility requirements and the differences between product and process claims until the 1963 case of *In re Wilke*.<sup>64</sup> *Wilke* explained that section 112

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55. *Id.*

56. *Id.* at 184.

57. *Id.*

58. *Id.*

59. *Id.* at 182.

60. *Id.* at 178.

61. *Id.* at 182.

62. *Id.* at 186. The CCPA in *Nelson* made no attempt to distinguish the *Petrocarbon* case, stating instead that one of ordinary skill in the plastics art would know how to use the disclosed film in *Petrocarbon* in light of the film's disclosed properties. *Id.*

63. *Id.*

64. 314 F.2d 558 (C.C.P.A. 1963).

imputes different requirements on product and process claims. For a process claim, the applicant is only required to teach how to use the process, and is not required to teach a use for the product of the claimed process.<sup>65</sup> On the other hand, for product claims section 112 requires a disclosure of both the manner of making the claimed product and the manner of using the claimed product.<sup>66</sup> Thus, *Wilke* and *Nelson* combined to turn back the strict holding of *Bremner*. Despite *Wilke* and *Nelson*, chemical researchers still had reason to be uncertain regarding the status of the utility requirement until 1966.

### B. The *Manson* Decision

In 1966 The United States Supreme Court entered the chemical utility debate in *Brenner v. Manson*.<sup>67</sup> *Manson* was a patent applicant who sought an interference<sup>68</sup> with a previously issued patent.<sup>69</sup> Specifically, both parties claimed a process that yielded a steroid product used in cancer research.<sup>70</sup> The original examiner refused to declare an interference, asserting that *Manson*'s application failed to disclose any utility for the chemical research compound produced by the process.<sup>71</sup> Appealing the examiner's rejection, *Manson* attempted to demonstrate utility by referring to a publication which disclosed that other steroids that were homologs<sup>72</sup> to the steroids *Manson*'s process created were

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65. *Id.* at 565-66. *Accord, In re Adams*, 316 F.2d 476 (C.C.P.A. 1963), and *In re Szwarc*, 319 F.2d 277 (C.C.P.A. 1963).

66. *Wilke*, 314 F.2d at 562.

67. 383 U.S. 519 (1966).

68. The patent office may hold an interference hearing when a current patent application overlaps in scope with a pending application or an unexpired patent. 35 U.S.C. § 135 (1988). The interference seeks to resolve the issue of priority of invention between the parties. *Id.*

In *Manson*, Howard Ringold and George Rosenkranz applied for a U.S. patent in December 1957, claiming priority as of December 1956 when they filed for a Mexican patent. *Manson*, 383 U.S. at 520-21. *Manson* filed his U.S. application in January 1960, claiming that he discovered the process before December 1956. *Id.* *Manson* requested an interference hearing to resolve the competing priority claims. *Id.*

Judges examining the *Manson* decision have disagreed about the significance of the interference setting of the case. Compare *In re Kirk*, 376 F.2d 936, 944 (for purposes of determining utility differences between ex parte hearing and interference are "highly technical procedural ones") with *Kirk*, 376 F.2d at 953 (even for utility inquiries these two situations "differ by more than 'highly procedural aspects'"') (Rich, J., dissenting).

69. *Id.* at 521.

70. *Id.* at 520-22.

71. *Id.* at 521.

72. The Applicant's "homolog utility" argument seemed sensible, especially in light of the modern test of obviousness for chemical inventions announced three years earlier in *In re Papesch*, 315 F.2d 381 (C.C.P.A. 1963). Although *Papesch* ended the era in which the Patent Office typically determined obviousness simply because of a similar structural formula to a composition disclosed in the prior art, a difference in properties was

effective in inhibiting tumors in mice.<sup>73</sup> The Patent Office Board of Patent Appeals rejected this argument, concluding that the utility of a product could not be demonstrated merely by its close relation to another useful compound.<sup>74</sup> The CCPA reversed the Patent Office Board of Appeals in view of *Nelson*, noting that for process claims utility need not also be demonstrated for the product of the process so long as the product is not "detrimental to the public interest."<sup>75</sup>

The Supreme Court not only reversed the CCPA,<sup>76</sup> but rejected the standard in *Nelson*. Instead, the Court required process patent applications to demonstrate the utility of the products produced by the process.<sup>77</sup> The product of the process patent must exhibit a practical utility itself and not simply be "an object of scientific research" or "an object of use testing."<sup>78</sup>

As a rationale for its holding, the Court skeptically portrayed the disclosure of information in patents as being of dubious quality which does not entice others to search for a use for an invention.<sup>79</sup> More importantly, the Court feared that a process whose product is not precisely delineated by a specific practical utility would effectively "block off whole areas of scientific development" because of the uncertain scope of this monopoly grant.<sup>80</sup> As a result of these concerns, the Court required a showing of "substantial"<sup>81</sup> utility as the quid pro quo for receiving a patent. Therefore, a novel process does not merit a patent monopoly unless a "specific benefit exists in currently available form" for the products of the claimed process.<sup>82</sup> Whereas *Nelson* defined utility to include utility to the chemical researcher,<sup>83</sup> *Manson* held that a process

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nevertheless required in order to demonstrate the unobviousness of the invention as a whole when the prior art was a homolog of the invention. Conversely, it follows that it might be ordinarily expected that homologs would have a similar utility, as asserted by the applicant, based on similar properties.

73. 383 U.S. at 522.

74. *Id.*

75. The Supreme Court characterized this as an "extreme proposition." *Id.* at 530.

76. *Id.* at 536.

77. *Id.* at 534-35.

78. *Id.* at 535.

79. *Id.* at 534. The Court noted the "highly developed art of drafting patents so that they disclose as little information as possible." *Id.* at 534. Furthermore, any incentives to future research created by the patent disclosure are undercut by the patent-holder's ability to enforce the patent. *Id.*

For a discussion of the "dubious quality" of disclosure in patent applications see Sibley, *supra* note 24, at 216.

80. 383 U.S. at 534 (citing *Monsanto Chemical Co. v. Coe*, 145 F.2d 18, 21-24 (D.C. Cir. 1944)).

81. *Id.* at 534.

82. *Id.* at 534-35.

83. *Nelson*, 280 F.2d at 181. See *supra* notes 50-63 and accompanying text.

whose sole utility is in research does not satisfy the utility requirement.<sup>84</sup> In dicta, the Court further suggested that a product whose sole use was in research could also not be protected by a product patent.<sup>85</sup> The Court treated products and processes alike, centering its analysis on the disclosed use; if the use is merely for research, then the invention is unpatentable, regardless of whether the invention is a product or a process.<sup>86</sup>

### C. The CCPA's Response to *Manson*: *Kirk* & *Joly*

The CCPA in the companion cases of *In re Kirk*<sup>87</sup> and *In re Joly*<sup>88</sup> extended the *Manson* holding by embracing the dicta in *Manson* which suggested that the Court's reasoning would be similarly applicable to product claims for chemical research intermediates.<sup>89</sup> *Kirk* and *Joly* both involved product claims for intermediates used to synthesize other compounds that had no known utility. Specifically, *Kirk* involved intermediate steroids used in preparing "biologically active compounds."<sup>90</sup> The CCPA held that if a process is not useful, then the claimed intermediates used in the process are not useful, and sections 101 and 112 are thus not satisfied.<sup>91</sup> In *Joly*, the CCPA also affirmed the Examiner's rejection for insufficient disclosure of utility.<sup>92</sup> The court explained that "[a] useless product does not become useful by conversion into another useless product."<sup>93</sup>

In his dissenting opinion in *Kirk*, Judge Rich criticized the wisdom of the policies enunciated in *Manson* as extended by the majority in *Kirk* and *Joly*.<sup>94</sup> He also distinguished *Manson*, viewing it as having much

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84. *Manson*, 383 U.S. at 535-36.

85. *Id.* at 535 ("these arguments . . . would apply equally to the patenting of the product produced by the process").

86. *Id.*

87. 376 F.2d 936 (C.C.P.A. 1967).

88. 376 F.2d 906 (C.C.P.A. 1967).

89. *Kirk*, 376 F.2d at 945 ("just as the practical utility of the compound produced by a chemical process 'is an essential element' . . . the practical utility of the compound, or compounds produced from a chemical 'intermediate' . . . is an essential element in establishing patentability of that intermediate"); *Joly*, 376 F.2d at 908 (quoting *Kirk*).

90. *Kirk*, 376 F.2d at 939.

91. *Id.* at 945, 942 (discussing sections 101 and 112).

92. *Joly*, 376 F.2d at 909.

93. *Id.* at 907.

94. *Kirk*, 376 F.2d at 957-59 (Rich, J., dissenting). However, the extension of the *Manson* holding to ex parte proceedings in *Kirk* and *Joly* is actually not surprising, given the broad language and strong dicta in *Manson*. A narrow interpretation of *Manson* by the CCPA—for example, by restricting the stringent utility requirement to a reduction of practice inquiry in an interference context—would not be in the spirit of the expansive policy-based reasoning of the Supreme Court.

narrower applicability.<sup>95</sup> Specifically, Rich questioned the line drawing issues surrounding the concept of practical utility.<sup>96</sup> He noted that these so called “useless” products were commonly used and sold within the chemical research industry.<sup>97</sup> According to Rich, the best rule “from the practical, administrative standpoint” was a *per se* finding of utility for new chemical compounds.<sup>98</sup> As a result of the majority decisions, Rich called for Congressional action to reverse the tide of judicial rulemaking.<sup>99</sup>

Judge Rich also criticized the Supreme Court’s disregard—that the CCPA majority in *Kirk* and *Joly* followed—for the precedential value of prior judicial and legislative interpretations of utility.<sup>100</sup> Finally, Judge Rich quotes extensively from a memorandum sent by a large chemical company to its patent counsel.<sup>101</sup> The memo indicates that the researchers often asserted artificial utilities for their newly developed products because the testing for their “true utility” was too time-consuming.<sup>102</sup>

#### D. The Chemical Utility Requirement Today: The Progeny of *Manson*, *Kirk*, and *Joly*

Although *Manson* rejected the inclusion of chemical research into the utility definition under sections 101 and 112, *Carter-Wallace v. Riverton*<sup>103</sup> held that a patent for a new compound satisfied the utility requirement by claiming potential human therapeutic value evidenced by laboratory animal tests.<sup>104</sup> While the compound was intended for human

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95. *Id.* at 949 (1967) (Rich, J., dissenting). Judge Rich distinguished *Manson* as a case where an applicant in an interference hearing produced no evidence of utility. *Id.* at 948. On the other hand, *Kirk* involved an “admitted disclosure of the compounds as intermediate to make certain steroids.” *Id.* at 949. Thus, for Rich, the difference was that between zero disclosure and some disclosure.

Rich also would limit *Manson* to an interference setting, whereas *Kirk* and *Joly* involved ex parte proceedings and thus required different rules. *Id.* at 953. In an interference, the utility requirement is arguably more challenging because of the necessity to establish actual reduction to practice in order to prove priority of invention. *Id.*

Nevertheless, the interference distinction Rich suggests may simply be a mechanism he employed to attempt to limit the scope of the questionable policy considerations created by the Supreme Court, whose decisions were binding upon the CCPA.

96. *Id.* at 957.

97. *Id.*

98. *Id.*

99. *Id.*

100. *Id.* at 950-955.

101. *Id.* at 959.

102. *Id.* at 960.

103. 433 F.2d 1034 (C.C.P.A. 1970). The claims at issue were three organic compounds in the class of 2,2-disubstituted-1, 3-propanediol, one of which was generically known as meprobamate.

104. *Id.* at 1039-40.

use, at the time of the patent application tests had been conducted only on mice and other laboratory animals.<sup>105</sup> Whether the drug could ever be used to treat humans, however, remained unproven. Thus *Carter-Wallace* refines *Manson* by essentially measuring utility by the degree of research. In effect, *Carter-Wallace* finds utility where laboratory testing indicates that the new compound has a chance of being useful.

The court further refined the quantity and quality of testing necessary to show utility in *Nelson v. Bowler*<sup>106</sup> and *Cross v. Iizuka*.<sup>107</sup> In *Bowler*, the court held that "pharmacological activity" evidence shown through testing on animals constituted a practical utility even though such testing did not establish a specific therapeutic value.<sup>108</sup> In reaching its decision, the court expressly recognized that providing incentive for disclosure of compounds yet unproven as to their usefulness to humans nonetheless benefited the public. The *Iizuka* opinion noted, "[I]t is inherently faster and easier to combat illnesses and alleviate symptoms when the medical profession is armed with an arsenal of chemicals having known pharmacological activities."<sup>109</sup>

In *Iizuka*, the court held that *in vitro* testing of a claimed compound coupled with *in vivo* testing of structurally similar compounds was sufficient evidence of pharmacological activity to meet the utility requirement.<sup>110</sup> *Iizuka* extended *Bowler*, holding that a patent applicant may show the utility of a new compound without testing the new compound on laboratory animals, thus lessening the degree of research needed to meet the utility requirement.

In biotechnology research, the utility of cDNA fragments<sup>111</sup> has recently been at issue during the course of the multinational Human Genome Project. Craig Venter, formerly affiliated with the National Institutes of Health (NIH), filed a patent application in 1991 claiming as products partial cDNA fragments sequenced at NIH.<sup>112</sup> The application claimed full length cDNA sequences as well as complementary variants thereof, all of which NIH asserted could be obtained without undue

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105. 433 F.2d at 1036.

106. 626 F.2d 853 (C.C.P.A. 1980).

107. 753 F.2d 1040 (Fed. Cir. 1985).

108. 626 F.2d at 856.

109. *Id.*

110. 753 F.2d at 1050.

111. The term "cDNA" signifies complementary DNA, which matches the genetic messenger or messenger RNA (mRNA). Of the many DNA sequences in human genetic material or the human genome, only the cDNA sequences encode operational proteins. It is estimated that only about 3% of DNA in the human genome actually codes for a useful protein. See, MERGES, *supra* note 11, at 158.

112. See, e.g., Edmund L. Andres, *U.S. Seeks Patent on Genetic Codes Setting Off Furor*, N.Y. TIMES, Oct. 21, 1991, at A1.

experimentation.<sup>113</sup> Although Venter and other advocates of the NIH application argued that allowing patents for partial cDNA sequences promotes technology, the NIH ultimately allowed the application to be abandoned in early 1994.<sup>114</sup> Thus, officially, the patentability of the cDNA fragments remains an unresolved issue.<sup>115</sup> Unless patents for the cDNA fragments are ultimately granted, the prosecution histories will remain secret.<sup>116</sup>

Commentators have noted, however, that in view of *Manson*, *Kirk*, and *Joly*, partial cDNA fragments apparently do not meet the utility standard adopted by the courts.<sup>117</sup> The ultimate utility for a cDNA sequence is to determine the protein produced by the gene. Although an inventor of a partial cDNA fragment may assert nominal utilities, such as uses as genetic markers, PCR primers, and tissue typing probes, these utilities probably would not meet the *Manson* standard of a "substantial" utility, and would instead be construed as uses for "purely research purposes."<sup>118</sup>

### III. RECONSIDERING THE STRICT UTILITY STANDARD IN CHEMICAL PATENT PRACTICE

#### A. A Criticism of *Manson*: Chemical Research Benefits Society in a Two-Step Quid pro quo, Each Step Being Crucial in Promoting the Progress of the Useful Arts

At the core of the Supreme Court's reasoning in *Brenner v. Manson* were fundamental notions of the purposes of patent law as expressed in the Constitution and in the Patent Act of 1952: "The basic quid pro quo contemplated by the Constitution and the Congress for granting a patent monopoly is the benefit derived from an invention with substantial utility."<sup>119</sup> From this axiom the Court concluded that "[u]nless and until a process is refined and developed to this point—where specific benefit exists in currently available form—there is insufficient justification for permitting an applicant to engross what may prove to be a broad field."<sup>120</sup> Inherent in this logical progression, however, is the embedded conclusion that any compound whose "specific benefit" does not "exist in currently available form" would not be beneficial to society such that it merits

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113. *Id.*

114. Smith and Kettelberger, *supra* note 2, at 51.

115. *Id.* at 63.

116. *Id.*

117. See, e.g., *id.* at 53.

118. *Id.*

119. *Manson*, 383 U.S. at 534.

120. *Id.*

patent rights. This conclusion is questionable when applied to inventive processes in the chemical arts.

The *Manson* decision is fundamentally flawed in that it assumes that all chemical research benefits society via the same one-step quid pro quo that society experiences with mechanical and electrical inventions. It is a virtual tautology that mechanical and electrical inventions are created with a use in mind: a nose cone for a jet airplane is produced with the airplane in mind; an electrical amplifier is created with the need for an amplified electrical output in mind. The creation of invention "X", and the useful application of invention "X", are inherently unified. The invention process applies technology to address a perceived need or to improve a current application. Society benefits in a one-step quid pro quo: in exchange for a patent, the inventor discloses to society an operative electrical/mechanical innovation—that innovation is almost always inherently useful/beneficial by its electrical or mechanical nature.<sup>121</sup>

On the other hand, many chemical inventions benefit society in a two-step, rather than a one-step, progression. The first step is the creation of a compound with new characteristics and the second step is the finding of a use for that compound and its properties. Professor Merges summarizes the two-step nature of chemical research in the following passage:

Because of the unique nature of chemical research, chemists often develop a chemical compound without a particular purpose in mind. Often a chemist works with a family of related compounds, trying to synthesize one which, because of the properties it shares with other compounds in the family, is thought likely to be useful for something. The chemist might have a particular goal when she sets out, such as the discovery of a compound that will treat a particular disease. Alternatively, she may be exploring a general class of compounds whose properties suggest they might eventually serve some as yet unspecified purpose. Either way, chemists often synthesize compounds which they believe might be useful someday for something.<sup>122</sup>

Following this first step comes the second step of finding a use for the synthesized compound. Under the *Manson* decision and its progeny, only inventors who achieve the second step may obtain a patent for their

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121. While it is difficult to imagine otherwise, Professor Merges puts forth the following example of a non-useful mechanical invention:

[O]ne might perhaps imagine a "machine" with working parts that did not really do anything; perhaps it just spins around, or oscillates back and forth for no particular purpose. Such a machine would fail the test of utility under § 101 of the patent code. Note that machines that serve only to amuse or entertain are deemed useful under the patent code.

MERGES, *supra* note 11, at 147.

122. *Id.* at 149.

efforts. In other words, only if a use for a newly discovered compound is known, or if a use is discovered for an existing compound which previously had no known use, can a patent be obtained for that compound.

Despite *Manson's* implications to the contrary, both the (1) "creation" step and the (2) "finding an application" step in the progress of chemical development are beneficial to society, and each should be rewarded independently of the other. Thus, the creation of a new chemical compound and its disclosure to society, even if its use is not yet known, should be encouraged and rewarded by the patent process. The premise of the above assertion is, of course, that society does benefit from the disclosure of compounds with no known use. This assertion demonstrates complete consistency with the present allowance of "method of use" claims for patented compounds reciting nominal use, or a vastly different use, in their original patent disclosures.<sup>123</sup> It is well known that if an inventor finds a novel, nonobvious use for a known compound, she may obtain a patent for that method of use. With this in mind, consider the following hypothetical.

Assume that a composition claim has been granted to inventor A on a new compound X, with the disclosed utility being to kill mosquitoes. Assume that inventor B reads the patent disclosure for compound X and decides that compound X might be useful for something other than killing mosquitoes. It is well-known under novelty and obviousness principles that if the new use was similar to killing mosquitoes (for example, killing flies), there would be a reduced chance of obtaining a method-of-use patent under sections 102 and 103.<sup>124</sup> If, however, the new use were completely unrelated to killing mosquitoes (for example, a cure for cancer), a patent on the new method-of-use would probably be granted.<sup>125</sup>

The purpose of the above hypothetical is to show that the patent laws already recognize that the disclosed use of a new compound may just be the tip of the iceberg for that compound. More importantly, the laws already recognize that it may be the tip of some *other* iceberg: the less obvious a new use is in light of the original compound patent disclosure, the more willing the patent laws are to reward the new-use

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123. 35 U.S.C § 100 includes in the definition of a patentable "process" the "new use of a known process, machine, manufacture, composition of matter, or material," establishing the basis for "method of use" claims as a "process" claim under 35 U.S.C. § 101. 35 U.S.C. §§ 100, 101 (1988).

124. See generally, MPEP, *supra* note 1, at § 706.02 (In section entitled "Rejection on Prior Art," the patent office reviews standards for anticipation rejections under 35 U.S.C. § 102 and obviousness rejections under 35 U.S.C. § 103.).

125. *Id.*

inventor.<sup>126</sup> It is the job of subsequent inventors to find uses which are as nonobvious as possible in light of the compound's original disclosure. Why, then, must the original compound have any recited use at all? Or, alternatively, why should products with nominal utilities receive patents while those with unknown, but potentially great, utilities go unrewarded? The patent law machinery is already in place to allow society to benefit from the disclosure of new compounds with no known use.

Currently, there is a large inconsistency between the benefits society receives from patented "nominal-use" compounds and those received from non-disclosed, non-patented, no-known-use compounds. In the former case, the product patent is granted even where only a nominal use is disclosed, and society fully benefits as new inventors scurry to find novel, nonobvious uses for that compound. In sad contrast, a compound with no known use will remain undisclosed, as its inventor will not disclose the compound through a patent until she finds at least a nominal use for the compound.<sup>127</sup> There is no rational reason for such an artificial distinction, created by *Manson* and its lower-court progeny, to remain. It is clear that society would benefit from step one of the two-step quid pro quo because society already benefits where only nominal uses are initially disclosed. There is no practical difference in the promotion of the useful arts between inventions with no known use and those with a mere nominal use. Therefore, each step of the two-step quid pro quo should be independently encouraged by the patent system. When a subsequent use is found for a claimed compound, a subsequent inventor may file "method-of-use" claims, and a resulting cross-licensing arrangement between the product-claim owner and the method-of-use claim owner can ensure beneficial use by all and a proportionate sharing of the rewards of creation by the two patent holders.

In light of the benefit to society of disclosing a compound with no known use or with a known use only in research, the Supreme Court's reasoning in *Manson* is questionable. The founding fathers provided Congress with the opportunity to establish a patent system in order to "promote the progress of science and the useful arts."<sup>128</sup> However, the *Manson* Court doubted the significance of a benefit to the public in receiving the applicant's disclosure of new compounds with uncertain uses, because the Court explained that in claim drafting, the applicant discloses as little information as possible.<sup>129</sup> Congress has explicitly and

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126. *Id.*

127. *Manson* disagrees on this point, claiming that inventors who cannot determine a use for their inventions will have "every incentive to make [their] invention[s] known to those able to do so." *Manson*, 383 U.S. at 534.

128. U.S. CONST. art. I, § 8, cl. 8.

129. See supra note 79 and accompanying text.

clearly promulgated disclosure requirements for an applicant for a patent.<sup>130</sup> While a claim may disclose minimal information, as clearly established by Congress in the patent statute, it must be sufficiently supported by the disclosure to merit the patent rights.<sup>131</sup> It is the role of Congress to determine what disclosure requirements an applicant must meet in exchange for the proprietary interest from the patent. Congress has clearly fulfilled this responsibility. The duty of the patent office is to zealously examine patent applications in accordance with the instructions of Congress.

Further, in *Manson* the Court asserted that fears of secrecy for unpatentable processes were "exaggerated."<sup>132</sup> The majority dismissed the idea that if an inventor cannot find a use for an invention, he would suppress or conceal the invention until such time as a suitable use is discovered. Surprisingly, the Court argued the opposite to be true—an inventor would have "every incentive" to disclose an invention with no known utility so that someone else may determine a use for the invention.<sup>133</sup> Although this may be somewhat true in the confines of academic research,<sup>134</sup> the Court's rationale is in tension with a fundamental premise behind the patent statute: rewarding inventors by granting them the chance at profit encourages dissemination of technological information. Distinct from this premise, the Court implied that research data which has no current "practical utility"<sup>135</sup> will be disseminated more readily in the absence of a proprietary reward, for two reasons. First, if an inventor does not "complete" his invention—for example, by not discovering a practical utility for it—then the inventor would fully disclose the invention in the hope that someone else will complete the invention.<sup>136</sup> Second, the Court asserts that if an inventor could receive a patent for such a product, he probably will disclose as little information as possible to the public and thus impede research efforts to find the elusive use for this product.<sup>137</sup> Although the Court claimed to analyze the "general intent of Congress,"<sup>138</sup> its decision and reasoning run contrary to some of the fundamental concepts of the patent

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130. See generally, 35 U.S.C. § 112; 37 C.F.R. §§ 1.71 - 1.85 (1994).

131. 35 U.S.C. § 112 (1988).

132. *Manson*, 383 U.S. at 534.

133. *Id.* at 534.

134. See, Lawrence R. Velvel, *A Critique of Brenner v. Manson*, 49 J. PAT. OFF. SOC'Y 5, 7 (1967). However, as academic research has taken on a much more competitive nature, notions of academic benevolence may simply be outdated.

135. However, as Judge Rich noted, "practical utility" is a slippery term which justifies conclusions more readily than it provides an analytical structure to face new problems. See *Kirk*, 376 F.2d at 857 (Rich, J., dissenting).

136. *Manson*, 383 U.S. at 534.

137. *Id.*

138. *Id.* at 533.

system. In a dissenting opinion in *Manson*, Justice Harlan highlighted the lack of empirical support for the Court's rationale.<sup>139</sup> Other commentators share this concern and criticize the majority opinion as abstract and reasoned without the necessary facts in the record.<sup>140</sup>

Unsatisfied with the utility of an inventor's mere creation of a new composition, the *Manson* Court feared that granting claims for a new composition with no known use would prevent the public from discovering end uses for such a composition,<sup>141</sup> which the Court presumably found to be the greater contribution to technology. The Court's stringent definition of utility results in a requirement of "substantial" utility, assuring the public of a tangible benefit in exchange for the applicant's proprietary monopoly.<sup>142</sup> Specifically, Justice Fortas concluded that a process which is only useful as an object of scientific research is important, but does not merit a patent.<sup>143</sup> He explained that "a patent is not a hunting license," and is "not a reward for the search, but compensation for its successful conclusion."<sup>144</sup> Once again, however, this assertion simply begs the question because it does not explain why the production of an object of scientific research is not in itself a successful conclusion.

## B. International Considerations Further Compel Abandonment of a Stringent Chemical Utility Requirement

In addition to the questionable policies justifying *Manson*, the evolving international climate also favors relaxing the rigorous utility requirement in the United States. Many key foreign competitors of the United States have not adopted similar stringent chemical utility requirements. Both the European Patent Convention and the Japanese Patent Statute label utility under the alternative concept of "industrial

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139. *Id.* at 538 (Harlan, J., dissenting). Harlan also questioned, in the absence of empirical data to the contrary, the majority's assertion that "useless" new compounds will be readily disclosed by inventors. *Id.* Harlan believed that a first chemist should be encouraged to disseminate his invention by rewarding him with a patent, in the interests of progress, even without a "utility" as defined by the majority. *Id.* at 539. Thereafter, someone else could then take the "further but less difficult step" leading to a commercially useful item. *Id.*

140. See, e.g., Velvel, *supra* note 134, at 56 (encouraging Congress to investigate the facts that are assumed by the Court).

141. 383 U.S. at 534-35.

142. *Id.* at 534. Thus, the strict definition of utility was judicially created; the legislature simply used the broad term "utility" with no indication of a special meaning. A special meaning was implemented by the Court. See, e.g., Mirabel, *supra* note 2, at 814 (arguing that dictionary meaning of "utility" is mandated in the absence of a specific instruction by the legislature and thus "utility" must also encompass any chemical research investigations).

143. *Manson*, 383 at 535-36.

144. *Id.* at 536.

applicability.<sup>145</sup> In these nations, "industrial applicability" includes the use of an invention for pure research purposes.<sup>146</sup> In the United States, chemical research is only a valid utility under narrow circumstances.<sup>147</sup>

The United States' stricter position with respect to chemical utility creates confusion when an inventor seeks international protection. If, for example, an inventor initially files a patent application in a foreign country with a lower utility standard, the inventor may not necessarily secure a priority date in the United States under section 119 of the United States patent code<sup>148</sup> if the rigorous utility standards of *Manson, Kirk, and Joly* are not met at the time of foreign filing.<sup>149</sup> However, this rule is not surprising and naturally follows from the policy considerations underlying section 119, once the utility standard is established.<sup>150</sup>

An inventor who expects to file an application in the United States based upon a prior foreign application date must meet what may essentially be a much stricter standard than required by the initial foreign application, creating confusion in securing patent protection in multiple countries. *In re Ziegler*<sup>151</sup> exemplifies this uncertainty. In *Ziegler*, the applicant originally filed an application in Germany in 1954 for a process pertaining to propylene. Within twelve months of the German application's filing date, Ziegler filed an application in the United States Patent Office in accordance with section 119. Subsequently, the United States application became involved in an interference, and eventually a continuation application was filed in 1987. The CAFC affirmed the PTO's ruling that the original German application which the applicant relied upon for priority did not explicitly disclose a practical utility under section 112.<sup>152</sup> The CAFC's decision in *Ziegler* was not surprising; it merely prohibited an applicant from circumventing the strict practical

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145. See BENT ET AL, *supra* note 31, at 146 (citing Article 52(1) if the European Patent Convention and Section 29(1) of the Japanese Patent Law).

146. *Id.*

147. See *supra* note 52.

148. 35 U.S.C. § 119 (1988).

149. See generally, *Kawai v. Metlesics*, 480 F.2d 880 (C.C.P.A. 1973). The CCPA held in *Kawai* that a foreign application itself must meet the requirements found in § 112 in order to achieve priority status. *Id.* at 886. The court felt that the statute mandated that in exchange for a right to priority, the foreign application must be treated as if it were filed in the United States on the date that the foreign application is filed. *Id.*

150. *Id.* In *Kawai*, the CCPA analyzed priority in the context of a constructive reduction to practice, which requires proof in the specification of a disclosure of a practical utility. *Id.*

151. 992 F.2d 1197 (Fed. Cir. 1993).

152. *Id.* at 1203. The applicant attempted to assert that a practical utility was in fact asserted, but the court rejected the applicant's argument following reasoning similar to that of *Petrocarbon*. See *supra* note 23. See also, *Application of Hafner*, 410 F.2d 1403 (1969) (application was rejected in the United States because of a lack of disclosure of utility, while such disclosure was not required in Germany).

utility requirement of *Manson* by filing abroad prior to filing in the United States and then using the interim period to discover a practical utility to satisfy U.S. law while also retaining the prior foreign filing date.

As foreign competition continues to become more challenging, patent harmonization<sup>153</sup> is an ever-increasing possibility that could result from negotiations under the General Agreement of Tariffs and Trade (GATT),<sup>154</sup> through an independent effort by the World Intellectual Property Organization (WIPO), or, less likely, through direct legislation in Congress.

The increasing momentum toward uniformity between patent systems should be extended to lessen the strict chemical utility standard in the United States. This unnecessarily strict standard hampers the development of chemical and biotechnological research in the United States by discouraging the exchange of information about new compositions until a substantial use (as defined in *Manson*, *Kirk*, and *Joly*) has been disclosed. While inventors in the United States are certainly free to read patents from other countries, American inventors may not have practical access to these disclosures until an English translation is available through a U.S. patent application.<sup>155</sup> Thus the actual exchange of information through disclosure will be more active in nations with the lower utility standard.

### C. Introducing "Best Utility" as a Means for Implementing a Relaxed Chemical Utility Standard

An alternative to the strict utility requirement under *Manson* would be to allow research as a viable practical utility while requiring the inventor to disclose her "best utility" at the time of filing a patent claim. "Best utility" is the best use for a new compound known or suspected by an inventor at the time of application. Disclosure of the "best utility" for chemical patents is analogous to the "best mode" requirement for mechanical and electrical inventions under Section 112. A "best utility" requirement would prevent an applicant from asserting mere research utility while concealing a better utility from the public. The present "how to use" requirement of section 112 would be insufficient to prevent concealment because the enablement inquiry is commensurate with the asserted utility. Therefore, under *Iizuka*, if a mere research utility were

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153. See generally, HAROLD WEGNER, PATENT HARMONIZATION (1993).

154. See generally, Bruce A. Lehman, *Intellectual Property Under the Clinton Administration*, 27 GEO. WASH. J. INT'L L. & ECON. 395 (1993).

155. Such concerns motivated Sen. Dennis DeConcini (D-Ariz.) to introduce on September 30, 1994 a new bill (S.2488) providing for the publication of patent applications eighteen months after their filing. 140 CONG. REC. S13,863 (daily ed. Sept. 30, 1994) (statement of Sen. DeConcini), described in *Legislation: Administration Bill on 18-Month Publication of Patents is Introduced*, 48 PAT., TRADEMARK & COPYRIGHT J. 599 (1994).

disclosed, the enablement requirement would be satisfied by simply explaining "how to use" the research while a "better" utility could be suppressed.

The "best utility" requirement would be most effectively implemented if it were codified as a specific requirement for chemical and biochemical patent applications. Codification would clearly distinguish the "best utility" requirement for chemical patents from the "best mode" requirement for mechanical and electrical patents. It would also eliminate any confusion by requiring that an inventor not only state the best embodiments of a claimed compound, but also share the status of her research.

#### IV. CONCLUSION

Congress should reject the policies outlined in *Manson*, *Kirk*, and *Joly* by implementing legislation to the contrary. In view of the disadvantage to chemical and biotechnological researchers in the United States on an increasingly competitive international playing field, Congress should explicitly include research as a satisfactory utility under section 101.

Chemical and biotechnological research are inherently different from electrical and mechanical inventions because discovering a new composition and finding a use for the composition should be the subject of two separate patents with the final commercial product brought to the marketplace through a cross-licensing agreement. Electrical and mechanical cases do not ordinarily create this potential for separate patents because a new invention is inherently connected to its practical utility. Since new chemical or biotechnological creations have potential use in research, these research possibilities should be explicitly codified as sufficient uses in the Patent Statute. The disclosed research utility should meet an analysis similar to the "best mode" requirement of section 112. The applicant would be required to disclose his "best utility" at the time of filing in order to obtain a valid patent.

Although the Supreme Court in *Manson* suggested that obtaining a use for a compound is a greater contribution than actually discovering the compound,<sup>156</sup> obtaining the use is obviously not possible without knowledge of the existence of the compound. Without a proprietary interest, an inventor of a compound has little incentive to provide information about the compound to potential competitors. The Supreme Court's fear that large areas of technology would be blocked off by

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156. See *supra* note 38. The Supreme Court's suggestion may further be attacked because composition claims are clearly the premium form of protection and are unquestionably preferred over method claims, such as those claiming a "method for making" or a "method for using."

granting claims to inventors with no known utility should be alleviated by the concept of "method of use" claims.

Alternatively, federal courts may choose to re-adopt the basic *Nelson* holdings, either by the unlikely avenue of an outright Supreme Court reversal of *Manson*, or, more likely, by a Federal Circuit ruling which confines *Manson* to its facts, as Judge Rich suggests in *Kirk*.<sup>157</sup> In *Nelson*, the Federal Circuit's predecessor court created a compromise wherein research is deemed to fulfill practical utility under section 101 while the inventor must teach someone skilled in the art "how to use" the invention under section 112.<sup>158</sup> *Nelson* struck a proper balance by allowing research to be a viable utility and requiring the applicant to properly disclose and teach the invention in view of the aforementioned fundamental patent law principles. *Nelson* was not as liberal as the earlier chemical utility cases, which essentially disregarded the utility requirement of both sections 101 and 112.

Simply reestablishing *Nelson* as the law would not necessarily be a panacea. An applicant should also be required to disclose the "best utility" in order to preclude the inventor from suppressing an actual use while simply disclosing a research use, and thus gaining the patent monopoly with an incomplete or fraudulent disclosure. One solution to this problem, of course, would be to judicially subsume the "best utility" requirement under the "best mode" requirement. In other words, the section 112 requirement of demonstrating to a person of ordinary skill in the industry how to use the product would require a showing of the best use for the product, including the best avenues of future research.

In conclusion, the *Nelson* approach better encourages the public to invent and also requires the applicant to teach and disclose research utility in accordance with the policies that drive the patent system. The stricter policies announced in *Manson* do not encourage an inventor of a new chemical or biochemical composition or process to disclose the discovery to other researchers who may then further attempt to put the invention to a more commercially practical use. The *Nelson* approach also invites further research and progress by allowing later inventors to file patent applications for novel uses of the products created by their peers. The more liberal interpretation of chemical utility would also aid researchers in the United States by removing the disadvantage in international competition created by the United States' strict position. In view of the foregoing considerations, the current rigorous chemical utility standard in the United States should be relaxed and the *Nelson* approach to the utility requirement for chemical inventions should be reinstated.

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157. See *Kirk*, 376 F.2d at 948-49.

158. *Nelson*, 280 F.2d at 184.

either judicially or legislatively, with the proviso that an applicant must disclose a "best utility" in order to obtain a valid patent.

# **COMMENT**

## **COPYRIGHT MISUSE AND TYING: WILL COURTS STOP MISUSING MISUSE?**

**TROY PAREDES** †

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### **I. INTRODUCTION**

Should a copyright infringer be able to argue, as an affirmative defense, that the copyright holder has misused his copyright by undermining innovation and creativity, the public policy concerns of copyright law?

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The misuse doctrine, a permutation of the equitable doctrine of unclean hands, originally developed as a defense to patent infringement claims. The doctrine provides that whenever a copyright holder uses his copyright in a way that undermines copyright policy, the court may deny him relief against infringement. Although the general doctrine is simple, courts and scholars nonetheless disagree over how to define the type of conduct that constitutes misuse. There are two fundamentally different views. The traditional "scope of the grant" view argues that a copyright holder's misconduct need not rise to the level of an antitrust violation to constitute misuse. Adherents to this view argue that a copyright holder's conduct may undermine copyright policy even though it does not violate the Sherman or Clayton Acts. The "antitrust" view, on the other hand, argues that a copyright holder's misconduct must rise to the level of an antitrust violation to constitute misuse.

The issue of copyright misuse in today's economy is of special concern. Many defendants asserting the misuse defense are alleged infringers of copyrighted computer programs and software. Given the vital role of computer technology in our economy, it is essential that courts maintain incentives to create new software programs by adequately enforcing the exclusive rights attendant to a copyright grant.<sup>1</sup>

Licitors of copyrighted computer software programs often "tie"<sup>1</sup> their works to hardware and servicing.<sup>2</sup> Ties are the quintessential example of misuse. Therefore, this Comment focuses on whether courts, which are currently split over how to define misuse, should adopt the traditional or antitrust view when the copyright holder's alleged misconduct is a tie.

Part II discusses the public policy implications of copyright law, and the economic incentives copyrights provide to innovation and creation. Part III begins with a historical overview of the development of the misuse doctrine in patent law, emphasizing conflicting interpretations of *Morton Salt*, the Supreme Court's first formal articulation of the misuse doctrine. Part III concludes with a discussion of the misuse defense. The analysis highlights the arguments supporting the traditional and antitrust views of copyright misuse. It also focuses on the antitrust view's criticisms of the traditional view. Part IV addresses the question of which view of misuse courts should adopt when the copyright holder's alleged misconduct is a tie. After analyzing tying theory within the context of the

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1. In a tying arrangement, the seller refuses to sell a product (tying product) unless the buyer agrees to purchase a second product (tied product). A tie-in, however, is not anticompetitive unless the seller has market power in the tying product market. Tie-ins are addressed in detail in Part IV.

2. See *infra* Part IV.C for examples of tie-ins involving computer software programs.

misuse doctrine, this commentator concludes that when plaintiff's alleged misconduct is a tie, courts should adopt the antitrust view.

Through Part IV, this commentator assumes arguendo that courts should recognize copyright misuse as a valid affirmative defense to allegations of infringement. However, in Part V, this commentator challenges this assumption. Part V thus asks whether the misuse defense should exist at all in copyright law and answers with this commentator's bifurcation theory. That is, when the copyright holder's alleged misconduct is a tie, courts should bifurcate issues of antitrust law from issues of infringement and reject the misuse defense completely for two reasons. First, the misuse defense weakens copyright policy by undermining incentives to innovate and creating incentives to infringe. Second, antitrust laws, bifurcated from issues of infringement and misuse, deter and root out illegal tying arrangements that threaten copyright policy, without displacing incentives to innovate with incentives to infringe. Bifurcation is the optimal approach because it holds both infringers and antitrust violators independently accountable for their behavior.

## II. COPYRIGHT PUBLIC POLICY

Article I, Section 8 of the United States Constitution gives Congress the "Power . . . To Promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."<sup>3</sup> To the extent that the exclusive rights accompanying a copyright grant create opportunities for innovators and creators to capture monopoly profits from the sale and licensing of their works, copyrights create incentives to innovate and create.<sup>4</sup>

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3. U.S. CONST. art. I, § 8.

4. Copyrights usually confer limited, if any, market power; rather, it is the potential for carving out a profitable, monopolistic niche that provides the incentive to innovate, regardless of the actual market power that results, given actual or potential competitive entry. Thus, even though copyrights usually do not create economic monopolies, the author's creative effort is spurred by his *ex ante* expectation that his creation will create an economic monopoly. For a general discussion of the market room factor (i.e., the stimulant effect that the potential for monopoly profits has on creativity and innovation), see F.M. SCHERER & DAVID ROSS, INDUSTRIAL MARKET STRUCTURE AND ECONOMIC PERFORMANCE 630-637 (1990). For a mathematical model of copyright incentives, see William M. Landes & Richard A. Posner, *An Economic Analysis of Copyright Law*, 18 J. LEG. STUDIES 325, 333-35 (1989). For purposes of semantics, "innovate" and "create" will be used interchangeably to refer to the creative efforts of copyright holders and patentees. Likewise, the words "innovator" and "creator" will be used interchangeably to refer to copyright holders and patentees.

Not only does the Copyright Act<sup>5</sup> create economic incentives for innovators by allowing them to establish a market niche from which they may derive monopoly profits; but by making it unlawful to infringe the copyright holder's exclusive rights,<sup>6</sup> the Act deters free-riding. The remedies accorded copyright holders against infringers under the Act create a disincentive to infringe for those wanting free access to the copyrighted good.<sup>7</sup> As an alternative to the unlawful appropriation of the copyrighted good for personal consumption or to compete in the marketplace, a potential infringer has an incentive to create a substitute.

Inherent in a copyright grant is a tradeoff between the public interest against restraints of trade and the Constitutional charge to Congress to create economic rewards that promote progress.<sup>8</sup> That Congress adopted the Copyright Act demonstrates that under certain conditions, congressional concern for innovation supersedes its desire to protect unfettered competition. Because the ultimate objective of both antitrust and copyright policy is to promote consumer welfare through a combination of free competition and innovation, Congress is willing to allow limited restraints of trade in the form of copyright grants, if these restraints promote innovation. Presumably, the market power conferred by a copyright represents the maximum restraint of trade which Congress is willing to condone.<sup>9</sup> In the long run, efficiency and productivity gains resulting from innovation overwhelm allocative efficiency losses resulting from copyrights' monopoly power:

[T]echnological progress contributes far more to consumer welfare than does the elimination of allocative inefficiency caused by noncompetitive pricing. The grant of statutory monopoly rights in the form of patent or copyright . . . reflects that a primary goal of competitive policy—namely an efficient innovative economy—will be served by protecting, for a period of time, innovations meeting

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5. 17 U.S.C. §§ 101-1010 (1988).

6. 17 U.S.C. § 501 (1988).

7. 17 U.S.C. § 502-11 (1988). Remedies available to copyright holders against infringers include monetary and punitive damages, injunctive relief, the infringer's profits, costs and attorney's fees. For an exhaustive discussion of remedies, see 3 M. NIMMER & D. NIMMER, *NIMMER ON COPYRIGHT* §§ 14.01-14.10 (1994).

8. Legislative history of the 1909 Copyright Act demonstrates this balance of interests:

In enacting a copyright law Congress must consider . . . two questions: First, how much will the legislation stimulate the producer and so benefit the public; and second, how much will the monopoly granted be detrimental to the public? The granting of such exclusive right, under the proper terms and conditions, confers a benefit upon the public that outweighs the evils of the temporary monopoly.

H.R. Rep. No. 2222, 60th Cong., 2d Sess. 7 (1909).

9. This commentator assumes, for the sake of argument, that the market power and incentives to innovate which inhere in a copyright grant represent the optimal tradeoff between restraint of trade and innovation.

specified standards from the competition of those who have not incurred the expenses of innovation, thus encouraging innovative competition.<sup>10</sup>

Copyright policy therefore suggests that temporary and limited restraints of trade that spur dynamic efficiency are preferable to perfect competition and static efficiency, because without the incentive to innovate that is created by the potential for monopoly profits, long-run consumer welfare may be undermined.<sup>11</sup> In Federalist No. 43, James Madison captured the essence of this argument; namely that the potential to earn economic profit promotes innovation, whose ultimate beneficiary is the public:

The utility of this power will scarcely be questioned. The copyright of authors has been solemnly adjudged in Great Britain to be a right of common law. The right of useful inventions seems with equal reason to belong to the inventors. The public good fully coincides in both cases with the claims of individuals.<sup>12</sup>

Copyrights only create incentives to innovate if courts enforce the copyright holder's exclusive rights.<sup>13</sup> If a copyright holder cannot rely on the courts to ensure his control over the market by disciplining infringers, his opportunity for monopoly profits decreases.<sup>14</sup> To the extent that the incentives to innovate are proportional to the innovator's ex ante valuation of the copyright grant—which is contingent upon the innovator's expected opportunity to earn monopoly profits—lack of

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10. Donald Turner, *Basic Principles in Formulating Antitrust and Misuse Constraints on the Exploitation of Intellectual Property Rights*, 53 ANTITRUST L.J. 485, 485 (1984). See also Jesse Markham, *Concentration: A Stimulant or Retardant to Innovation?*, in INDUSTRIAL CONCENTRATION: THE NEW LEARNING 247, 252-54 (H. Goldsmith, H. Mann & J. Weston eds., 1974).

11. Cf. *Picard v. United Aircraft Corp.*, 128 F.2d 632, 643 (1942) ("[T]o denounce patents merely because they create monopolies is to indulge in superficial thinking.") (Frank, J., concurring), cert. denied, 317 U.S. 651 (1942).

12. THE FEDERALIST NO. 43 (James Madison). See also *Mazer v. Stein*, 374 U.S. 201, 219 (1954) ("The economic philosophy behind the clause empowering Congress to grant patents and copyrights is the conviction that encouragement of individual effort by personal gain is the best way to advance public welfare through the talents of authors and inventors in 'Science and the useful Arts.'").

13. The broader the scope of the exclusive rights conferred by a copyright, and the more strictly these rights are enforced, the greater is the copyright holder's market power and ability to earn monopoly profits, and hence the greater the incentives to innovate. However, as mentioned above, see *supra* notes 8-11 and accompanying text, the benefits of dynamic efficiency only overwhelm the short-run welfare loss from restraints of trade if the anticompetitive effect is limited. Finding the optimal tradeoff between dynamic and static efficiency is critical but difficult.

14. See *Quinto v. Legal Times of Washington*, 511 F. Supp. 579, 581 (D.D.C. 1981); William J. Nicoson, *Misuse of the Misuse Doctrine in Infringement Suits*, 9 UCLA L. REV. 76, 106 (1962).

enforcement of the copyright holder's exclusive rights erodes the economic incentives to create a copyrightable work.

Furthermore, a potential infringer's incentive to innovate rather than infringe is a function of the likelihood that the infringer will be held liable for infringement. By definition, lack of enforcement of a copyright means that infringers are permitted to freely appropriate another's work without payment or permission. Thus, the incentive to free-ride increases when copyright enforcement decreases.

### III. COPYRIGHT MISUSE: ITS HISTORY AND ITS MEANING

#### A. An Overview of the Misuse Defense

The misuse doctrine is a permutation of the doctrine of unclean hands.<sup>15</sup> According to the unclean hands doctrine, a plaintiff seeking equitable relief should be denied such relief if he does not come into court with "clean hands."<sup>16</sup> The unclean hands defense consists of two requirements: first, that the plaintiff's misconduct directly and immediately relates to the litigated transaction; second, that the plaintiff's misconduct has harmed the defendant.<sup>17</sup>

In *Morton Salt Co. v. G.S. Superego Co.*,<sup>18</sup> a patent infringement case, the Supreme Court formally created the misuse defense as an application of the doctrine of unclean hands:

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15. For an overview of patent misuse doctrine see 5 D. CHISUM, PATENTS § 19.04 (1993). For a discussion of copyright misuse doctrine, see 9 E. LIPSCOMB, LIPSCOMB'S WALKER ON PATENTS §§ 28.32-28.36 (3d ed. 1988); 3 NIMMER, *supra* note 7, § 13.09[B].

16. Justice Story notes, "It is one of the fundamental principles upon which equity jurisprudence is founded, that before a complainant can have a standing in court he must first show that not only has he a good and meritorious cause of action, but he must come into court with clean hands." STORY, EQUITY JURISPRUDENCE 98 (14th ed. 1918).

17. In 1933 the Court described the test as follows:

But courts of equity do not make the quality of suitors the test. They apply the maxim requiring clean hands only where some unconscionable act of one coming for relief has immediate and necessary relation to the equity that he seeks in respect of the matter in litigation. They do not close their doors because of plaintiff's misconduct, whatever its character, that has no relation to anything involved in the suit, but only for such violations of conscience as in some measure affects the equitable relation between the parties in respect of something brought before the court of adjudication.

*Keystone Driller Co. v. General Excavator Co.*, 290 U.S. 240, 245 (1933). See also Note, *The Misuse Defense in Copyright Actions*, 37 N.Y.U. L. REV. 916, 917 (1962). In copyright cases, the unclean hands doctrine has been extended to actions at law, but courts rarely recognize the defense. See 3 NIMMER, *supra* note 7, § 13.09[A].

18. 314 U.S. 488 (1942).

It is said that the equitable maxim that a party seeking the aid of a court of equity must come into court with clean hands applies only to the plaintiff's wrongful conduct in the particular transaction which raises the equity, enforcement of which is sought. . . . Undoubtedly, 'equity does not demand that its suitors have led blameless lives,' but additional considerations must be taken into account where maintenance of the suit concerns the public interest as well as the private interest of the suitors.<sup>19</sup>

The misuse doctrine represents the maxim that whenever a copyright or patent holder uses his monopoly grant in a way that undermines the grant's underlying public policy, the court may and should deny the copyright holder relief when his exclusive rights are infringed.<sup>20</sup> Infringers can invoke the misuse doctrine as an affirmative defense. If the defendant successfully invokes the misuse defense, the court will deny the copyright holder relief until he purges himself of his misuse and thereby harmonizes the use of his copyright grant with public policy.<sup>21</sup>

While stemming from the unclean hands doctrine, the misuse doctrine is broader in scope than the unclean hands doctrine and is recognized as a separate defense.<sup>22</sup> An infringer may invoke the misuse doctrine as a recognizable and meritorious defense even though plaintiff's alleged misconduct is collateral to the litigated transaction and

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19. *Id.* at 491-93 (citations omitted).

20. "[T]he constitutionality of an attempt to compel the owner of a patent to share with others the title, use, and avail of his property" has been questioned, since the Constitution charges Congress with promoting innovation by rewarding creators with certain exclusive rights in the results of their efforts. Conway P. Coe, Commissioner of Patents of the United States 1933-45, before the Temporary National Economic Committee in 1939, *quoted in* *United States v. Line Material Co.*, 333 U.S. 287, 334 (1948) (dissenting opinion). This constitutional concern applies to the misuse doctrine, because a successful misuse defense effectively divests the intellectual property owner (if only temporarily) of his exclusive rights. However, the constitutionality of the misuse defense is supported by a comprehensive reading of Article I, Section 8. See Nicoson, *supra* note 17, at 101. The exclusive rights of a patent or copyright are granted pursuant to the specific constitutional objective to promote innovation. See, e.g., *Bobbs-Merrill Co. v. Isador Straus*, 210 U.S. 339, 346 (1908) ("[C]opyright property under the Federal law is wholly statutory, and depends upon the right created under the acts of Congress passed in pursuance of the authority conferred under article I, § 8 of the Federal Constitution: to promote the Progress of Science and the useful Arts."). When an intellectual property owner uses his patent or copyright to undermine the constitutional purpose pursuant to which his exclusive rights were granted, any constitutional objections to the suspension of the owner's exclusive rights in his creation are tenuous at best. The conditional nature of intellectual property rights, therefore, distinguishes them from other forms of property rights.

21. See *Morton Salt*, 314 U.S. at 493. For a general discussion of purging, see 9 LIPSCOMB, *supra* note 15, § 28.35.

22. The unclean hands doctrine may be conceptualized as a special instance of misuse where the copyright holder's misconduct relates directly to the litigated transaction and where the defendant's conduct harmed the infringer.

does not directly relate to the issue before the court. In fact, to bring the defense, the defendant is not required to have been a party to the plaintiff's transaction creating the alleged misconduct, or to have been injured by the transaction.<sup>23</sup> Thus, the misuse defense represents a more potent shield against piracy charges than the unclean hands doctrine.

The development of the misuse doctrine represents the Court's effort to ensure that the public policy underlying intellectual property is preserved and furthered. It creates incentives for copyright infringers to plead misuse, and therefore creates incentives for copyright holders to protect their ability to enforce their rights by harmonizing their conduct with copyright policy.<sup>24</sup> Because the Court's concern is the public interest in innovation, it is not surprising that the misuse doctrine extends to cases where the plaintiff's misuse is not directly related to the defendant's infringement; even though the requirements of the unclean hands doctrine are not met, the copyright holder's misconduct has nevertheless eroded industry-wide incentives to innovate.<sup>25</sup>

## B. The Historical Development of the Misuse Doctrine in Patent Law

### 1. OVER 150 YEARS OF A "MISUSE NOTION"

Commentators and judges usually reference *Morton Salt* as the first case establishing the patent misuse doctrine.<sup>26</sup> However, the Supreme Court has invoked reasoning similar to that of the *Morton Salt* Court for

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23. See *Lasercomb America, Inc. v. Reynolds*, 911 F.2d 970, 979 (4th Cir. 1990) (explaining that infringer in *Morton Salt* was not injured by patentee's tie); 3 NIMMER, *supra* note 7, § 13.09[A]. Requiring that plaintiff's conduct injure defendant would be inconsistent with the concern of the misuse defense, which is not the equities between defendant and plaintiff, but between the public interest and a plaintiff. A plaintiff's misconduct may undermine the public interest without injuring the infringer. Moreover, since the ultimate beneficiary of copyright law is the public, "[t]he public is a silent but an important party in interest in all patent litigation." *Long v. Arkansas Foundry Co.*, 247 F.2d 366, 369 (1957), *cert. denied*, 361 U.S. 915 (1959). To the extent that the public is effectively a party to all infringement litigation, plaintiff's alleged misconduct has harmed a party to the litigation, even if not the named defendant.

24. The misuse defense is consistent with the discussion *supra* notes 8-11 and accompanying text regarding the acceptable tradeoff between the restraint of trade inherent in copyrights and the incentives they create to innovate. By misusing his copyright, a copyright holder not only garners more monopoly power than Congress presumably finds optimal, but also subverts innovation. As a result, the social cost of the copyright grant exceeds the social benefits. The misuse defense, by creating incentives for the plaintiff to purge his misconduct, therefore shifts the balance between monopoly power and innovation back to that which inheres in the copyright grant and which, by assumption, is optimal.

25. See *supra* note 23.

26. *Lasercomb*, 911 F.2d at 975.

more than 150 years to refuse infringed patentees relief.<sup>27</sup> The Court in these early cases reasoned that when a patentee extends his patent rights beyond their limited scope, he loses his right to relief from infringement in favor of the public's interest in these unprotected areas.

In *Pennock v. Dialogue*,<sup>28</sup> Pennock and Sellers had invented a hose in 1811 for which they filed for and received a patent in 1818. From 1811 to 1818, Dialogue, with Pennock and Sellers's permission, made and sold this hose to several Philadelphia companies.<sup>29</sup> After receiving their patent, Pennock and Sellers sued defendant for infringement.<sup>30</sup> The Supreme Court affirmed the lower court's denial of the plaintiff's request for relief.<sup>31</sup> Justice Story reasoned that if a patentee were allowed to withhold a patent request until competitors challenged his monopoly position with substitutes, the patentee could effectively extend the length of his monopoly power beyond the fourteen year duration of a patent grant.<sup>32</sup> Since the plaintiff-patentee's attempt to secure an excessively long monopoly offended the public policy of patents, the plaintiff relinquished his right to protection from infringement.<sup>33</sup>

Citing *Pennock*, the Court in *Kendall v. Winsor*,<sup>34</sup> which was also concerned with a delayed patent request, adopted and clarified the reasoning underlying Justice Story's opinion and more clearly foreshadowed the Court's reasoning in *Morton Salt*:

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27. See, e.g., *Pennock v. Dialogue*, 27 U.S. 1, 19 (1829); see also, *Kendall v. Winsor*, 62 U.S. 322, 328 (1958); *Motion Picture Patents Co. v. Universal Film Mfg Co.*, 243 U.S. 502, 519 (1917).

28. 27 U.S. 1 (1829).

29. *Id.* at 3.

30. *Id.*

31. *Id.* at 24.

32. The *Pennock* Court explained:

If an inventor should be permitted to hold back from the knowledge of the public the secrets of his invention; if he should for a long period of years retain the monopoly, and make, and sell his invention publicly, and thus gather the whole profits of it, relying upon his superior skill and knowledge of the structure; and then, and then only, when the danger of competition should force him to secure the exclusive right, he should be allowed to take out a patent, and thus exclude the public from any farther use than what should be derived under it during the fourteen years; it would materially retard the progress of science and useful arts, and give a premium to those who should least prompt to communicate their discoveries. A provision, therefore, that should withhold from an inventor the privilege of an exclusive right, unless he should, as early as he should allow the public use, put the public in possession of his secret, and commence the running of the period, that should limit that right; would not be deemed unreasonable.

*Id.* at 19.

33. *Id.*

34. 62 U.S. 322 (1858).

[T]he inventor who designedly, and with the view of applying it indefinitely and exclusively for his own profit, withholds his invention from the public, comes not within the policy or objects of the Constitution or acts of Congress. He does not promote, and, if aided in his design, would impede the progress of science and the useful arts. And with a very bad grace could he appeal for favor or protection to that society which, if he had not injured, he certainly had neither benefited nor intended to benefit.<sup>35</sup>

The 1917 case, *Motion Picture Patents Co. v. Universal Film Manufacturing*<sup>36</sup> is the most recognized predecessor to *Morton Salt*, probably because like *Morton Salt*, *Motion Picture Patents* concerned a tying arrangement.<sup>37</sup> In *Motion Picture Patents*, the patentee had conditioned the licensing of its patented movie projector on the condition that the licensee would only purchase film used in the machine from the patentee.<sup>38</sup> One of the defendants, Universal Film Exchange, had sold film made by defendant Universal Film Manufacturing for use in the patented machine to a third defendant, the Prague Amusement Company.<sup>39</sup> *Motion Picture Patents* sued for contributory infringement.<sup>40</sup> The Court denied the plaintiff relief, explaining that its licensing restrictions were invalid as an attempt to extend the scope of the valid movie projector patent into tied markets that were unpatented.<sup>41</sup> Because film was outside the scope of *Motion Picture Patents*' patent claims, the Court refused to condone plaintiff's attempt to bring film within the scope of the projector patent with a tie.<sup>42</sup> The Court justified its decision by its concern for the public's interest:

A restriction which would give to the plaintiff such a potential power for evil over an industry . . . is plainly void, because [it is] wholly without the scope and purpose of our patent laws and because, if sustained, it would be gravely injurious to that public interest, which we have seen is a more favorite of the law than is the promotion of private fortunes.<sup>43</sup>

Two patent contributory infringement cases following *Motion Picture Patents*, *Carbice Corp. of America v. American Patents Development*

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35. *Id.* at 328.

36. 243 U.S. 502 (1917).

37. *Motion Picture Patents* overruled *Sidney Henry v. A.B. Dick*, 224 U.S. 1 (1912).

38. 243 U.S. at 506.

39. *Id.* at 507.

40. *Id.* at 508. For a complete discussion of the history of misuse and contributory negligence, see James B. Kobak, Jr., *A Sensible Doctrine of Misuse for Intellectual Property Cases*, 2 ALB. L.J. SCI. & TECH. 1 (1992).

41. *Motion Picture*, 243 U.S. at 512-13.

42. *Id.* at 513.

43. *Id.* at 519.

*Corp.*<sup>44</sup> and *Leitch Manufacturing Co. v. Barber Co.*<sup>45</sup> were to have the most immediate effect on the Court's decision in *Morton Salt*. However, the importance of these earlier cases in establishing the notion of misuse, which the Court more clearly developed over time into the formal misuse doctrine, should not be ignored.

## 2. SETTING THE TABLE FOR MORTON SALT

*Carbice* and *Leitch* set the table for *Morton Salt*. In *Carbice*, the plaintiff-patentee had patented a refrigerated transportation package which he licensed only on condition that the licensee use plaintiff's solid carbon dioxide (dry ice) with the package.<sup>46</sup> The defendant sold dry ice to the plaintiff's licensees and the plaintiff sued for contributory infringement.<sup>47</sup> Because the plaintiff tried to expand his legal monopoly into unpatented goods through his licensing agreement (which constituted a tie-in), the Court denied relief.<sup>48</sup> Summarizing the essence of *Pennock*, *Kendall*, and *Motion Picture Patents* and foreshadowing later misuse cases including *Morton Salt*, Justice Brandeis stated: "[C]ourts deny relief against those who disregard the limitations sought to be imposed by the patentee beyond the legitimate scope of its monopoly."<sup>49</sup> Underlying Justice Brandeis' opinion is the Court's concern that attempts to extend monopoly power into other markets through ties and other restrictive licensing arrangements undermine the public interest in innovation and competition.

In *Leitch*, the Barber Company had patented a process for laying bituminous emulsion on cement roads to retard evaporation during curing.<sup>50</sup> Barber did not charge users of this process a royalty, but only permitted them to use this process if they purchased its emulsion.<sup>51</sup> Leitch Manufacturing sold emulsion to a contractor using Barber's process, and Barber sued for contributory infringement.<sup>52</sup> The Court ruled for Leitch.<sup>53</sup> Justice Brandeis, again writing for the Court, reasoned that whenever a patentee extends the limited monopoly of his patent into unpatented goods and ignores the limitations "inherent in the patent

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44. 283 U.S. 27 (1931).

45. 302 U.S. 458 (1938).

46. 283 U.S. at 30.

47. *Id.*

48. *Id.* at 33-34 (relief denied because of plaintiff's attempt, "without sanction of law, to employ the patent to secure a limited monopoly of unpatented material").

49. *Id.* at 32.

50. *Leitch*, 302 U.S. at 460.

51. *Id.*

52. *Id.* at 461.

53. *Id.* at 463.

grant,"<sup>54</sup> the Court will deny him relief. Justice Brandeis firmly restated the rule which *Carbice* first established: "[E]very use of a patent as a means of obtaining a limited monopoly of unpatented material is prohibited."<sup>55</sup>

Because the patents in *Carbice* and *Leitch*, as well as *Motion Picture Patents*, did not legally extend to the tied good, there was effectively no infringement by defendant. Nevertheless, the Court did not limit its holdings to this ground. Given the *Morton* Court's reliance upon the reasoning of *Carbice* and *Leitch*,<sup>56</sup> one can only speculate that had *Carbice* and *Leitch* ruled against plaintiffs then *Morton Salt* might have turned out differently.

### 3. MORTON SALT: THE MODERN MISUSE DOCTRINE

In *Morton Salt*, Chief Justice Stone firmly articulated the patent misuse defense in direct infringement actions.<sup>57</sup> In *Morton Salt*, the respondent had patented a salt depositing machine.<sup>58</sup> A condition of the respondent's licensing agreement was that it required licensees to purchase salt tablets for the machine exclusively from the respondent.<sup>59</sup> Like the arrangements in *Carbice* and *Leitch*, the respondent's alleged misconduct was a tying arrangement.<sup>60</sup> The respondent sued when the petitioner, a competitor, copied, produced, and sold the patented machines in direct competition with the respondent.<sup>61</sup> The petitioner answered that respondent had misused his patent, and thus should be denied relief.<sup>62</sup> The issue before the Court, therefore, was "not necessarily whether respondent has violated the Clayton Act, but whether a court of equity will lend its aid to protect the patent monopoly when respondent is using it as the effective means of restraining competition with its sale of an unpatented article."<sup>63</sup> The Supreme Court reversed the Court of Appeals for the Seventh Circuit and held that the respondent could not recover against its competitor for direct infringement.<sup>64</sup>

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54. *Id.* at 462.

55. *Id.* at 463.

56. See *Morton Salt*, 314 U.S. at 491.

57. *Morton Salt's* companion case, *B.B. Chemical Co. v. Elmer A. Ellis*, 314 U.S. 495 (1942), adopted part and parcel the holding and reasoning of *Morton Salt*.

58. *Morton Salt*, 314 U.S. at 490.

59. *Id.* at 491.

60. *Id.*

61. *Id.* at 490-91.

62. *Id.* at 492.

63. *Id.* at 490.

64. *Id.* at 494.

Although the Court declined to rule on whether respondent's tying arrangement violated the Clayton Act,<sup>65</sup> the Court's language implies that the substantive standard is that of anticompetitiveness, namely, whether respondent had restrained trade. Moreover, the Court's broad holding expressly illustrates its reliance upon antitrust standards to define misuse:

Where the patent is used as a means of restraining competition with the patentee's sale of an unpatented product, the successful prosecution of an infringement suit even against one who is a competitor in such sale is a powerful aid to the maintenance of the attempted monopoly of the unpatented article, and is thus a contributing factor in thwarting the public policy underlying the grant of the patent. . . . Equity may rightly withhold its assistance from such a use of the patent by declining to entertain a suit for infringement, and should do so at least until it is made to appear that the improper practice has been abandoned and that the consequences of the misuse of the patent have been dissipated.<sup>66</sup>

After explaining the tying arrangement, the Court concluded, with no apparent economic or market analysis, "that respondent is making use of its patent monopoly to restrain competition in the marketing of unpatented articles . . . and is aiding in the creation of a limited monopoly in the tablets not within that granted by the patent."<sup>67</sup> This conclusion reflected the Court's contemporaneous hostility toward patent tie-ins and its presumption in antitrust cases that when a patentee used his patent to effect a tie, the result was an anticompetitive restraint of trade.<sup>68</sup> In light of these antitrust decisions, it is nearly certain that, had *Morton Salt* been a Clayton Act case, the Court would have held that respondent's tie violated the antitrust laws.

Presuming that the respondent's tie-in illegally extended the monopoly power of its patent into the tied market for salt, the Court

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65. *Id.*

66. *Id.* at 493.

67. *Id.* at 491.

68. See *Times-Picayune Publishing Co. v. United States*, 345 U.S. 594, 605 (1953); *International Salt Co. v. United States*, 332 U.S. 392, 396 (1947); *International Business Mach. Corp. v. United States*, 298 U.S. 131, 135-38 (1936); *United Shoe Mach. Corp. v. United States*, 258 U.S. 451, 457-60 (1922). See also George H. Schueler, *The New Antitrust Illegality Per Se: Forestalling and Patent Misuse*, 50 COLUM. L. REV. 170, 190-92 (1950); Toshiko Takenaka, *Extending the New Patent Misuse Limitation to Copyright: Lasercomb America, Inc. v. Reynolds*, 5 SOFTWARE L.J. 739, 755 (1992).

The Court's specific hostility toward patent tie-ins was an extension of its general hostility toward ties. See, e.g., *Standard Oil Co. of Cal. v. United States*, 337 U.S. 293, 305 (1949) ("Tying agreements serve hardly any purpose beyond the suppression of competition."). Eventually the Court focused its hostility on copyright tie-ins. See *United States v. Loew's Incorporated*, 371 U.S. 38, 45-52 (1962); *United States v. Paramount Pictures*, 334 U.S. 131, 157-58 (1948). For the Clayton Act and Sherman Act provisions relevant for the purposes of intellectual property misuse involving ties, see 15 U.S.C. § 14 (1988) (Clayton Act) and 15 U.S.C. §§ 1, 2 (1988) (Sherman Act).

concluded that the patentee's licensing agreement undermined the public interest in patents, and thereby constituted misuse, because it restrained trade.<sup>69</sup> The Court reasoned that a "patentee, like . . . other holders of an exclusive privilege granted in the furtherance of a public policy, may not claim protection of his grant by the courts where it is being used to subvert that policy."<sup>70</sup> The Court viewed the policy subverted the constitutional charge of Congress "to promote the Progress of Science and Useful Arts."<sup>71</sup>

By implicitly defining misuse as conduct that restrains competition, the Court suggested that misuse and antitrust analyses are coextensive. Support for this reading is found in the Court's statement that "the public policy which includes inventions within the granted monopoly excludes from it all that is not embraced in the invention."<sup>72</sup> In other words, any use of a patent that offends antitrust policy by extending monopoly power into a market outside the scope of the patent grant subverts patent policy and thus constitutes misuse. Since the Court seemingly conceptualized misuse as conduct that undermines patent policy by restraining competition, the Court presumably would have rejected petitioner's misuse defense had it found that the patentee's tie did not restrain trade.

#### 4. DOES MORTON SALT REQUIRE AN ANTITRUST VIOLATION?

While deciding whether there was a Clayton Act violation, the *Morton* Court applied antitrust policy to define the type of misconduct that constitutes misuse. The Court's language and reasoning suggest that it viewed antitrust violations and patent misuse as coextensive because a patentee who undermined antitrust policy by restraining trade was considered to have likewise undermined patent policy.<sup>73</sup> Although the Court's opinion suggests that antitrust and misuse concerns are coterminous, the Court did not explicitly answer the question whether the patentee's misconduct must violate an antitrust law to constitute misuse. Most commentators and judges read *Morton Salt* to answer this

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69. The *Morton Salt* Court's reasoning is consistent with the discussion above regarding the optimal tradeoff between monopoly power and incentives to innovate. See *supra* notes 8-11 and accompanying text.

70. *Morton Salt*, 314 U.S. at 494.

71. *Id.*

72. *Id.*

73. See, e.g., *supra* notes 65-72 and accompanying text.

question in the negative,<sup>74</sup> relying on *Morton Salt's* comment that "[i]t is unnecessary to decide whether respondent has violated the Clayton Act, for we conclude that in any event the maintenance of the present suit to restrain petitioner's manufacture or sale of the alleged infringing machines is contrary to public policy."<sup>75</sup>

The Court's presumption that respondent's tie restrained trade, its hostility at the time toward patent tie-ins, and its presumption that tie-ins *per se* violated the antitrust laws suggests that the Court did apply substantive antitrust standards to determine whether the licensing agreement constituted misuse. It was unnecessary to rule directly on a Clayton Act violation because the Court was hearing an infringement case and not a Clayton Act case.<sup>76</sup> Other than the above-quoted sentence, nothing in the Court's opinion suggests that conduct could undermine antitrust policy against restraints of trade, and thereby patent policy, without violating the antitrust laws.

Although the Supreme Court has asserted that *Morton Salt* does not require that a patent-holder's conduct rise to the level of an antitrust violation to constitute misuse,<sup>77</sup> this commentator believes that the language and reasoning of *Morton Salt* demand that the opinion be reinterpreted.

## C. From Patents to Copyright

### 1. THE MISUSE DOCTRINE IN COPYRIGHT LAW

Although the misuse doctrine developed in patent infringement cases, it has been extended to copyright law. The first case to uphold the

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74. See, e.g., Joel R. Bennett, *Patent Misuse: Must an Alleged Infringer Prove an Antitrust Violation?*, 17 AM. INTELL. PROP. L. ASS'N Q.J. 1 (1989) (arguing that patent misuse does not require an antitrust violation). See generally 9 LIPSCOMB, *supra* note 15, § 28:33.

75. *Morton Salt*, 314 U.S. at 494.

76. Nicoson, *supra* note 14, at 91.

77. The Court's view that conduct may constitute misuse while falling short of an antitrust violation apparently originated with Justice Douglas' opinion in *Transparent-Wrap Machine Corp. v. Stokes & Smith Co.*, 329 U.S. 637 (1947). Citing *Morton Salt*, Justice Douglas reasoned, "[t]hough control of the unpatented article or device falls short of a prohibited restraint of trade or monopoly, it will not be sanctioned." *Id.* at 641. Twenty-two years later, the Court affirmed *Transparent-Wrap* in *Zenith Radio Corp. v. Hazeltine Research, Inc.* 395 U.S. 100, 140 (1969) ("If there was . . . patent misuse, it does not necessarily follow that the misuse embodies the ingredients of a violation of either § 1 or § 2 of the Sherman Act, or that Zenith was threatened by a violation so as to entitle it to an injunction under § 16 of the Clayton Act."). However, prior to *Transparent-Wrap*, the Court hinted that misuse required that the patentee's misconduct rise to the level of an antitrust violation. See *Mercoid Corp. v. Minneapolis-Honeywell Regulator Co.*, 320 U.S. 680, 684 (1944) ("The legality of any attempt to bring unpatented goods within the protection of the patent is measured by the anti-trust laws not by the patent law.").

misuse defense in a copyright infringement action was *M. Whitmark & Sons v. Jensen*.<sup>78</sup> Plaintiffs, members of the American Society of Composers, Authors, and Publishers (ASCAP), sued defendants, operators of a movie theater, for copyright infringement. They alleged that defendants had shown movies accompanied by plaintiffs' music without obtaining from plaintiffs a license permitting defendants to publicly perform the music. Defendants argued that the court should deny plaintiffs relief because plaintiffs had misused their copyrights to fix prices and restrain competition by a policy of issuing only blanket licenses for music performances. The court ruled for defendants, reasoning that plaintiffs' licenses constituted misuse because they illegally extended plaintiffs' statutory monopolies in violation of the Sherman Act:

It is the collective acts and agreements of plaintiffs and their associate members which have diverted their copyrights from their "statutory purpose and become a ready instrument for economic control in domains where anti-trust acts or other laws not the patent statutes define the public policy." Refuge cannot be sought in the copyright monopoly which was not granted to enable plaintiffs to set up another monopoly, nor to enable the copyright owners to tie a lawful monopoly with an unlawful monopoly and thus reap the benefits of both.<sup>79</sup>

This court's misuse analysis, focusing on the copyright holder's use of its copyrights to restrain trade, suggests that the court defined misuse only in terms of an actual antitrust violation.<sup>80</sup>

After *Whitmark*, no court denied relief for copyright infringement on the basis of a misuse defense until the Ninth Circuit decided *Lasercomb America, Inc. v. Reynolds*<sup>81</sup> in 1990. In *Lasercomb*, the court adopted the conventional interpretation of *Morton Salt*: a misuse defense does not require an antitrust violation.<sup>82</sup> Lasercomb had developed a copyrighted software program, Interact, which it used in the manufacture of steel rule

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78. *M. Witmark & Sons v. Jensen*, 80 F. Supp. 843 (D. Minn. 1948).

79. *Id.* at 848-49 (citations omitted).

80. In the following passage, the court implied that an explicit antitrust violation was necessary:

One who unlawfully exceeds his copyright monopoly and violates the anti-trust laws is not outside the pale of the law, but where the Court's aid is requested . . . and the granting thereof would tend to serve the plaintiffs in their plan and scheme with other members of ASCAP to extend their copyrights in a monopolist control beyond their proper scope, it should be denied.

*Id.* at 850.

81. 911 F.2d 970 (4th Cir. 1990).

82. *Id.* at 973 ("We are persuaded that the rationale of *Morton Salt* in establishing the misuse defense applied to copyrights.").

dyes.<sup>83</sup> Before Lasercomb licensed Interact on a wide scale, it licensed four prerelease copies to Holiday Steel.<sup>84</sup> Holiday Steel circumvented a protective device on Interact and made three unauthorized copies.<sup>85</sup> Holiday Steel then created its own software program that was almost identical to Interact and marketed it as its own.<sup>86</sup> Holiday Steel did not deny direct infringement, but argued that the noncompete clause of plaintiff's license constituted misuse.<sup>87</sup> The court found that plaintiff's noncompete clause restrained competition outside the scope of the copyright.<sup>88</sup> Ruling for the defendant, the court noted that "a misuse of copyright defense is inherent in the law of copyright just as a misuse of patent defense is inherent in patent law."<sup>89</sup> Since patents and copyrights both serve the public policy of promoting innovation, they both must recognize the misuse defense in infringement actions.<sup>90</sup> The *Lasercomb* court explicitly stated that plaintiff's conduct need not rise to the level of an antitrust violation to constitute misuse.<sup>91</sup>

*Lasercomb* represents the broadest application of copyright misuse. Since *Lasercomb* the copyright misuse defense has been widely recognized in the courts. Although not necessarily ruling for defendant, the Fourth, Eleventh, and Federal Circuits, as well as district courts in the Second, Fourth, Fifth, Sixth, Ninth, Eleventh, and D.C. Circuits, have recognized the copyright misuse defense in the last three years.<sup>92</sup>

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83. *Id.* at 971.

84. *Id.*

85. *Id.*

86. *Id.*

87. *Id.* at 972. For an exhaustive discussion of *Lasercomb*'s noncompete clause, see Philip Abromats, Comment, *Copyright Misuse and Anticompetitive Software Licensing Restrictions: Lasercomb America, Inc. v. Reynolds*, 52 U. PIT. L. REV. 629, 643-45 (1992). The primary offending clause required the licensee to agree not to "permit or suffer" any of its directors, officers, and employees to directly or indirectly write, develop, produce, or sell software that competed with Interact for a period of ninety-nine years. *Lasercomb*, 911 F.2d at 973.

88. *Lasercomb*, 911 F.2d at 978.

89. *Id.* at 973.

90. *Id.* at 974. However, the *Lasercomb* court never explains why similar policy objectives necessitate the same affirmative defenses. Assuming arguendo that the misuse doctrine should be applied to copyright law as well as patent law, a case can be made that even if the traditional view is appropriate for patent misuse, it is inappropriate for copyright misuse. See, discussion *infra* Part IV.C.5.

91. *Lasercomb*, 911 F.2d at 978 ("So while it is true that the attempted use of a copyright to violate antitrust law probably would give rise to a misuse of copyright defense, the converse is not necessarily true—a misuse need not be a violation of antitrust law in order to comprise an equitable defense to an infringement action.").

92. See *Atari Games Corp. v. Nintendo of America, Inc.*, 975 F.2d 832, 845-47 (Fed. Cir. 1992); *Service & Training, Inc. v. Data General Corp.*, 963 F.2d 680, 690 (4th Cir. 1992); *Bellsouth Advertising & Publishing Corp. v. Donnelley Info. Publishing, Inc.*, 933 F.2d 952, 960-61 (11th Cir. 1991); *National Cable Television Ass'n, Inc. v. Broadcast Music, Inc.*, 772

The Supreme Court has yet to provide lower courts any definite guidance regarding how to define copyright misuse. The closest the Court has come to ruling on copyright misuse is its acknowledgment that such a defense exists in a few cases.

The Court first recognized copyright misuse implicitly in *United States v. Paramount Pictures, Inc.*<sup>93</sup> Although the Court never mentioned the term copyright misuse, it relied on patent misuse cases, including *Morton Salt*, to affirm the lower court's condemnation of *Paramount's* block-booking as an antitrust violation.<sup>94</sup> The Court stated, "[e]nlargement of the monopoly of the copyright was condemned below in reliance on the principle which forbids the owner of a patent to condition its use on the purchase or use of patented or unpatented materials."<sup>95</sup> Effectively, the Court found that *Paramount's* tie-in was a misuse of its copyright. In *United States v. Loew's Inc.*,<sup>96</sup> the Supreme Court again implicitly recognized copyright misuse in a block-booking case. The *Loew's* Court relied on *Paramount* and patent misuse cases to find that defendant's block-booking was an antitrust violation.<sup>97</sup> In dicta, the Court indicated that misuse may apply to copyright law as well as patent law.<sup>98</sup> Most recently, the Court explicitly recognized copyright

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F. Supp. 614, 651-52 (D.D.C. 1991); Advanced Computer Serv. of Mich., Inc. v. MAI Sys. Corp., 845 F. Supp. 356, 366-67 (E.D. Va. 1994); Triad Sys. Corp. v. Southeastern Express Co., 1994 WL 446049, \*14 (N.D. Cal. 1994); Atari Games Corp. v. Nintendo of America, 1993 WL 207548, \*9 n.2 (N.D. Cal. 1993); Lucasarts Entertainment Co. v. Humongous Entertainment Co., 1993 WL 341281, \*4 (N.D. Cal. 1993); National Football League, Cleveland Browns, Inc. v. Rondor, Inc., 840 F. Supp. 1160, 1168 (N.D. Ohio 1993); Mastercraft Fabrics Corp. v. Dickson Elberton Mills, Inc., 821 F. Supp. 1503, 1511 (M.D. Ga. 1993); Reliability Research Inc. v. Computer Associates Int'l, 793 F. Supp. 68, 69 (E.D.N.Y. 1992); Microsoft Corp. v. BEC Computer Co., 818 F. Supp. 1313, 1316-17 (C.D. Cal. 1992); Sega Enter. Ltd. v. Accolade, 785 F. Supp. 1392, 1399 (N.D. Cal. 1992), *rev'd on other grounds*, 977 F.2d 1510 (9th Cir. 1992); Electronic Data Sys. Corp. v. Computer Associates Int'l, Inc., 802 F. Supp. 1463, 1465-66 (N.D. Tex. 1992); Michael Anthony Jewelers, Inc. v. Peacock Jewelry, Inc., 795 F. Supp. 639, 655 (S.D.N.Y. 1992); Budish v. Gordon, 784 F. Supp. 1320, 1336-37 (N.D. Ohio 1992); Basic Books, Inc. v. Kinko's Graphics Corp., 758 F. Supp. 1522, 1537-39 (S.D.N.Y. 1991); Coleman v. ESPN, 764 F. Supp. 290, 295 (S.D.N.Y. 1991).

93. 334 U.S. 131 (1948).

94. *Id.* at 157.

95. *Id.* (citations omitted).

96. 371 U.S. 38 (1962).

97. *Id.* at 46.

98. *Id.* at 45-52. As Professor Nimmer explains,

[t]he United States Supreme Court's decision in *United States v. Loew's, Inc.* seemed to hint that in the view of our highest tribunal, the doctrine of the patent cases is fully applicable in copyright actions. In *Loew's*, the Court made explicit reference to the principle that a patentee who utilizes unlawful tying arrangements should be denied relief in an infringement action, and then proceeded to apply with reference to copyrights the same antitrust restrictions on tie-in of sales as were applicable in the patent context.

misuse in *Broadcast Music, Inc. v. Columbia Broadcasting System, Inc.*,<sup>99</sup> a blanket-licensing case in which the Court reversed the Second Circuit's finding of copyright misuse based upon a per se antitrust violation by finding that there had been no antitrust violation.<sup>100</sup> The Court did not independently address the validity of the copyright misuse doctrine.

The collective result of *Paramount*, *Loew's*, and *Broadcast Music* is that the Court has recognized the doctrine of copyright misuse and has suggested that misuse requires an antitrust violation.<sup>101</sup> However, as discussed in the following section, lower courts, lacking clear precedent from the Court, disagree over how to define misuse. Thus, it is critical that the Supreme Court, when given the opportunity, clearly articulate a definition of misuse.

## 2. HOW TO DEFINE COPYRIGHT MISUSE

The emphasis in *Whitmark* on plaintiffs' antitrust violation contrasts sharply with *Lasercomb*'s statement that plaintiff does not need to violate the antitrust laws for his conduct to constitute misuse. This tension, which embodies the tension between the above conflicting interpretations of *Morton Salt*, has manifested itself in courts hearing copyright misuse cases. Courts disagree whether an antitrust violation is required for copyright misuse.<sup>102</sup> This disagreement among courts demonstrates

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3 NIMMER, *supra* note 7, § 13.09[A].

99. 441 U.S. 1 (1979).

100. *Id.* at 24. *See also id.* at 6 n.9.

101. For example, the *Loew's* Court stated, "[a]ccommodation between the statutorily dispensed monopoly in the combination of contents in the patented or copyrighted product and the statutory principles of free competition demands that extension of the patent or copyright monopoly by the use of tying agreements be strictly confined." *Loew's*, 371 U.S. at 49. *See also* 3 NIMMER, *supra* note 7, § 13.09[A] (asserting that *Loew's* tacitly approved "an analogy between patents and copyrights with respect to an antitrust misuse defense").

102. For courts that have either explicitly or implicitly defined misuse as conduct that violates the antitrust laws see *Bellsouth Advertising & Publishing Corp. v. Donnelley Info. Publishing, Inc.*, 933 F.2d 952, 960-61 (11th Cir. 1991) (copyright holder's enforcement of its compilation copyright in original format of "Yellow Pages" did not constitute misuse because such enforcement is sanctioned by copyright laws); *United Telephone Co. of Mo. v. Johnson Publishing Co.*, 855 F.2d 604, 612 (8th Cir. 1988) (copyright holder's effort to require infringer to purchase license in its entire white pages listings at 500% price increase did not constitute misuse); *Saturday Evening Post Co. v. Rumbleseat Press, Inc.*, 816 F.2d 1191, 1200 (1987) (copyright holder's "no-contest" clause did not constitute misuse); *Electronic Data Sys. Corp. v. Computer Associates Int'l., Inc.*, 802 F. Supp. 1463, 1466 (N.D. Tex. 1992) (denying copyright holder's motion to dismiss licensee's misuse claim where licensee sufficiently alleged that copyright holder's licenses constituted illegal tie-in); *Basic Books, Inc. v. Kinko's Graphics Corp.*, 758 F. Supp. 1522, 1538-39 (S.D.N.Y. 1991) (copyright holder's infringement action did not constitute misuse because action was reasonable under copyright laws and not illegal monopoly extension).

today's two dominant views<sup>103</sup> of the misuse doctrine in intellectual property law: the traditional "scope of the grant" view that does not require an antitrust violation, and the more recent "antitrust view" which does.<sup>104</sup> Both views have their proponents in scholarly circles.<sup>105</sup>

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For courts that have either explicitly or implicitly defined misuse in terms of public policy standards that go beyond the antitrust laws see *Atari Games Corp. v. Nintendo of America, Inc.*, 975 F.2d 832, 846 (Fed. Cir. 1992) (upholding district court's preliminary injunction where copyright holder's license did not restrain licensee's creativity); *Lasercomb America, Inc. v. Reynolds*, 911 F.2d 970, 978 (4th Cir. 1990) (copyright holder's incorporation of "noncompete" clause into software license constituted misuse, regardless of whether it violated antitrust laws); *Advanced Computer Serv. of Mich., Inc. v. MAI Sys. Corp.*, 845 F. Supp. 356, 366-67 (E.D. Va. 1994) (owner of copyrighted software program did not misuse copyright where license neither violated antitrust laws nor restricted licensees from developing competing software); *Microsoft Corp. v. BEC Computer Co., Inc.*, 818 F. Supp. 1313, 1316 (C.D. Cal. 1992) (software license prohibiting licensee from selling licensed software unaccompanied by licensee's computers did not offend copyright policy because license did not prohibit licensee from independently implementing program similar to copyrighted software or selling computers without accompanying software); *National Cable Television Ass'n, Inc. v. Broadcast Music, Inc.*, 772 F. Supp. 614, 652 (D.D.C. 1991) (blanket licenses did not constitute misuse because licenses did not violate antitrust laws or otherwise undermine copyright policy); *Broadcast Music, Inc. v. Moor-Law, Inc.*, 527 F. Supp. 758, 772-73 (D. Del. 1981), *aff'd per curiam*, 691 F.2d 390 (3rd Cir. 1982) (performing rights organization's practice of basing license fee for small establishments providing live music on percentage of entertainment expenses did not constitute misuse).

103. There is a third view grounded in contract theory that failed to gather strong support. See Nicoson, *supra* note 14, at 100; Note, *Mandatory Package Licensing: A New Patent Misuse*, 44 VA. L. REV. 727, 734-35 (1958). The contract view of misuse conceptualizes patents and copyrights as contracts between the public and the innovator. The public promises the innovator the exclusive rights in the product of his creative efforts; the innovator implicitly promises to limit his monopoly to the parameters of these exclusive rights. Any use by the innovator of his patent or copyright to extend his monopoly power beyond the scope of his exclusive rights, therefore, constitutes a "breach" of his "contract" with the public. As a result, when the innovator misuses his intellectual property, the public is no longer obligated to enforce the innovator's exclusive rights in the courts. The innovator's breach frees the public from fulfilling its duties under the parties' bargain. Since the innovator has broken his promise, he is in no position to complain when the public does not respect his statutory monopoly, which was conditioned upon the innovator's upholding his end of the agreement. Among those who have framed intellectual property as a contract between the public and the innovator is Chief Justice Marshall. See *Grant v. Raymond*, 31 U.S. (6 Pet.) 218, 241-242 (1832).

104. The 1988 Patent Misuse Reform Act (PMRA) adopted the antitrust view of misuse when the alleged misconduct is a patent tie-in. 35 U.S.C. § 271(d)(5) (1988). No congressional action has been taken with regard to copyright misuse. For a more extensive discussion of PMRA, see *infra* Part IV.C.7.

105. For commentators supporting the traditional view see Timothy H. Fine, *Misuse and Antitrust Defenses to Copyright Infringement Actions*, HASTINGS L.J. 315 (1965); Richard Slitt, *Copyright Self-help Protection as Copyright Misuse: Finally the Other Shoe Drops*, UMKC L. REV. 899 (1989); David Scher, Note, *The Viability of the Copyright Misuse Defense*, 20 FORDHAM URB. L.J. 89 (1992). For commentators supporting the antitrust view, see, e.g., Byron A. Bilicki, *Standard Antitrust Analysis and the Doctrine of Patent Misuse: A Unification Under the Rule of Reason*, 46 U. PITTS. L. REV. 209 (1984); J. Dianne Brinson, *Patent Misuse: Time for a Change*, 16 RUTGERS COMPUTER & TECH. L.J. 357 (1990); Scott A. Miskimon,

The traditional view contends that licensing arrangements, even without violating antitrust laws, may undermine copyright policy and constitute misuse. The premise of this position is that the copyright grant is limited in scope to explicit exclusive rights. Thus, any attempt to secure market power beyond these limits is misuse—even if the attempt to accrue monopoly power does not violate the Clayton or Sherman Acts—because it creates monopolies broader than those sanctioned by copyright policy.<sup>106</sup>

Effectively, the traditional view imposes a lower threshold of monopoly extension for conduct to undermine copyright policy than that which is required to violate the Clayton or Sherman Acts. For example, a tie-in may constitute misuse under the traditional view even if scrutiny under the antitrust laws would indicate that the tie was not anticompetitive.

According to the antitrust view, only conduct that undermines antitrust policy undermines copyright policy. Thus, only anticompetitive conduct violating antitrust law constitutes misuse. Therefore, Clayton and Sherman Act violations define copyright misuse.

Proponents of the antitrust view of misuse have four primary criticisms of the traditional view: (a) courts have historically relied on antitrust policy to define misuse; (b) by not requiring an antitrust violation, the traditional view risks condemning procompetitive licensing practices that do not undermine copyright policy; (c) the traditional view causes uncertainty for innovators and business; and (d) the legal presumption should be against recognizing the misuse defense.

a. Courts have historically relied on antitrust policy to define misuse

Courts have relied on antitrust policy against restraints of trade to define misconduct constituting misuse.<sup>107</sup> Because courts apply antitrust policy when adjudicating the misuse defense, judicial antitrust and

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*Divorcing Public Policy From Economic Reality*, 69 N.C. L. REV. 1672 (1991); Philip Abromats, Comment, *Copyright Misuse and Anticompetitive Software Licensing Restrictions: Lasercomb America, Inc. v. Reynolds*, 52 U. PITTS. L. REV. 629 (1991).

106. See, e.g., Robert P. Merges, *Reflections on Current Legislation*, J. PAT. & TRADEMARK OFF. SOC'Y 793, 795 (1988).

107. See, e.g., Morton Salt Co. v. G.S. Suppiger Co., 314 U.S. 488, 493 (1942). Even those courts expressly adopting the traditional view discuss misuse in terms of antitrust policy. See, e.g., *Lasercomb America, Inc. v. Reynolds*, 911 F.2d 970, 978-79 (4th Cir. 1990).

In a related argument, one commentator contends that since the Copyright Act creates economic incentives to innovate, courts should conduct their misuse analysis within an economic framework defined by the antitrust laws, rather than implement general notions of public policy that may be inconsistent with economic and antitrust analysis. Roger Arar, Note, *Redefining Copyright Misuse*, 81 COLUM. L. REV. 1291, 1311 (1981).

misuse analyses are effectively coextensive: a plaintiff's misconduct only undermines copyright policy if it violates antitrust policy. Since an antitrust violation is the best indication of conduct contravening antitrust policy, courts should rely on antitrust standards and require that a plaintiff's conduct rise to the level of an antitrust violation to constitute misuse.<sup>108</sup> As Judge Posner explains, "If misuse claims are not tested by conventional antitrust principles, by what principle shall they be tested? Our law is not rich in alternative concepts of monopolistic abuse; and it is rather late in the day to try to develop one."<sup>109</sup>

Furthermore, there is no justification for treating copyright owners more harshly than other property owners. Owners of intellectual property should face the same standards of anticompetitiveness as any other property owner. Intellectual property owners should not be held liable for contravening antitrust policy when their conduct is too benign for the government or a private party to successfully challenge under the Clayton or Sherman Acts.<sup>110</sup>

The traditional view follows a strand of common law independent of and less demanding than the antitrust laws. This uncodified law of anticompetitive conduct has no place in the judicial system.<sup>111</sup> Moreover, it is unnecessary for courts to usurp the role of antitrust legislation and common law by imparting in infringement cases their own standards of the type of conduct that undermines antitrust policy. The antitrust laws have evolved over time, both through statutory amendment and case law developments, to be more responsive to anticompetitive concerns and to more accurately ascertain what types of conduct raise an anticompetitive concern. As the legal embodiment of public policy against restraints of trade, antitrust statutes and case law extend to all anticompetitive practices. There is no reason to believe that this well-developed body of antitrust law is an inadequate basis, requiring a supplemental body of common law, upon which to adjudicate the misuse defense.<sup>112</sup> The fact

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108. See, e.g., Roger B. Andewelt, "Competition Policy and the Patent Misuse Doctrine," remarks before the Bar Association for the District of Columbia, Patent, Trademark, and Copyright Section (Nov. 3, 1982) ("Since the antitrust laws are the appropriate vehicle for evaluating competitive effect, conduct should not be condemned as patent misuse on economic grounds unless the conduct is inconsistent with the antitrust laws."). See also Brinson, *supra* note 105, at 371 (arguing that it is logical to require antitrust violation for misuse since policy underlying misuse is antitrust policy); Nicoson, *supra* note 14, at 88.

109. USM Corp. v. SPS Technologies, Inc., 694 F.2d 505, 511 (7th Cir. 1982), *cert. denied*, 482 U.S. 1107 (1983).

110. See Turner, *supra* note 10, at 486.

111. Nicoson, *supra* note 14, at 91.

112. For example, Judge Posner explains,

[t]he [misuse] doctrine arose before there was any significant body of federal antitrust law, and reached maturity long before that law (a product very

that the court is hearing an infringement case does not, or at least should not, give it license to follow a strand of anticompetitive standards and case law with separate from current statutory and judicial standards that have developed through litigation of the Sherman and Clayton Acts. At least one circuit, the Seventh Circuit, has exercised the proper restraint: "We decline to create a federal common law rule that would jostle uncomfortably with the Sherman Act."<sup>113</sup>

- b. By not requiring an antitrust violation, the traditional view risks condemning procompetitive licensing practices that do not undermine copyright policy

The traditional view does not require an antitrust violation. There is thus a proof gap<sup>114</sup> between what a defendant has to show under the traditional and antitrust views of misuse. Under the antitrust view, "unless the defendant can make a 'definite factual showing of illegality' arising from plaintiff's agreement with its license, it is not entitled to judgment of dismissal."<sup>115</sup> Under the traditional view, the defendant may

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largely of free interpretation of unclear statutory language) attained its present broad scope. Since the antitrust laws as currently interpreted reach every practice that could impair competition substantially, it is not easy to define a separate role for a doctrine also designed to prevent an anticompetitive practice—the abuse of a patent monopoly.

USM, 694 F.2d at 510.

One commentator, supporting the traditional view, challenges Judge Posner's assessment:

The enactment of the copyright law itself embodied the existing federal policies generally opposing monopolies or restraints of trade. . . . Analysis of allegedly anticompetitive conduct from the standpoint of copyright policy alone is absolutely proper, for federal copyright protection existed for 100 years before the Sherman Act became law. And today, even if there had never existed antitrust laws with government sanctions and treble-damage liability, the analysis of a misuse defense in a copyright infringement action would proceed on the basis of the general public policy forbidding anticompetitive conduct incorporated in the copyright laws.

Frank Gibbs, *Copyright Misuse: Thirty Years Waiting for the Other Shoe*, Copyright L. Symp. (ASCAP) (No. 23) 31, 36 (1973). This commentator ignores that with the enactment of the Sherman and Clayton Acts, the antitrust laws became the standard by which courts determine whether a seller restrains trade in contravention of antitrust policy. The antitrust laws' role as the proper monitor of anticompetitive practices is not usurped by copyright law simply because copyright law embodies the public policy against anticompetitive practices and could (and perhaps did) monitor such practices involving copyrights in the absence of the Sherman and Clayton Acts.

113. *Saturday Evening Post Co. v. Rumbleseat Press, Inc.*, 816 F.2d 1191, 1200 (7th Cir. 1987) (Posner, J.).

114. Brinson, *supra* note 105, at 375.

115. *G.S. Suppiger Co. v. Morton Salt Co.*, 117 F.2d 968, 972 (1941), *overruled by* *Morton Salt Co. v. G.S. Suppiger Co.*, 314 U.S. 488 (1942). Depending on the licensing arrangement, the "factual showing of illegality" may be analyzed either under the per se

simply point to the licensing contract, without the economic analysis required to show an antitrust violation, to show that plaintiff has used his intellectual property to restrain trade in contravention of public policy.<sup>116</sup> Essentially, the traditional view presumes that certain licensing arrangements, while not violating the antitrust laws, nonetheless restrain trade enough to violate copyright policy.

*Senza-Gel Corp. v. Seiffhart*<sup>117</sup> is the most striking example of the effects of this gap. In *Senza-Gel*, the Federal Circuit found that "the district court's grant of summary judgment on the defense of [patent] misuse was not in conflict with its denial of summary judgment on the counterclaim for antitrust violation."<sup>118</sup> Although the court found that there were genuine issues of material fact relating to the tying counterclaim, it granted summary judgment on misuse merely on a showing that plaintiff had tied its patent license to other goods.<sup>119</sup> The court required no further evidence of anticompetitive effect.<sup>120</sup> To justify its decision, the Federal Circuit reasoned, "[T]he patentee's act may constitute patent misuse without rising to the level of an antitrust violation."<sup>121</sup> One commentator has dubbed this extreme form of the traditional view, in which tying is sufficient to establish a misuse, a "super *per se*" rule.<sup>122</sup>

The proof gap threatens the ultimate objective that the traditional view purports to support: increased consumer welfare. First, licensing arrangements that are condemned under the traditional view, but that do not violate antitrust laws, often reflect and promote competitive markets and are, therefore, in the best interest of the consumer. The traditional view forces the copyright holder to purge these procompetitive practices to avoid entering procompetitive agreements that could subject them to the risk of falling under the misuse doctrine. Second, licensing arrangements that do not implicate the antitrust laws, but do constitute

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rule or the rule of reason. For a general discussion of the *per se* rule and rule of reason, see 7 PHILLIP E. AREEDA, ANTITRUST LAW: AN ANALYSIS OF ANTITRUST PRINCIPLES AND THEIR APPLICATION §§ 1500-11 (1986). The proof gap is wider under the rule of reason since it requires plaintiff to affirmatively prove that defendant's conduct is anticompetitive, whereas the *per se* rule presumes the requisite illegal restraint of trade when certain practices are engaged in under certain circumstances. That is, under the *per se* rule, the court presumes that certain practices are inherently anticompetitive and thus violate the antitrust laws.

116. See, e.g., *Lasercomb America, Inc. v. Reynolds*, 911 F.2d 970 (4th Cir. 1990).

117. 803 F.2d 661 (Fed. Cir. 1986).

118. *Id.* at 668.

119. *Id.* at 669.

120. *Id.* at 668.

121. *Id.*

122. Brinson, *supra* note 105, at 390.

misuse under the traditional view, may be the most efficient mechanism for copyright holders or patentees to maximize profits or recoup investment costs. Prohibiting these licensing practices threatens to undermine the economic incentives driving innovation.

It is not worth preventing the downside risk that some illegal monopoly extension will slip through the cracks of the antitrust view by enforcing a harsh super per se rule. It is preferable for judges in an infringement action to err on the side of permitting illegal restraints of trade than to purge procompetitive licenses from the market. After the infringement litigation, the antitrust laws remain available to curb anticompetitive practices in antitrust cases, but there is no safety mechanism to remedy the harms that occur when judges root out procompetitive licensing arrangements from the marketplace. Moreover, to the extent that courts are loyal to precedent, even bad precedent, once courts, and especially the Supreme Court, condemn a practice as misuse, it will likely remain condemned, regardless of how much it benefits the public.<sup>123</sup> As then-Professor Easterbrook explains, "If judges condemn efficient practices, they will disappear, their benefits lost. . . . The costs of judicial error are borne by consumers, who lose the efficient practice and get nothing in return."<sup>124</sup>

c. Traditional view causes uncertainty for innovators and business

The traditional view, except in its super per se formulation, does not articulate clear standards for misuse. One commentator, criticizing the subjective nature of the traditional view, argues that it "presupposes some transcendent notion of what constitutes 'natural' or 'proper' patent or copyright exploitation and thus fails to identify any legal rules or standards for fixing the boundaries of legitimate conduct."<sup>125</sup> The traditional view, which results in different standards being applied by different judges, leaves ambiguous and uncertain what standards a court will apply to determine whether a plaintiff's conduct has an anticompetitive effect. Even if a licensor is relatively certain that his license does not violate the antitrust laws, he is uncertain whether his license violates the traditional view's vague public policy standards.<sup>126</sup> Given this uncertainty, copyright holders may hesitate before entering

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123. See Frank H. Easterbrook, *The Limits of Antitrust*, 63 TEX. L. REV. 1, 15 (1984).

124. *Id.* at 21.

125. Note, *Clarifying the Copyright Misuse Defense: The Role of Antitrust Standards and First Amendment Values*, 104 HARV. L. REV. 1289, 1295 (1991).

126. See USM Corp. v. SPS Technologies, Inc., 694 F.2d 505, 511 (7th Cir. 1982), cert. denied, 482 U.S. 1107 (1983).

certain licensing arrangements that, while not violating the antitrust laws, may nonetheless violate some judicially created standard of anticompetitiveness.<sup>127</sup> To the extent that uncertainty deters licensing practices that might survive scrutiny even under traditional misuse doctrine, and that are, in fact, procompetitive,<sup>128</sup> otherwise valuable goods and information are made unavailable for public enjoyment. Moreover, those licensing agreements that are entered into may not allow intellectual property owners to maximize profits, thus attenuating the incentives to innovate. Furthermore, without a well-defined legal framework within which to operate, potential licensors cannot easily assess their licensing opportunities and practices and must expend resources that could have been used for further innovation to determine if their licensing agreements constitute misuse. Finally, if a licensor is unsure whether his license constitutes misuse, he may hesitate to incur the costs associated with bringing an infringement suit, since the benefits of litigation are suspect. By deterring intellectual property owners from enforcing their exclusive rights, the traditional view undermines the public policy against piracy. The antitrust laws instead provide the misuse doctrine with needed certainty and stability.

d. The legal presumption should be against recognizing the misuse defense

Because the Constitution charges Congress to create intellectual property rights, there should be a legal presumption against the misuse defense. An infringer who himself has undermined copyright policy by infringing a plaintiff's exclusive rights should be required to affirmatively prove that the plaintiff's licensing arrangement undermines the public welfare. The presumption of misuse should not weigh in favor of infringers as it does under the traditional view.<sup>129</sup> Rather, the presumption should weigh toward protecting intellectual property rights, as it does under the antitrust view. The constitutional purpose motivating copyrights is realized only if courts discipline infringers, so courts should respect copyright holders' exclusive rights. Courts should grant an intellectual property owner relief against infringement unless the defendant rebuts the presumption against misuse by proving that the plaintiff's conduct rises to the level of an antitrust violation. The plaintiff

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127. See Arar, *supra* note 108, at 1310-11.

128. For a general discussion of the potential competitive effects of licensing arrangements involving tie-ins, see *infra* Parts IV.A and IV.B

129. Under the traditional view, courts effectively presume an anticompetitive effect to justify their finding of misuse, even though an antitrust analysis may reveal that the licensing practice is of no anticompetitive concern.

should not be denied relief simply by the defendant's pointing to the plaintiff's licensing contract.

Aside from its assertion that conduct can undermine copyright policy without violating the antitrust laws, the traditional view has one primary rebuttal to the antitrust criticism: infringers will be deterred from using the misuse defense if they have to prove an antitrust violation.<sup>130</sup> As the proof gap discussion illustrates, it is more difficult for an infringer to successfully invoke a misuse defense if he must prove a violation of the antitrust laws. Proving an antitrust violation is more costly and time-consuming than simply examining a licensing contract. Litigating antitrust issues requires expert testimony, extensive discovery, and intricate analysis. As the cost of bringing the defense increases and the likelihood of its success decreases, the expected net benefit of arguing misuse decreases. Thus requiring an antitrust violation decreases the incentive for infringers to argue misuse. The result, according to proponents of the traditional view, is that too few acts of misuse will be purged under the antitrust view, because too few infringers will allege misuse, and of those, too few will sustain the defense. It is true that it is cheaper and easier for an infringer to sustain the misuse defense under the traditional view than under the antitrust view. Yet the reason for antitrust standards, after all, is to discriminate activities that actually undermine public policy from those too innocuous for competitive concern. Parts IV and V further address this issue.

#### IV. COPYRIGHT MISUSE AND TIE-INS: THE RISK OF APPLYING THE TRADITIONAL VIEW

Infringers usually predicate their misuse defense on tying arrangements in copyright holders' licenses, in part because copyright holders' licenses frequently involve tie-ins.<sup>131</sup> Thus, how courts approach misuse when the copyright holder's alleged misconduct is a tie is critical, because tying arrangements often promote competition, copyright policy,<sup>132</sup> and technological progress.

That misuse may undermine competition and copyright policy is reason enough to be concerned over how courts define misuse. However, the issue is particularly critical to copyrighted computer software, where infringers disproportionately argue the misuse defense and

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130. See, e.g., Miskimon, *supra* note 105, at 1695.

131. See, e.g., *United States v. Loew's Inc.*, 371 U.S. 38 (1962); *United States v. Paramount Pictures*, 334 U.S. 131 (1948); *F.E.L. Publications Ltd. v. Catholic Bishops of Chicago*, 506 F.Supp. 1127 (N.D. Ill. 1981), *rev'd on other grounds*, 739 F.2d 284 (7th Cir. 1984), *cert. denied*, 459 U.S. 859 (1982).

132. See *infra* Part IV.B.3.

disproportionately allege a copyright tie-in as misconduct.<sup>133</sup> Creators of copyrighted computer software programs, for whom research and development costs are higher than for other types of works receiving copyright protection and for whom technological goodwill and reputation are critically important, are notorious for tying hardware, maintenance, and servicing to their software.<sup>134</sup> The tumultuous computer market heightens the need of software developers to recoup investment costs, maximize profits, and protect their technological goodwill and reputation. Software copyright holders' opportunity to tie, and thereby increase their profits and protect their competitive status in the marketplace, mitigates the investment risks inherent in their rapidly changing industry, where new technology is constantly replacing its predecessors.<sup>135</sup> By mitigating investment risks, tie-ins encourage investment in research and development, which ultimately culminates in an increased rate of technological advancement that promotes economic growth and productivity.

#### A. Anticompetitive Effects of Tie-ins and Copyright Policy

"In the paradigm of a tie, a seller refuses to sell one product, which a buyer desires, unless the buyer also agrees to purchase a second product, which is not otherwise desired from this seller on the offered terms."<sup>136</sup> Or as the Supreme Court has framed them, ties are "an agreement by a party to sell one product but only on the condition that the buyer also purchases a different (or tied) product, or at least agrees that he will not purchase that product from any other supplier."<sup>137</sup> The fundamental anticompetitive concern of tie-ins is foreclosure<sup>138</sup> resulting

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133. See cases cited *infra* notes 242-244.

134. For cases where an owner of a copyrighted software allegedly tied sales or licensing of its software (tying product) to hardware or maintenance and servicing (tied product) see *Service & Training, Inc. v. Data General Corp.*, 963 F.2d 680 (4th Cir. 1992); *Virtual Maintenance, Inc. v. Prime Computer, Inc.*, 957 F.2d 1318 (6th Cir. 1992), *vacated and remanded*, 61 USLW 3061 (1992), *aff'd on reh'g*, 995 F.2d 1324 (6th Cir. 1993); *Digidyne Corp. v. Data General Corp.*, 734 F.2d 1336 (9th Cir. 1984), *cert. denied*, 473 U.S. 926 (1985); *Advanced Computer Serv. of Mich., Inc. v. MAI Sys. Corp.*, 845 F. Supp. 356 (E.D. Va. 1994); *Electronic Data Sys. Corp. v. Computer Associates Int'l.*, 802 F. Supp. 1463 (N.D. Tex. 1992); *Microsoft Corp. v. BEC Computer Co., Inc.*, 818 F. Supp. 1313 (C.D. Cal. 1992); *Sega Enter. Ltd. v. Accolade, Inc.*, 785 F. Supp. 1392 (N.D. Cal. 1992), *rev'd on other grounds*, 977 F.2d 1510 (9th Cir. 1992); *Data General Corp. v. Grumman Sys. Support Corp.*, 1988 WL 159936 (D. Mass. 1988).

135. See Ramsey Hanna, Note, *Misusing Antitrust: The Search for Functional Copyright Misuse Standards*, 46 STAN. L. REV. 401, 426 (1994).

136. 9 AREEDA, *supra* note 116, § 1700a. Tie-ins implicate sections of both the Clayton Act and the Sherman Act. 15 U.S.C. §§ 1, 2, 14.

137. *Northern Pacific Ry. Co. v. United States*, 356 U.S. 1, 5-6 (1958).

138. See 9 AREEDA, *supra* note 116, § 1704.

from leverage.<sup>139</sup> Leverage is "a supplier's power to induce his customer for one product to buy a second product from him that would not otherwise be purchased solely on the merit of that second product."<sup>140</sup> Thus, leverage is the means by which a seller effects its tying arrangement and extends monopoly power into the tied market. By using his leverage to coerce customers to accept a tie, the seller can foreclose the tied market to competitors and thereby insulate himself from competition in the tied market. Tying, therefore, restrains competition (on the merits) in the tied market, and, by leaving insufficient demand to support rivals, threatens to worsen the market structure of the tied market by creating either a monopoly or oligopoly.<sup>141</sup>

However, a seller has no leverage and hence cannot force his customers to accept the tied with the tying product, if he lacks market power in the tying product market.<sup>142</sup> For example, if numerous substitutes are available for the tying product, competitive pressures will force the tying seller to abandon his arrangement or lose market share to his competitors. The seller in a competitive market may also lower the price of the package so that it is acceptable to buyers. But in this situation the relation is not coercive, and there is no monopoly in either the tying or the tied market. Rather, the seller has competed on the merits of the bundled package by setting a price that customers willingly accept.

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139. See *id.* § 1700d.

140. 5 P. AREEDA & D. TURNER, ANTITRUST LAW: AN ANALYSIS OF ANTITRUST PRINCIPLES AND THEIR APPLICATION § 1134a (1980).

141. See *Times-Picayune Publishing Co. v. United States*, 345 U.S. 594 (1953). In *Times* the Court stated:

Tying arrangements . . . flout the Sherman Act's policy that competition rules the marts of trade. Basic to the faith that a free economy best promotes the public weal is that goods must stand the cold test of competition. . . . By conditioning his sale of one commodity on the purchase of another, a seller coerces the abdication of buyers' independent judgment as to the "tied" product's merits and insulates it from the competitive stresses of the open market. . . . Conversely, the effect on competing sellers attempting to rival the "tied" product is drastic: to the extent the enforcer of the tying arrangement enjoys market control, other existing or potential sellers are foreclosed from offering up their goods to a free competitive judgment; they are effectively excluded from the marketplace.

*Id.* at 605. For a general discussion of foreclosure, see 9 AREEDA, *supra* note 116, § 1703d.

142. Justice Black explained, "[I]f one of a dozen food stores in a community were to refuse to sell flour unless the buyer also took sugar it would hardly tend to restrain competition in sugar if its competitors were ready and able to sell flour by itself." *Northern Pacific*, 356 U.S. at 7. See also *Jefferson Parish*, 466 U.S. at 37-38; *Fortner Enter. v. United States Steel Corp.*, 394 U.S. 495, 519 (1969) (hereinafter *Fortner I*); *USM Corp. v. SPS Technologies, Inc.*, 694 F.2d 505, 511 (7th Cir. 1982), cert. denied, 482 U.S. 1107 (1983); 9 AREEDA, *supra* note 116, §§ 1703d3, 1704c; Ward Bowman, *Tying Arrangements and the Leverage Problem*, YALE L.J. 19, 31 (1957); Easterbrook, *supra* note 123, at 20.

Courts have primarily relied on the anticompetitive effect of foreclosure when finding that tie-ins violate antitrust law.<sup>143</sup> However, there are additional anticompetitive concerns of ties, including: (1) the evasion of price controls;<sup>144</sup> (2) the facilitation of price discrimination;<sup>145</sup> and (3) the creation of entry barriers.<sup>146</sup> Like foreclosure, these anticompetitive risks also depend upon the seller having market power in the tying market. Justice White's dissent in *Fortner I* captures the various anticompetitive concerns of tie-ins.<sup>147</sup>

Because the Court believes that "[t]ying arrangements serve hardly any purpose beyond the suppression of competition,"<sup>148</sup> ties are scrutinized under the *per se* analysis of antitrust illegality,<sup>149</sup> usually.<sup>150</sup> The Court first outlined the *per se* rule in *Northern Pacific Railway Co. v.*

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143. See, e.g., *Jefferson Parish*, 446 U.S. at 16; 9 AREEDA, *supra* note 116, §§ 1700d, 1704.

144. See 9 AREEDA, *supra* note 116, § 1703e3; *Bowman*, *supra* note 143, at 21.

145. 9 AREEDA, *supra* note 116, § 1703e1.

146. *Id.* § 1705e.

147. Justice White wrote:

There is general agreement in the cases and among commentators that the fundamental restraint against which the tying proscription is meant to guard is the use of power over one product to attain power over another, or otherwise distort freedom of trade and competition in the second product. This distortion injures the buyers in the second product, who because of their preference for the seller's brand of the first are artificially forced to make a less than optimal choice in the second. And even if the customer is indifferent among brands of the second product and therefore loses nothing by agreeing to use the seller's brand of the second in order to get his brand of the first, such tying agreements may work significant restraints on competition in the tied product. The tying seller may be working toward a monopoly position in the tied product and, even if he is not, the practice of tying forecloses other sellers of the tied product and makes it more difficult for new firms to enter that market. They must be prepared not only to match existing sellers of the tied product in price and quality, but to offset the attraction of the tying product itself. Even if this is possible through simultaneous entry into production of the tying product, entry into both markets is significantly more expensive than simply entry into the tied market, and shifting buying habits in the tied product is considerably more cumbersome and less responsive to variations of competitive offers. In addition to these anticompetitive effects in the tied product, tying arrangements may be used to evade price control in the tying product through clandestine transfer of the profit to the tied product; they may be used as a counting device to effect price discrimination; and they may be used to force a full line of products on the customer so as to extract more easily from him a monopoly return on one unique product in the line. All of these distortions depend upon the existence of some market power in the tying product.

*Fortner I*, 394 U.S. at 512-14.

148. *Standard Oil Co. of Cal. v. United States*, 337 U.S. 293, 305 (1949).

149. See 9 AREEDA, *supra* note 116, §§ 1720-21.

150. *Id.* §§ 1728-29.

*United States*, explaining that ties are "unreasonable in and of themselves whenever a party has sufficient economic power with respect to the tying product to appreciably restrain free competition in the market for the tied product and a 'not insubstantial' amount of interstate commerce is affected."<sup>151</sup> More recently, courts<sup>152</sup> require a plaintiff to establish four elements before condemning a tie-in under the *per se* rule: (1) the existence of separate products; (2) an agreement conditioning the purchase of the tying product upon purchase of the tied product (or at least upon a condition not to purchase the tied product from another seller); (3) sufficient market power<sup>153</sup> with respect to the tying product to restrain competition appreciably in the tied product; and (4) an effect upon a substantial amount of commerce in the tied product.<sup>154</sup>

Illegal ties undermine copyright policy by reducing competition in the tied product market. First, the possessor of a copyright to a tying product has little incentive to innovate because he does not have to compete to gain market share in the tied market. Neither does he have to maintain his market share because entry barriers erected by the tie, coupled with the copyright holder's guaranteed pool of customers comprising individuals accepting the tied package, ensure him a fixed

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151. Northern Pacific Ry. Co. v. United States, 356 U.S. 1, 6 (1958).

152. See, e.g., Service & Training, Inc. v. Data General Corp., 963 F.2d 680, 683 (4th Cir. 1992).

153. For examples of how the Court has defined market power, see *Eastman Kodak Co. v. Image Technical Serv., Inc.*, 112 S. Ct. 2072, 2080 (1992) ("Market power is the power 'to force a purchaser to do something that he would not do in a competitive market.' " (quoting *Jefferson Parish Hosp. Dist. No. 2 v. Hyde*, 466 U.S. 2, 14 (1984))) and *Fortner I*, 394 U.S. at 503 ("Market power is usually stated to be the ability of a single seller to raise price or restrict output . . . [T]he proper focus of concern is whether the seller has the power to raise prices, or impose other burdensome terms such as a tie-in, with respect to any appreciable number of buyers within the market."). Economists usually define firm market power in terms of the Lerner Index. For a discussion of the Lerner Index, which measures the extent to which a seller can raise price over marginal cost, see SCHERER & ROSS, *supra* note 4, at 70-71. Recently, *Jefferson Parish* defined monopoly power by relying more on the economic theory underlying the Lerner Index. The Court stated, "As an economic matter, market power exists whenever prices can be raised above the level that would be charged in a competitive market." *Jefferson Parish*, 466 U.S. at 28 n.46. The Court has also historically relied heavily on the "uniqueness" of a good to infer market power. See, e.g., *United States Steel v. Fortner Enter.*, 429 U.S. 610, 619-22 (1977) (hereinafter *Fortner II*). The presumption of market power when a good is sufficiently unique is especially pertinent to a discussion of copyrights, since by definition copyrighted works are unique. Regardless of the slight nuances among the different ways the Court has defined market power, the Court has maintained the position of *Fortner I* that the "standard of 'sufficient economic power' does not . . . require that the defendant have a monopoly or even a dominant position throughout the market for the tying product." *Fortner I*, 394 U.S. at 502-03.

154. Unless the tying arrangement forecloses a substantial amount of commerce, it does not threaten to restrain trade enough in the tied market to create an anticompetitive concern. See, e.g., 9 AREEDA, *supra* note 116, §§ 1703, 1704.

share of the tied market.<sup>155</sup> Second, the copyright holder's actual and potential competitors in the tied market have less of an incentive to innovate since foreclosure and entry barriers reduce (and may eliminate) their opportunity to recoup investment costs or earn profits from their creative efforts.<sup>156</sup> By restraining trade and undermining innovation, illegal copyright ties upset the acceptable tradeoff between monopoly power and the dynamic efficiency of copyrights.<sup>157</sup>

## B. Should Copyright Ties Be Presumptively Anticompetitive?

The Court has historically treated tie-ins involving intellectual property more harshly than ties involving other goods or services.<sup>158</sup> The Court's hostility toward these ties began primarily with the early patent misuse cases in which the Court held, without formal economic analysis, that patent tie-ins were anticompetitive.<sup>159</sup> To justify its hostility to ties, the Court presumed that patents and copyrights provided the seller with sufficient economic power over the tying product to foreclose competition in the tied market.<sup>160</sup> The Court's presumption of market power and an illegal restraint of trade when the tying product was a

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155. For example, Areeda notes:

The disappearance of rival firms in the tied market . . . eliminates competitive spurs toward cost reduction, innovation, and improvements in the production and distribution of that product. Although a monopolist can usually increase profits by cutting costs and innovating, he is under less pressure to do so than the firm that needs such improvements to keep up with or get ahead of rivals. As usual, therefore, we fear that a monopolist will choose "the quiet life" rather than aggressive progress.

*Id.* § 1705b The positive influence of competition on innovation is called the stimulus factor. *See generally* SCHERER & ROSS, *supra* note 4, at 630-37, 644-60.

156. *See supra* note 4.

157. *See supra* note 24.

158. 9 AREEDA, *supra* note 116, § 1701.

159. *See United States v. Loew's Inc.*, 371 U.S. 38, 45-46 (1962); *United States v. Paramount Pictures*, 334 U.S. 131, 157 (1948).

160. *See, e.g., Fortner I*, 394 U.S. at 505 n.2 ("Uniqueness confers economic power only when other competitors are in some way prevented from offering the distinctive product themselves. Such barriers may be legal, as in the case of patents and copyrighted products."); *Jefferson Parish*, 466 U.S. at 16 ("[I]f the government has granted the seller a patent or similar monopoly over a product, it is fair to presume that the inability to buy the product elsewhere gives the seller market power."); *Loew's*, 371 U.S. at 45 ("The requisite economic power is presumed when the tying product is patented or copyrighted."); *Times-Picayune Publishing Co. v. United States*, 345 U.S. 594, 611 (1953) (patents and copyrights supply the "requisite market control"). At least one circuit has held that the Court's historical presumption of market power from intellectual property is rebuttable. *Digidyne Corp. v. Data General Corp.*, 734 F.2d 1336, 1344 (9th Cir. 1984), *cert. denied*, 473 U.S. 926 (1985). For a general discussion of *Digidyne* and whether the Court's presumption of market power is rebuttable or conclusive, see J. Dianne Brinson, *Proof of Economic Power in a Sherman Act Tying Arrangement Case*, 48 LA. L. REV. 29, 45-58 (1987).

patented or copyrighted good resulted in discriminatory treatment of these grants in antitrust cases: If a patent or copyright was involved, the Court condemned selling arrangements it otherwise permitted for non patented or non copyrighted other goods.<sup>161</sup> Because the Court presumed an antitrust violation, it found no reason to undertake extensive economic and market analyses and did not hesitate to find misuse.<sup>162</sup> With regard to copyrights, this presumption of anticompetitive effects was not justified.

### 1. THE QUESTION OF MARKET POWER, COPYRIGHTS, AND PATENTS

Market power is the "ability of a single seller to raise price and restrict output."<sup>163</sup> Intellectual property law potentially confers market power because it creates barriers to competitors' entry into the relevant market with the same good and, to a certain extent, with substitute goods.<sup>164</sup> Furthermore, even with entry into the market by competitors, the copyright holder would retain market power, albeit of no real anticompetitive concern in the long run, as intellectual property rights ensure product differentiation and a monopolistically competitive market.<sup>165</sup> Thus, the degree of market power is a function not only of how unique or socially desirable the new product is, but also of how effective the property right is in erecting entry barriers that keep substitutes out of the market.

As the analysis below suggests, neither patents nor copyrights confer much market power. Of the two, copyrights confer less.<sup>166</sup>

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161. See Schueller, *supra* note 68, at 192.

162. As the Court explained in *Loew's*:

Since the requisite economic power may be found on the basis of either uniqueness or consumer appeal, and since market dominance in the present context does not necessitate a demonstration of market power in the sense of § 2 of the Sherman Act, it should seldom be necessary in a tie-in sale case to embark upon a full-scale factual inquiry into the scope of the relevant market for the tying product and into the corollary problem of the seller's percentage share in that market. This is even more obviously true when the tying product is patented or copyrighted, in which case . . . sufficiency of economic power is presumed.

*Loew's*, 371 U.S. at 45 n.4.

163. *Fortner I*, 394 U.S. at 503.

164. See generally SCHERER & ROSS, *supra* note 4, at 624-26.

165. For an overview of product differentiation and monopolistic competition, see *id.* at 600-10. For an exhaustive discussion of monopolistic competition, see E.H. CHAMBERLAIN, *THE THEORY OF MONOPOLISTIC COMPETITION* (1933).

166. See, e.g., *Alfred Bell & Co. v. Catalda Fine Arts, Inc.*, 191 F.2d 99, 103 (2d Cir. 1951) (explaining that the protection granted patent owners is greater than that accorded copyright holders).

Four factors contribute to the minimal market power inherent in copyright grants: (a) the requirements of a copyright; (b) the idea/expression dichotomy and merger doctrine; (c) the exclusive rights that accompany a copyright; and (d) the fair use doctrine.

a. Originality requirement of copyrights

Copyrights protect "original works of authorship fixed in any tangible medium of expression."<sup>167</sup> For purposes of a copyright, originality requires only that the work "was independently created by the authors (as opposed to copied from other works)."<sup>168</sup> Thus, to receive copyright protection, a work does not need to be novel and can in fact be identical to previous works.<sup>169</sup> Judge Learned Hand explains:

Borrowed the work must indeed not be, for a plagiarist is not himself pro tanto an "author"; but if by some magic a man who had never known it were to compose anew Keats's Ode on a Grecian Urn, he would be an "author," and if he copyrighted it, others might not copy that poem, though they might of course copy Keats's.<sup>170</sup>

The copyright originality standard, and its implications, contrasts sharply with the standards required for a patent.<sup>171</sup> First, to obtain a patent, an inventor must establish the novelty of his invention by demonstrating that it is unlike any prior useful art.<sup>172</sup> Second, he must establish that his invention is useful.<sup>173</sup> Third, the inventor must establish that the differences between his invention and prior art would not "have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains."<sup>174</sup>

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167. 17 U.S.C. § 102 (1988).

168. *Feist Publications, Inc. v. Rural Telephone Serv. Co.*, 499 U.S. 340, 345 (1991). See also *Alfred Bell*, 191 F.2d at 99-102 (comparing requirements of "a high degree of uniqueness ingenuity, and inventiveness" for patents with originality requirement of copyrights); 1 NIMMER, *supra* note 7, § 2.01.

169. See *Feist*, 499 U.S. at 345 ("Originality does not signify novelty; a work may be original even though it closely resembles other works so long as the similarity is fortuitous and not the result of copying."); *Alfred Bell*, 191 F.2d at 103 ("The 'author' is entitled to a copyright if he independently contrived a work completely identical with what went before; similarly, although he obtains a valid copyright, he has no right to prevent another from publishing a work identical with his, if not copied from his."); 1 NIMMER, *supra* note 7, § 2.01.

170. *Sheldon v. Metro-Goldwyn Pictures Corp.*, 81 F.2d 49, 54 (2d Cir. 1936).

171. *Alfred Bell*, 191 F.2d at 101-102 ("[The] Constitution . . . recognizes that the standards for patents and copyrights are basically different.").

172. See 35 U.S.C. § 102 (1988) (novelty requirement); 35 U.S.C. § 101 (invention must be "new"); 35 U.S.C. § 115 (1988) (patentee must be the first inventor or discoverer).

173. 35 U.S.C. § 101 (1988).

174. 35 U.S.C. § 103. See *Feist*, 499 U.S. at 345; *Alfred Bell*, 91 F.2d at 102 (explaining that copyrights do not have a non-obviousness requirement).

Since the requirements for a patent are more demanding than for copyrights, patents confer more market power than copyrights. Because an author only has to meet the relatively lax standard of originality while an inventor has to meet the standards of novelty, utility, and non-obviousness, copyrights are easier to attain than patents.<sup>175</sup> It is easier, however, to create more perfect substitutes for copyrighted goods than to invent an acceptable substitute that does not infringe a patent.<sup>176</sup> In fact, because of the novelty requirement of patents, it is likely that a patented good is substantially unlike prior arts, which suggests a low degree of substitutability between patented inventions.

b. Idea/expression dichotomy.

An author may only copyright his expressions, not his ideas.<sup>177</sup> The Supreme Court explained in *Baker v. Seldon*<sup>178</sup> how the idea/expression dichotomy distinguishes copyrights from patents:

The difference between the two things, letters-patent and copyright, may be illustrated by reference to the subjects just enumerated. Take the case of medicines. Certain mixtures are found to be of great value in the healing art. If the discoverer writes and publishes a book on the subject (as regular physicians generally do), he gains no exclusive right to the manufacture and sale of the medicine; he gives that to the public. If he desires to acquire such exclusive right, he must obtain a patent for the mixture as a new art, manufacture, or composition of matter. He may copyright his book, if he pleases; but that only secures to him the exclusive right of printing and publishing his book. So of all other inventions or discoveries. . . . But the principal is the same in all. The description of the art in a book, though entitled to the benefit of copyright, lays no foundation for an exclusive claim to the art itself. The object of the one is explanation; the object of the other is use. The former can be secured, if at all, by letters-patent.<sup>179</sup>

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175. See 1 NIMMER, *supra* note 7, § 2.01.

176. The *Alfred Bell* court explained: "A patentee, unlike a copyrightee, must not merely produce something original, he must also be 'the first inventor or discoverer.' Hence it is possible to have a plurality of valid copyrights directed to closely identical or even identical works." *Alfred Bell*, 191 F.2d at 103 (citations omitted).

177. 17 U.S.C. § 102 (1988). For an overview of the idea/expression dichotomy, see 1 NIMMER, *supra* note 7, § 2.03[D]. For an economic justification of the idea/expression dichotomy, see Landes & Posner, *supra* note 4, at 347-49 (arguing that if ideas were copyrightable, the cost of expression would increase, which would decrease the proliferation of works upon which social welfare depends).

178. 101 U.S. 99 (1879).

179. *Id.* at 102-03, 105. See also *Mazer v. Stein*, 347 U.S. 201, 217 (1954) ("Unlike a patent, a copyright gives no exclusive rights to the art disclosed; protection is given only to the expression of the ideas—not the idea itself.").

A classic example illustrates the effect of *Baker*: While Shakespeare could have copyrighted the text of *Romeo and Juliet*, he could not have copyrighted its love theme. Thus, *West Side Story* would not infringe Shakespeare's copyright.<sup>180</sup>

The author's personal expression of an idea defines the scope of his copyright, whereas the inventor's patent claim defines the scope of his patent.<sup>181</sup> In his claim, the patentee may express his broad conception of an idea and how his invention captures part of that idea. The patent's scope, then, is not limited to the particular specifications of his invention but may also encompass the inventor's broader personal expression of the idea behind the invention.<sup>182</sup> The broader the patentee defines his claim, the broader is the scope of his patent; thus, the patent claim effectively allows a patentee to define the range of goods over which he will exert his exclusive rights. A patentee's broadly defined claim will exclude potential competitors by preempting alternative expressions of the idea embodied by the patentee's invention. The copyright holder, on the other hand, has no control over alternative expressions of the idea embodied by his work since his exclusive rights only protect his personal expression.<sup>183</sup> Since patent grants are often broader in scope than copyrights, a greater variety of substitutes may fall within the broad protective ambit of a patent claim than falls within the relatively narrow protective ambit of a copyright. Patents therefore often confer more market power than copyrights.

The merger doctrine is an extension of the idea/expression dichotomy. In order to prevent the monopolization of ideas, if a particular expression represents one of a limited number of ways of expressing an idea, or in the extreme the only way, the author cannot obtain a copyright for his expression.<sup>184</sup> Since the monopoly power conferred by a copyright increases as the number of ways available for expressing an idea decreases, an innovator cannot protect his creation when circumstances are such that a copyright would confer substantial monopoly power by effectively allowing him to monopolize a field without the threat of substitutes taking away market share. The merger doctrine requires the potential for competing innovators to create substitutes as a condition precedent to the granting of a copyright. In

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180. Glen P. Belvis, *Computers, Copyright & Tying Agreements: An Argument for the Abandonment of the Presumption of Market Power*, 28 B.C. L. REV. 265, 286 n.131 (1987).

181. 35 U.S.C. § 112 (1988). For an in-depth analysis of this point, see Belvis, *supra* note 180, at 283-87.

182. See Belvis, *supra* note 180, at 287.

183. See, e.g., *Alfred Bell*, 191 F.2d at 103.

184. See, e.g., *Herbert Rosenthal Jewelry Corp. v. Kalpakian*, 446 F.2d 738, 740-41 (9th Cir. 1971); *Morrisey v. Proctor & Gamble Co.*, 379 F.2d 675, 678-79 (1st Cir. 1967).

other words, if a copyright would confer substantial market power, the merger doctrine precludes the grant. The critical question for copyrights and market power, therefore, is not whether substitutes and potential entry provide a competitive stimulus, but how effective this threat of competition is in ensuring a competitive outcome. The answer depends on the facts of each case, and can be determined only on an ad hoc basis.

#### c. Exclusive rights and infringement

The exclusive rights that accompany a copyright most notably include the right "to reproduce the copyrighted work in copies."<sup>185</sup> The exclusive rights of a patent, however, are relatively broad and include the right to make, use, or sell the patented invention.<sup>186</sup> Since patents confer greater control over the relevant product, the market power inherent in a patent exceeds that inherent in a copyright.<sup>187</sup>

Not only are the exclusive rights of a patent broader than those of a copyright, they are accorded more protection, which bolsters the patentee's market power in comparison to the copyright holder's. First, inadvertent duplication constitutes patent infringement,<sup>188</sup> but not copyright infringement if the originality requirement is met.<sup>189</sup> Second, whereas substantial similarity between a patented good and an alleged infringer's invention may be sufficient for actionable infringement, similarity between a copyrighted work and an alleged infringer's work constitutes infringement only if the substantial similarity is the result of copying.<sup>190</sup>

#### d. Fair use doctrine

The Copyright Act allows copying of copyrighted works for certain purposes, which under the Act constitutes "fair use."<sup>191</sup> A defendant who successfully argues the fair use defense is exonerated from liability,

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185. 17 U.S.C. § 106 (1988).

186. 35 U.S.C. § 271(a). (1988)

187. For an entertaining example of this point, see Belvis, *supra* note 180, at 285-87.

188. See 4 CHISUM, *supra* note 15, § 16.02[2].

189. See, e.g., *Alfred Bell*, 191 F.2d at 103. This distinction is consistent with the difference between the novelty requirement of patents and the originality requirement of copyrights. An inventor is charged with full knowledge of prior patented inventions, even if he does not have such knowledge. *Id.*

190. See, e. g., 1 NIMMER, *supra* note 7, § 2.01[A]. For a comprehensive discussion of substantial similarity and copyrights, see *id.* § 13.03[A].

191. 17 U.S.C. § 107 (1988). For a general discussion of fair use, see 13 NIMMER, *supra* note 7, § 3.05; *see also* Bilicki, *supra* note 105, at 235-37. For an economic analysis of fair use, see Landes & Posner, *supra* note 4, at 357-60.

because "fair use of a copyrighted work . . . is not an infringement."<sup>192</sup> There is no fair use defense for patent infringement.

e. In sum copyrights confer less market power than patents

As the above analysis suggests, copyrights and patents are fundamentally different. The statutory requirements for a patent are more demanding than for a copyright, the exclusive rights of a patent are broader than those of a copyright, and patents preempt competition from a broader field than do copyrights.<sup>193</sup> Hence, patents are a stronger shield against competition, since they erect a higher barrier to entry by potential competitors into the market. One therefore expects to find more copyrighted goods that satisfy consumer demand for a particular end use than patented goods that would satisfy such a demand.<sup>194</sup>

Not all patents confer enough market power for patent holders to successfully effect a monopolistic tie. This implies that copyrights, which offer less protection than patents, also fail to confer the requisite market power for such a tie.<sup>195</sup> Notwithstanding earlier cases presuming monopoly power from intellectual property grants, courts have begun to recognize that monopoly power should not be presumed from patents or copyrights. The judicial trend is toward requiring affirmative proof of market power before condemning an intellectual property tie.<sup>196</sup>

In conclusion, given the relatively lax requirements and less exclusive rights of copyrights, courts should not presume that they confer the requisite monopoly power to effect a tie that is anticompetitive. Copyrights erect minimal entry barriers, and potential innovators should not find it difficult to create around the copyright. Thus, even if there are no substitutes today for the copyrighted good, potential entry helps ensure competitive pricing and licensing arrangements. If the copyright holder does have market power, it is likely a function of factors other

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192. 17 U.S.C. § 107 (1988).

193. See *Bobbs-Merrill Co. v. Isador Straus*, 210 U.S. 339, 345 (1908); *Saturday Evening Post Co. v. Rumbleseat Press, Inc.*, 816 F.2d 1191, 1198 (7th Cir. 1987).

194. See Richard Stitt, Comment, *Copyright Self-Help Protection as Copyright Misuse: Finally, the Other Shoe Drops*, 57 UMKC L. REV. 899, 904 (1989).

195. See, e.g., F.M. Scherer, Panel Discussion, *The Value of Patents and Other Legally Protected Commercial Rights*, 53 ANTITRUST L.J. 535, 547 (1985).

196. See *Jefferson Parish Hosp. Dist. No. 2 v. Hyde*, 466 U.S. 2, 36 n.7 (1984) (O'Connor, J., concurring); *Virtual Maintenance, Inc. v. Prime Computer, Inc.*, 957 F.2d 1318 (6th Cir. 1992), *vacated and remanded*, 61 U.S.L.W. 3061 (1992), *aff'd on reh'g*, 995 F.2d 1324 (6th Cir. 1993); *Abbott Lab. v. Brennan*, 952 F.2d 1346 (Fed. Cir. 1991); *A.I. Root Co. v. Computer/Dynamics, Inc.*, 806 F.2d 673 (6th Cir. 1986); *Alcon Lab., Inc. v. Allergan, Inc.*, 17 U.S.P.Q. 2d 1365 (N.D. Tex. 1990); *Allen-Myland, Inc. v. IBM Corp.*, 693 F. Supp. 262 (E.D. Pa. 1988); *Klo-zik Co. v. General Motors Corp.*, 677 F. Supp. 499 (E.D. Tex. 1987); *3 P.M., Inc. v. Basic Four Corp.*, 591 F. Supp. 1350 (E.D. Mich. 1984).

than the copyright, such as reputation, start-up costs, economies of scale, marketing and advertising, distribution and servicing networks, and first-mover advantages. The existence of a copyright is only one factor determining market structure, and, contrary to several older court opinions, but consistent with recent judicial trends, it is not dispositive as to whether the copyright holder actually has the market power to effect a monopolistic tie.

## 2. CRITICISM OF LEVERAGE THEORY

The Chicago School of Economics,<sup>197</sup> among others, has been an outspoken critic of the Supreme Court's reliance on leverage theory in tying cases.<sup>198</sup> The Chicago School argues that leverage theory is untenable, and that monopolists' use of tie-ins to maximize profits does not harm competition.

The Chicago School's fundamental criticism is the "fixed sum argument . . . which is simply that a firm with market power may be able to gain its profit all from its own market, all from another, or from any combination thereof, but the total amount of restriction that the monopolist will profitably be able to impose is fixed regardless of the practice that is used."<sup>199</sup> Thus, a copyright holder cannot extract more monopoly power from his grant than that received from its exclusive rights. Professor Stigler explains:

One film Justice Goldberg cited, *Gone With the Wind*, is worth \$10,000 to the buyer, while a second film the Justice cited, *Getting Gertie's Garter*, is worthless to him. The seller could sell the one for \$10,000, and throw away the second, for no matter what its cost, bygones are forever bygones. Instead, the seller compels the buyer to take both. But surely he can obtain no more than \$10,000, since by hypothesis this is the value of both films to the buyer. Why not, in short, use his monopoly power directly on the desirable film? It seems no more sensible, on this logic, to blockbook the two films

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197. The Chicago School analyzes anticompetitive behavior in terms of consumer welfare and efficiency.

198. For example, Judge Robert Bork, one of the leaders of the Chicago School, writes, The law's theory of tying arrangements is merely another example of the discredited transfer-of-power theory, and perhaps no other variety of that theory has been so thoroughly and repeatedly demolished in the legal and economic literature. That the law's course remained utterly undeflected for so long casts an illuminating and, if you are of a sardonic turn of mind, amusing sidelight upon the relation of scholarship to judicial lawmaking.

ROBERT BORK, THE ANTITRUST PARADOX 372 (1978). See also RICHARD POSNER, ANTITRUST LAW: AN ECONOMIC PERSPECTIVE (1976). See generally Aaron Director & Edward Levi, *Law and the Future: Trade Regulation*, 51 NW. U. L. REV. 281 (1956).

199. Louis Kaplow, *Extension of Monopoly Power Through Leverage*, 85 COLUM. L. REV. 515, 518 (1985).

than it would to compel the exhibitor to buy *Gone With the Wind* and seven ouiji boards, again for \$10,000.<sup>200</sup>

Stigler suggests that the copyright holder cannot extend his monopoly profit potential, because he must compensate licensees for accepting the tie—which to consumers is equivalent to a price increase—by, for example, lowering prices.<sup>201</sup> Thus, according to then-Professor Posner, “[a] . . . fatal weakness of the leverage theory is its inability to explain why a firm with a monopoly of one product would want to monopolize complementary products as well.”<sup>202</sup>

Although the Chicago School rejects leverage theory, it concedes that a copyright holder may tie in order to price discriminate, the effect of which may or may not be anticompetitive.<sup>203</sup> For example, when goods are sold in variable proportions, price discrimination through metering enables the seller to maximize monopoly profit.<sup>204</sup> However, metering “creates no new and additional monopoly power over the tied product.”<sup>205</sup> In fact, if the copyright holder meters, the tie-in may actually increase allocative efficiency, output, and thus consumer welfare.<sup>206</sup> Not surprisingly, the Chicago School concludes that a copyright holder’s attempt to maximize profits with a tie should not be per se illegal.<sup>207</sup>

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200. George Stigler, *United States v. Inc.: A Note on Block-Booking*, 1963 SUP. CT. REV. 152, *quoted in* BORK, *supra* note 198, at 374. Although the Supreme Court has accepted leverage as a viable economic theory in tying cases, members of the Court have recognized the Chicago School rationale. Justice White explained in his *Fortner I* dissent: “The monopolist can exact the maximum price which people are willing to pay for his product. By definition, if his price went up he would lose customers. If he then refuses to sell the tying product without the tied product, and raises the price of the tied product above the market, he will also lose customers. The tying link works no magic.” 394 U.S. at 514.

201. See USM Corp. v. SPS Technologies, Inc., 694 F.2d 505, 510 (7th Cir. 1982), *cert. denied*, 482 U.S. 1107 (1983); BORK, *supra* note 198, at 373; POSNER, *supra* note 198, at 173; Bowman, *supra* note 142, at 21.

202. POSNER, *supra* note 198, at 173.

203. See, e.g., BORK, *supra* note 198, at 376-78; Bowman, *supra* note 142, at 23. The welfare effects of price discrimination are uncertain and depend on the circumstances at hand. For a general discussion of the indeterminate nature of the welfare effects of price discrimination, see SCHERER & ROSS, *supra* note 4, at 494-508. Recognizing the indeterminate effect of price discrimination on competition and consumer welfare, the Court, for example, explained in *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 113 S. Ct. 2578, 2586 (1988), that price discrimination does not violate the Robinson-Patman Price Discrimination Act, 15 U.S.C. § 13(a), when the price differentials “result from or further the forces of competition.”

204. For a discussion of price discrimination through metering, see Part IV.2.c(5). Copyright holders may also have an incentive to price discriminate when goods are used in fixed proportions. See, e.g., BORK, *supra* note 198, at 377.

205. Bowman, *supra* note 142, at 24.

206. See *infra* Part IV.B.3(e).

207. Cf. USM Corp. v. SPS Tech., Inc., 694 F.2d 505, 510 (7th Cir. 1982), *cert. denied*, 482 U.S. 1107 (1983) (“[T]here is nothing wrong with trying to make as much money as you can from a [copyright]. True, a tie-in can be a method of price discrimination. . . . But

Despite the Chicago School's criticisms, which themselves have been criticized,<sup>208</sup> leverage theory still is supported by the Supreme Court and some legal commentators.<sup>209</sup>

### 3. BUSINESS JUSTIFICATION AND PROCOMPETITIVE EFFECTS OF TIES

The Supreme Court has recognized that tie-ins may be procompetitive and serve legitimate business needs that overwhelm the risks of leverage and foreclosure:

Tie-ins may also at times be beneficial to the economy. . . . They may facilitate new entry into fields where established sellers have wedded their customers to them by ties of habit and custom. They may permit clandestine price cutting in products which otherwise would have no price competition at all because of fear of retaliation from the few other producers dealing in the market. They may protect the reputation of the tying product if failure to use the tied product in conjunction with it may cause it to malfunction. And, if the tied and tying products are functionally related, they may reduce costs through economies of joint production and distribution.<sup>210</sup>

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since . . . there is no principle that [copyright] owners may not engage in price discrimination, it is unclear why one form of discrimination, the tie-in, alone is forbidden."). For a general discussion of price discrimination, see SCHERER & ROSS, *supra* note 4, at 489-517. For a discussion of price discrimination and ties, see 9 AREEDA, *supra* note 116, § 1711.

208. See, e.g., Kaplow, *supra* note 199, at 520-38. A primary criticism of the Chicago School is that it ignores the possibility that tying sellers may effect predatory pricing schemes by cross-subsidizing losses in the tied market with profits from the tying market, and thereby drive competitors from the tied market and establish their own monopoly position. Justice White recognized this possibility in his *Fortner I* dissent:

If the monopolist uses his monopoly profit in the first market to underwrite sales below market price in the second, his monopoly business becomes less profitable. There remains an incentive to do so nonetheless when he thinks he can obtain a monopoly in the tied product as well, permitting him later to raise prices without fear of entry to recoup the monopoly profit he has foregone.

*Fortner I*, 394 U.S. at 513 n.4.

209. See, e.g., *Eastman Kodak Co. v. Image Technical Serv., Inc.*, 112 S. Ct. 2072 (1992); *Jefferson Parish Hosp. Dist. No. 2 v. Hyde*, 466 U.S. 2 (1984); Kaplow, *supra* note 199; Slawson, *A New Concept of Competition: Reanalyzing Tie-in Doctrine after Hyde*, 27 ANTITRUST BULL 257 (1982).

210. *Fortner I*, 394 U.S. at 514 n.9. See also *Eastman Kodak*, 112 S. Ct. at 2091; *National Collegiate Athletic Ass'n. v. Board of Regents of Univ. of Okla.*, 468 U.S. 85, 104 n.26 (1984); *Jefferson Parish*, 466 U.S. at 11-14; *International Salt Co. v. United States*, 332 U.S. 392, 397 (1947). Although procompetitive and business justifications have been recognized as viable defenses to allegations of tying in antitrust cases, these defenses have generally been rejected in misuse cases, including those involving ties. See, e.g., *Mercoid v. Mid-Continent Inv. Co.*, 320 U.S. 661, 666 (1944); *B.B. Chem. Co. v. Ellis*, 314 U.S. 495, 498 (1942); *M. Whitmark & Sons v. Jenson*, 80 F. Supp. 843, 848 (D. Minn. 1948). But see

There are five primary potential business and procompetitive justifications for tie-ins: the four Justice White mentions (technological interdependence and goodwill; facilitating new entry; indirect price cuts; and economies of joint production and distribution) and price discrimination by metering.

a. Technological interdependence and goodwill

Professor Bowman explains, "The usefulness of a particular product or device may depend not only upon its own adaptability but equally upon the adaptability of some essential component. If the essential component did not conform to exact specifications, it might impair the operation or usefulness of the principal product."<sup>211</sup> A seller may be justified in tying a good to specific supplies, accessories, or services that complement that good if there is a substantial risk that the tying product will not work optimally unless used in conjunction with the seller's supplies, accessories, or services. By using the tying product with inferior goods that undermine the tying product's performance, purchasers threaten the seller's reputation.<sup>212</sup> Given that a seller's strength as a competitor in the marketplace decreases when its reputation as a supplier of high quality, dependable goods is eroded, rooting out ties undertaken to protect goodwill threatens competition.<sup>213</sup> Several courts have recognized a defense based on technological interdependence and business goodwill.<sup>214</sup>

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Duplan Corp. v. Deering Milliken, Inc., 444 F. Supp. 648, 697 (D. S.C. 1977), *aff'd*, 594 F.2d 979 (4th Cir. 1979).

. 211. Bowman, *supra* note 142, at 27.

212. Some have questioned whether technological interdependence and goodwill is a valid justification for ties because buyers and sellers have consistent incentives to ensure the optimal performance of the tying product. Thus, to the extent that buyers will follow sellers' recommendations regarding how to best use the principal product, the seller may be able to ensure his reputation without tying, by supplying purchasers with detailed specifications of complementary goods and services and a recommended list of alternative sources. However, compiling and disseminating this information may be costly, and it may be costly for the seller to effectively police his buyers' decisions. In any case, to prevail, defendants relying on the defense of technological interdependence and goodwill usually must establish that there is no less anticompetitive alternative.

213. It is not surprising that computer software and program developers, to preserve their reputation and goodwill, often tie the licensing or sale of their copyrighted works with hardware or servicing and maintenance.

214. See *Standard Oil Co. v. United States*, 337 U.S. 293, 306 (1949); *Siegel v. Chicken Delight, Inc.*, 448 F.2d 43, 51 (9th Cir. 1971), *cert. denied*, 405 U.S. 955 (1972); *Susser v. Carvel Corp.*, 332 F.2d 505, 514-15, 519-20 (2d. Cir. 1964), *cert. dismissed*, 381 U.S. 125 (1965); *Dennison Mattress Factory v. Spring-Air Co.*, 308 F.2d 403 (5th Cir. 1962). For a general discussion of technological interdependence and goodwill, see 9 AREEDA, *supra* note 116, § 1703g1; BORK, *supra* note 198, at 379-81; Joseph Bauer, *A Simplified Approach to Tying Arrangements: A Legal and Economic Analysis*, 33 VAND. L. REV. 283, 324-25 (1980); Bowman,

b. Facilitating new entry

Because a tying arrangement guarantees the seller a certain market share of the tied product for which he does not have to compete, the tie may facilitate the seller's entry into the tied market. If the tie does not foreclose an appreciable share of the market, the net effect of the tie may be to promote competition in the tied market. For as the entrant gains a reputation and experience in the tied market, he will likely begin to compete for customers in that share of the market not guaranteed by his tie as well, which will force other competitors to compete in price and quality.<sup>215</sup>

c. Indirect price cuts

It may not be profitable for a tying seller who is part of an oligopoly to cheat by lowering prices, because rivals may respond with their own price cuts so that everybody is worse off.<sup>216</sup> However, a seller may be able to use a tie to disguise his price cuts so that other members of the oligopoly have a more difficult time detecting and responding to the seller's lower prices and increased market share.<sup>217</sup> With a tie, the seller may continue to sell the tying and tied products separately at the market price, while also selling them as a package at a price that is less than the sum of the two individual prices. This clandestine cheating is competitive in that it leads to increased output at lower prices.

d. Economies of joint production and distribution

By tying two goods, the seller may capture otherwise unavailable economies of scale and thereby decrease costs of production, distribution, advertising, and administration. These savings may be passed onto consumers through increased output and lower prices that approach the outcome in a perfectly competitive market.<sup>218</sup> Professor Bowman suggests that when a tie generates efficiencies, the two goods should be

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*supra* note 142, at 27-28; Kenneth J. Burchfiel, *Patent Misuse and Antitrust Reform: Blessed Be the Tie?*, 4 HARV. J.L. & TECH 1, 65-66 (1991); Gary Myers, Note, *Tying Arrangements and the Computer Industry*, 1985 DUKE L.J. 1027, 1049-53 (1985).

215. For courts recognizing the new entry defense, see Jefferson Parish Hosp. Dist. No. 2 v. Hyde, 466 U.S. 2, 23 n.39 (1984); Continental T.V. Inc. v. GTE Sylvania Inc., 433 U.S. 36, 55 (1977); Grappone, Inc. v. Subaru of New England, Inc., 858 F.2d 792, 799 (1st Cir. 1988); Northern v. McGraw-Edison Co., 542 F.2d 1336, 1347 (8th Cir. 1976); United States v. Jerrold Elecs. Corp., 187 F. Supp. 545, 555-60 (E.D. Pa. 1960), *aff'd per curiam*, 365 U.S. 567 (1961). For a general discussion of new entry, see 9 AREEDA, *supra* note 116, § 1703g4; Bauer, *supra* note 214, at 326.

216. For a discussion of oligopoly cheating, see SCHERER & ROSS, *supra* note 4, at 277-79.

217. For a general discussion of indirect price cuts, see 9 AREEDA, *supra* note 116, § 1703g3.

218. See BORK, *supra* note 198, at 378-79.

conceptualized as a single product. With a single product, there is by definition no tie and thus no anticompetitive concern: "Still, when the cost of producing and selling the combination is less than the cost of producing and selling the parts separately, no tie can be said to exist.... No coercion is required when a cost advantage exists, for these lower costs will be reflected in lower prices."<sup>219</sup>

e. Price discrimination by metering

Restraints in an intellectual property license can help ensure that new technology realizes its maximum return and benefits consumers as quickly and efficiently as possible.<sup>220</sup> For example, Justice Department antitrust enforcement guidelines note that

license restrictions such as tie-ins . . . can be used to differentiate among licensees that value technology differently, allowing the licensor to charge prices that more closely approximate the value that individual licensees place on the technology. . . . In addition to increasing the return to the technology owner, metering can also lead to greater dissemination of the technology by reducing the price to licensees that would have been unable or unwilling to pay the higher uniform price that the technology owner would have charged in the absence of metering.<sup>221</sup>

Price discrimination by metering allows a copyright holder to charge each licensee a price that more closely reflects his individual valuation of the copyrighted good. If a copyright holder can tie the sale of a necessary item to the licensing of the copyright, he can discriminate among consumers according to the intensity of their demand for the copyrighted good (i.e., their elasticity of demand), by metering the intensity of their use of the tied commodity. Professor Bowman explains:

If the first commodity is worth more to the intensive users than to the less intensive users—in economic terms, if the former's demand is less elastic—tying the second commodity to the first can in effect achieve the goal of discriminatory pricing for the first. In this situation, the tied product serves as a counting device to measure how intensively the first product is being used.<sup>222</sup>

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219. Bowman, *supra* note 142, at 29. Concurring in *Jefferson Parish*, Justice O'Connor echoed Prof. Bowman's analysis: "When the economic advantages of joint packaging are substantial the package is not appropriately viewed as two products, and that should be the end of the tying inquiry." *Jefferson Parish*, 466 U.S. at 40 (O'Connor, J., concurring).

220. See BORK, *supra* note 198, at 376-78; Bilicki, *supra* note 105, at 235-37; Bowman, *supra* note 142, at 23-25. Price discrimination by metering is effectively part of the Chicago School criticism of leverage theory. See *supra* notes 198-207 and accompanying text.

221. U.S. Department of Justice Antitrust Enforcement Guidelines for International Operations, 55 Antitrust & Trade Reg. Rep. (BNA) No. 1391, at S-16 (November 17, 1988) [hereinafter *Guidelines*].

222. Bowman, *supra* note 142, at 23.

A typical metering arrangement works as follows: The copyright holder licenses the copyright at cost, or just above cost, on the condition of the tie. The copyright holder can meter the intensity of the licensees' use through their purchases of the tied product. By charging a supra-competitive price for the tied goods, the copyright holder earns what effectively is a royalty from the copyrighted goods. The royalty paid by high-intensity users is greater than that paid by low-intensity users, reflecting the high-intensity users' greater valuation of the license. Under a system of metering, the copyright holder has an incentive to lower the marginal cost of producing and supplying the tied product. By driving down costs, the copyright holder can capture increased producer surplus and profits. More importantly for consumers, the copyright holder's increased efficiency promotes competition in the tied market, and permits the copyright holder to charge lower royalties to low-intensity users.

In sum, the potential procompetitive benefits of metering include: stimulating competition in the tied market; increasing access to the copyrighted good for low-intensity users whose valuation of the copyright is lower than the licensing fee that would prevail in the absence of price discrimination; and maintaining, and possibly enhancing, economic incentives to innovate by providing copyright holders with a way to recoup investment costs and maximize the monopoly profits of their products, thereby contributing to long-run efficiency and productivity gains.<sup>223</sup>

### C. Applying Copyright Misuse to Ties

What standard should courts apply when evaluating the copyright misuse defense when the copyright holder's alleged misconduct is a tie-in? As explained above, this issue is critical, real, and timely, because of its impact on the computer software industry.

Typical copyright tying arrangements are found in *Digidyne Corp. v. Data General Corp.*<sup>224</sup> and *Virtual Maintenance, Inc. v. Prime Computer, Inc.*,<sup>225</sup> antitrust cases that did not involve allegations of infringement. In *Digidyne*, defendant Data General (DG) manufactured NOVA, a computer

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223. Expectations are an important and often determinative aspect of research and development, or of any technological undertaking. If innovators expect that the probability of recouping costs and capturing monopoly profits is higher with metering, the ability to meter bolsters incentives to innovate. Metering, therefore, is consistent with copyright policy, especially if, as the Chicago School suggests, metering does not extend the copyright holder's monopoly power.

224. 734 F.2d 1336 (9th Cir. 1984), cert. denied, 473 U.S. 926 (1985).

225. 957 F.2d 1318 (6th Cir. 1992), vacated and remanded, 61 USLW 3061 (1992), aff'd on reh'g, 995 F.2d 1324 (6th Cir. 1993).

system consisting of a central processing unit (CPU) and a copyrighted operating system, RDOS.<sup>226</sup> Digidyne manufactured "emulator" CPUs designed to be compatible with DG's RDOS software.<sup>227</sup> Digidyne claimed that DG's RDOS licensing arrangement violated Section 1 of the Sherman Act<sup>228</sup> and Section 3 of the Clayton Act<sup>229</sup> because DG tied licenses of its copyrighted RDOS software (tying product) with purchases of its NOVA CPUs (tied product)<sup>230</sup> and thereby foreclosed Digidyne from competing with DG in the CPU market. Rejecting DG's defense that it "must bundle its software together with its CPU in order to recover its substantial investment in software research and development,"<sup>231</sup> the Ninth Circuit found that DG's licenses violated the antitrust laws under the per se standard of illegality, since DG could not prove that its tying arrangement was the least anticompetitive method available for recouping investment costs.<sup>232</sup>

In *Virtual Maintenance, Inc. v. Prime Computer, Inc.*, Prime Computer (Prime) manufactured and marketed computer systems, for which it also provided hardware maintenance and software programs.<sup>233</sup> PDGS, created by Ford Motor Company for automotive design, was one of the software design programs supplied exclusively by Prime for use on its 50 Series minicomputers.<sup>234</sup> Along with PDGS, Prime distributed PDGS software support, which included software revisions, modifications, updates, and support services.<sup>235</sup> Prime charged only \$16,000 per year for the software support when bundled in a package with Prime's hardware maintenance.<sup>236</sup> Yet Prime charged \$80,000 to \$160,000 per year for software support untied to maintenance.<sup>237</sup> Virtual Maintenance, Incorporated (VMI), a competing provider of hardware maintenance of Prime's 50 Series computers, sued Prime.<sup>238</sup> VMI alleged that Prime had foreclosed the market for hardware maintenance by tying the maintenance (tied product) with support for the copyrighted software (tying product).<sup>239</sup> Although Prime's package constituted a copyright

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226. *Digidyne*, 734 F.2d at 1338.

227. *Id.*

228. 15 U.S.C. § 1 (1988).

229. 15 U.S.C. § 14 (1988).

230. *Digidyne*, 734 F.2d at 1338.

231. *Id.* at 1343 (citation omitted).

232. *Id.* at 1343-44.

233. *Virtual Maintenance*, 957 F.2d at 1321.

234. *Id.*

235. *Id.* at 1322

236. *Id.*

237. *Id.*

238. *Id.*

239. *Id.*

tie-in,<sup>240</sup> the Sixth Circuit held that the package did not violate the antitrust laws because Prime lacked sufficient market power in the relevant tying market to foreclose the tied market for maintenance to competitors such as VMI.<sup>241</sup>

That copyright tie-ins are prevalent in the computer industry, coupled with the fact that recent copyright misuse cases have disproportionately challenged computer software licensing and sales arrangements, suggests that more and more software tying arrangements will be challenged as misuse. Since 1990, courts have heard at least twelve software copyright infringement cases in which the alleged infringer argued the misuse defense.<sup>242</sup> These cases have spanned the federal judiciary, having been heard in the Second, Fourth, Fifth, Seventh, Eighth, Ninth, and D.C. Circuits. In six of these twelve cases, the defense to the alleged infringement was a claim of misuse in the form of a tie-in.<sup>243</sup> In five of these six cases, the court explicitly or implicitly recognized the traditional view of misuse, although not necessarily ruling for the alleged infringer.<sup>244</sup>

*Data General Corp. v. Grumman*<sup>245</sup> and *Advanced Computer Services of Michigan, Inc. v. MAI Systems Corp.*<sup>246</sup> are representative cases where

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240. *Id.* at 1323.

241. *Id.* at 1326-27.

242. *Atari Games Corp. v. Nintendo of America Inc.*, 975 F.2d 832 (Fed. Cir. 1992); *Service & Training, Inc. v. Data General Corp.*, 963 F.2d 680 (4th Cir. 1992); *PRC Realty Sys. v. National Ass'n of Realtors*, 972 F.2d 341 (4th Cir. 1992); *Hill v. XYQUAD*, 939 F.2d 627 (8th Cir. 1991); *Lasercomb America, Inc. v. Reynolds*, 911 F.2d 970 (4th Cir. 1990); *Advanced Computer Serv. of Mich. Inc. v. MAI Sys. Corp.*, 845 F. Supp. 356 (E.D. Va. 1994); *Atari Games Corp. v. Nintendo of America*, 1993 WL 207548 (N.D. Cal. 1993); *Electronic Data Sys. Corp. v. Computer Associates Int'l, Inc.*, 802 F. Supp. 1463 (N.D. Tex. 1992); *Microsoft Corp. v. BEC Computer Co., Inc.*, 818 F. Supp. 1313 (C.D. Cal. 1992); *Sega Enter. Ltd. v. Accolade, Inc.*, 785 F. Supp. 1392 (N.D. Cal. 1992), *rev'd on other grounds*, 977 F.2d 1510 (9th Cir. 1992); *Reliability Research Inc. v. Computer Associates Int'l, Inc.*, 793 F. Supp. 68 (E.D.N.Y. 1992); *QAD. inc., v. ALN Associates, Inc.*, 770 F. Supp. 1261 (N.D. Ill. 1991), *aff'd in part, dismissed in part*, 924 F.2d 834 (7th Cir. 1992).

243. *Service & Training, Inc. v. Data General Corp.*, 963 F.2d 680 (4th Cir. 1992); *PRC Realty Sys. v. National Ass'n of Realtors*, 972 F.2d 341 (4th Cir. 1992); *Advanced Computer Serv. of Mich., Inc. v. MAI Sys. Corp.*, 845 F. Supp. 356 (E.D. Va. 1994); *Electronic Data Sys. Corp. v. Computer Associates Int'l, Inc.*, 802 F. Supp. 1463 (N.D. Tex. 1992); *Microsoft Corp. v. BEC Computer Co.*, 818 F. Supp. 1313 (C.D. Cal. 1992); *Sega Enter. Ltd. v. Accolade, Inc.*, 785 F. Supp. 1392 (N.D. Cal. 1992), *rev'd on other grounds*, 977 F.2d 1510 (9th Cir. 1992).

244. *Service & Training, Inc. v. Data General Corp.*, 963 F.2d 680 (4th Cir. 1992); *PRC Realty Sys. v. National Ass'n of Realtors*, 972 F.2d 341 (4th Cir. 1992); *Advanced Computer Serv. of Mich., Inc. v. MAI Sys. Corp.*, 845 F. Supp. 356 (E.D. Va. 1994); *Microsoft Corp. v. BEC Computer Co.*, 818 F. Supp. 1313 (C.D. Cal. 1992); *Sega Enter. Ltd. v. Accolade, Inc.*, 785 F. Supp. 1392 (N.D. Cal. 1992), *rev'd on other grounds*, 977 F.2d 1510 (9th Cir. 1992).

245. 1988 WL 159936 (D. Mass. 1988).

246. 845 F. Supp. 356 (E.D. Va. 1994).

alleged software copyright infringers raised, as affirmative defenses, the copyright holder's use of the software as a tying product.

In *Data General*,<sup>247</sup> Data General (DG) designed and sold computer systems and provided services for their maintenance and repair. Grumman, a third party maintainer, directly competed with DG in providing maintenance and repair for DG computers. DG developed and copyrighted a diagnostic program, ADEX, used to design, diagnose, and repair DG computer systems. DG only licensed ADEX to customers purchasing DG's maintenance services and to cooperative maintenance organizations that maintained their own computers.<sup>248</sup> Grumman, which was not licensed to use ADEX, admitted to reproducing copies of ADEX and using them. By copying ADEX, Grumman infringed DG's copyright.<sup>249</sup> Grumman defended itself by arguing that DG had misused its copyright to effect a tie.<sup>250</sup> Specifically, Grumman alleged that DG tied the purchase of maintenance repair services (tied product) to licensing of its copyrighted ADEX software (tying product). DG justified its licensing arrangement as a way to ensure optimal maintenance and performance of its computer systems—a technological goodwill and reputation justification.<sup>251</sup> Despite Grumman's misuse allegations, the court granted DG a preliminary injunction enjoining Grumman from copying and using ADEX.<sup>252</sup> Although it rejected Grumman's misuse defense, the court generally showed support for the antitrust view by citing cases adopting this view.<sup>253</sup>

In *Advanced Computer Services*, decided in 1994, plaintiffs, independent service organizations (ISOs), alleged that defendant MAI's software sales arrangement was an illegal tie-in.<sup>254</sup> MAI manufactured and sold computers, which it maintained and serviced in competition with plaintiffs.<sup>255</sup> MAI had copyrighted two types of software: operating system software and diagnostic software.<sup>256</sup> Although MAI had not

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247. The facts of the case are detailed at *Data General Corp. v. Grumman*, 803 F. Supp. 487 (D. Mass. 1992) and *Data General Corp. v. Grumman*, 761 F. Supp. 185 (D. Mass. 1991).

248. *Data General*, 761 F. Supp. at 192.

249. *Data General*, 803 F. Supp. at 491.

250. *Data General*, 1988 WL 159936, at \*3.

251. *Id.* at 188. For a discussion of technological goodwill and reputation defense, see *supra* notes 211-214 and accompanying text.

252. 1988 WL 159936, at \*6.

253. *Id.* at \*3.

254. Advanced Computer Serv. of Mich., Inc. v. MAI Sys. Corp., 845 F. Supp. 356, 360 (E.D. Va. 1994). For a copyright misuse case that shares *Advanced Computer Services*'s fact pattern and issues, see *Triad Sys. Corp. v. Southeastern Express Co.*, 1994 WL 446049 (N.D. Cal. 1994).

255. *Advanced Computer Services*, 845 F. Supp. at 359.

256. *Id.* at 360.

licensed plaintiffs to use its software, plaintiffs nonetheless made unauthorized copies for use in servicing MAI computers.<sup>257</sup> In response to MAI's infringement claim, ISOs contended that MAI misused its copyrights by unlawfully tying the sale of its copyrighted operating system and diagnostic software (tying product) with the sale of its maintenance and repair services (tied product).<sup>258</sup> Ruling on motions for summary judgment, the court found that plaintiffs had infringed MAI's copyrights.<sup>259</sup> Since plaintiffs failed to raise a genuine issue of material fact as to the existence of an (illegal) tying arrangement,<sup>260</sup> the court dismissed their misuse defense predicated upon an illegal tie-in.<sup>261</sup>

Given the growing importance of computer-related technology to economic productivity, efficiency, and growth, it is critical that courts adequately protect the economic incentives of software program developers by adopting a view of misuse that, rather than emasculating a copyright holder's exclusive rights, instead subjects the copyright holder's conduct to rigorous scrutiny before deeming it misuse. The heightened concern and attention registered here for computer software programs bolsters the general public policy favoring copyright protection.<sup>262</sup>

Although courts, even those applying the traditional view, do not always rule in favor of the infringer, the misuse defense remains a potent shield against allegations of infringement. Infringers have increasingly used this shield, especially against allegations of software copyright infringement. Seven primary arguments favor the adoption and application by courts of the antitrust view rather than the traditional view in the specific case of tie-in misuse.<sup>263</sup>

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257. *Id.* at 360-64, 366 (discussion of copyright infringement of software).

258. *Id.* at 359-60.

259. *Id.* at 364, 366.

260. *Id.* at 369.

261. *Id.* at 366. Because plaintiffs failed to establish that MAI had in fact tied its copyrighted software to its servicing, the court dismissed plaintiffs' misuse defense, even though the court implicitly suggested that the traditional view of misuse should be applied. *Id.* at 368. Presumably, the court, which discussed misuse in terms of *Lasercomb*, would not have dismissed plaintiffs' (tying) misuse defense if it found that MAI in fact tied its software to its servicing, even though the court may still have dismissed plaintiffs' antitrust tying claim. See *id.* at 366

262. See *supra* Part II.

263. A recent publication addressing the issue of copyright misuse argues against the antitrust view. Ramsey Hanna, Note, *Misusing Antitrust: The Search for Functional Copyright Misuse Standards*, 46 STAN. L. REV. 401 (1994). Hanna argues that an antitrust-based approach to copyright misuse is inappropriate because: (1) courts' antitrust analyses presume market power from the existence of a copyright, even though rigorous economic scrutiny would prove that the copyright relevant in the case at bar confers insufficient market power to be of anticompetitive concern and (2) since the antitrust laws' primary concern is price competition, courts' antitrust analyses are based upon static models that

### 1. ONLY TIES THAT VIOLATE ANTITRUST LAWS UNDERMINE COPYRIGHT POLICY

Unless the copyright holder's tie rises to the level of an antitrust violation, the copyright holder has not used his copyright in a manner contrary to copyright policy. Only ties that violate the Clayton or Sherman Act restrain trade enough to undermine copyright policy. A violation of the antitrust laws is both a necessary and sufficient condition for a tie to undermine copyright policy. Courts have developed the per se

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do not account for the innovations and increased productivity that result when a large market share gives firms an incentive to invest in research and development. *Id.* at 417-31. In sum, Hanna argues that because courts' antitrust analyses presume market power from the existence of a copyright and discount the incentives created by market power to innovate, the antitrust view of misuse roots out procompetitive licensing practices that promote copyright policy, especially tying arrangements. *Id.* at 432-35. Although this commentator shares Hanna's concern for not rooting out procompetitive licensing practices that promote copyright policy, this commentator disagrees with Hanna's two premises. First, courts have increasingly refused to presume market power from the existence of a copyright. See cases cited *supra* note 196. Second, courts' antitrust analyses, at least implicitly, consider dynamic economic models; courts recognize efficiency gains, such as those resulting from innovation. See, e.g., *United States v. Baker Hughes, Inc.*, 908 F.2d 981, 985-86 (D.C. Cir. 1990). Third, if a copyright holder ties in order to meter rather than to lever his monopoly into the tied market, he will likely rebut allegations that his licensing/sales contract violates the antitrust laws. See, e.g., *Falls City Indus., Inc. v. Vanco Beverage, Inc.*, 450 U.S. 428, 434-45 (1983) (price discrimination violates antitrust laws only if it is reasonably probable that price differential may harm competition). Thus, a court applying the antitrust view of misuse would likely find that plaintiff did not misuse his copyright. Contrary to Hanna's assertions, modern antitrust analysis appeases Hanna's concern that the misuse defense should not undermine copyright policy. The arguments below substantiate this commentator's conclusion that the antitrust view is appropriate when the copyright holder's alleged misconduct is a tie-in. The antitrust view satisfies Hanna's, and this commentator's, ideal that "[p]ractices which do not constrain the development and dissemination of innovative materials should be permissible." Hanna, *supra* note 263 at 446.

The superiority of the antitrust view over the traditional view depends to a large extent on courts not presuming market power from the existence of a copyright. If courts applying the antitrust view presume market power, then even if these courts find that the copyright holder's tie rises to the level of an antitrust violation, there is still a strong likelihood that the tie is not anticompetitive, and thus does not undermine copyright policy, see *infra* Part IV.3(1), since few copyrights confer market power, see *supra* Part IV.2.a. The primary element distinguishing the antitrust view from the traditional view is that the former requires that the copyright holder have market power in the tied market. See *supra* notes 120-21 and accompanying text. If courts presume market power when applying the antitrust view, they harmonize the antitrust view with the traditional view, excepting the requirement of substantiality to prove a per se antitrust tying violation. See *supra* notes 120 and 122 and accompanying text. Thus, by presuming market power under the antitrust view, courts erode the merits of the antitrust view that make it preferable to the traditional view when plaintiff's alleged misconduct is a tie. However, given the recent judicial trend of not presuming market power from the existence of a copyright, see cases cited *supra* note 196, the advantages of the antitrust view appear to be real and substantial; courts appear unlikely to emasculate the merits of the antitrust view by presuming market power.

rule and rule of reason to determine when ties restrain trade sufficiently to undermine antitrust policy and incentives to innovate. Thus, the antitrust laws, rather than the traditional view's public policy standards (which do not even demand an affirmative showing of market power before condemning a tie as misuse), should measure misuse when plaintiff's alleged misconduct is a tie. Otherwise, courts fail to ensure that the copyright holder has, in fact, misused his copyright.<sup>264</sup> For by definition, unless the copyright holder's tying arrangement undermines incentives to innovate by restraining trade, the copyright holder has not misused his copyright to upset the balance between unfettered competition and innovation implicit in the copyright grant's exclusive rights.

## 2. THE TRADITIONAL VIEW IS INCONSISTENT WITH ECONOMIC REALITY

Referencing ties and other selling arrangements, then-Professor Easterbrook writes, "[e]conomists have developed procompetitive explanations for all these practices, sometimes several explanations for each practice. Then, too, practices that were deleterious yesterday may yield benefits today."<sup>265</sup> The reasoning of the early patent misuse cases, such as *Carbice*, *Leitch*, and *Morton Salt*, rested on a presumption that ties were sufficiently anticompetitive to undermine incentives to innovate. Without discussing here the risks of the Court's early misunderstanding of the potential effects of ties, it is enough to point out that recent economic theory rebuts the Court's early presumption, and thereby the traditional view of misuse embodied in that presumption. Specifically, the minimal market power conferred by copyrights,<sup>266</sup> the criticisms of leverage theory,<sup>267</sup> and the potentially procompetitive effects of ties<sup>268</sup> indicate that the traditional view is inconsistent with economic theory. The traditional view's presumption that a copyright tie ipso facto restrains trade enough to undermine incentives to innovate is untenable. Since there is nothing inherent in ties to suggest that they should be presumptively anticompetitive, courts should not adopt the traditional

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264. Subjecting a tie to the standards of the antitrust laws, of course, does not guarantee that the tie has in fact restrained trade, even if found to constitute an antitrust violation. However, an antitrust violation is generally accepted as a reasonable proxy for anticompetitive conduct. This commentator assumes for simplicity of discussion that conduct that violates the antitrust laws restrains trade sufficiently to undermine antitrust policy.

265. Easterbrook, *supra* note 123, at 7.

266. See *supra* Part IV.B.1.

267. See *supra* Part IV.B.2.

268. See *supra* Part IV.B.3.

view based upon an outdated economic theory of ties. Rather, courts should subject ties to the scrutiny of the antitrust laws before condemning them as misuse.<sup>269</sup>

### 3. THE TRADITIONAL VIEW THREATENS TO UNDERMINE COPYRIGHT POLICY

By rooting out efficient tying arrangements that the antitrust view would permit copyright holders to enter the traditional view threatens to undermine incentives to innovate. By not permitting copyright holders to meter as a means of efficient and effective profit maximization, the traditional view limits the economic reward of innovation,<sup>270</sup> as well as the innovator's potential to recoup his investment costs.<sup>271</sup>

Furthermore, by deterring copyright holders from entering tying arrangements, the traditional view retards the proliferation of works into the market and thus subverts copyright law's objective of promoting the pool of knowledge and information available to the public. Not only does metering allow an innovator to maximize his profits, it also increases the public's access to the copyrighted work more quickly and more widely than other licensing arrangements.

Moreover, rather than face the risk of having to purge, an innovator who can only protect his reputation and goodwill with a tie may decide not to license his good at all, or to license it on a restricted basis to preferred customers he can trust.

Finally, to avoid the risk of having to purge himself of profit-maximizing tying arrangements, a copyright holder may not enforce his exclusive rights against infringers. It may be more profitable for the copyright holder to allow limited infringement than to divest himself of the profits he earns from tying, especially if there are no financially viable alternative licensing arrangements that allow the innovator to recoup his costs. By discouraging suits against infringement, the traditional view subverts the copyright policy against piracy and free-riding.

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269. In fact, Judge Posner suggests that if any presumption is warranted when there is no market power it is that ties promote efficiency. *USM Corp. v. SPS Technologies, Inc.*, 694 F.2d 505, 511 (7th Cir. 1982), *cert. denied*, 482 U.S. 1107 (1983). Realizing the potentially procompetitive effects of intellectual property licensing restrictions, such as tie-ins, the DOJ in 1988 adopted a rule of reason standard to determine whether to challenge restrictive licensing practices as antitrust violations. *See Guidelines, supra* note 221, at S-17.

270. *See USM*, 694 F.2d at 510.

271. *See Guidelines, supra* note 221, S-16-17; Scherer, *supra* note 195, at 551.

#### 4. THE TRADITIONAL VIEW UNDERMINES POTENTIALLY PROCOMPETITIVE EFFECTS OF TIES

By deterring copyright holders from entering ties that do not foreclose the tied market to competitors, the traditional view contravenes public interest by depriving society of the potentially procompetitive benefits of ties. Those potential benefits include price discrimination by metering, the facilitation of entry into new markets, indirect price cuts, and economies of joint production and scale. Not only is society deprived of these competitive benefits under the traditional view, but the traditional view also does nothing to stimulate other aspects of competition or innovation.

Since the effect of a tie on competition and innovation depends on market share, it is critical that courts do not presume that all tying agreements are anticompetitive and in contravention of antitrust and copyright policy. Only when the tie undermines innovation should courts find that the copyright holder has misused his copyright. A proper analysis of the competitive effect of a tie cannot confidently be made under the traditional view, but rather requires a more extensive antitrust inquiry.

#### 5. EVEN IF APPROPRIATE FOR PATENT MISUSE, TRADITIONAL VIEW IS INAPPROPRIATE FOR COPYRIGHT MISUSE

Recall the proof gap analysis above. The traditional view rests on a presumption that ties ipso facto restrain trade sufficiently to undermine incentives to innovate, while the antitrust view requires defendant to prove an antitrust violation under the per se rule, or if necessary under the rule of reason. The risk of the proof gap is a function of the extent to which ties condemned as misuse under the traditional view would not be condemned under the antitrust view.

For a tie to restrain trade, the seller must have economic power in the tying market. Thus, the more likely it is that the tying product confers market power, the less likely it is that the traditional view, by presuming an anticompetitive effect, will condemn ties that would pass muster under the antitrust view. In other words, the probability that the traditional view, which does not require a showing of market power, and the antitrust view, which does require a showing of market power, result in consistent outcomes increases with the likelihood that the tying

product confers market power.<sup>272</sup> When the results of the traditional and antitrust views converge, the risks of the proof gap dissipate.

This analysis suggests that the *Lasercomb* court erred in adopting the traditional view of patent misuse for copyright law.<sup>273</sup> Patents confer more market power than copyrights, so the traditional view's presumption of an anticompetitive effect is more likely to be consistent with an antitrust analysis of patent ties than of copyright ties. The traditional and antitrust views, then, are more likely to lead to the same conclusions in patent than in copyright misuse cases.

To save time, administrative and litigation costs, and other transaction costs, it may be efficient for courts to adopt the traditional view in patent cases. However, because the risks of the proof gap are greater when the tying product is a copyright rather than a patent, the traditional view is not appropriate for copyright misuse. It is less likely that the presumption of an anticompetitive effect is correct when the tying product is a copyrighted work rather than a patented invention. Therefore, courts should adopt the antitrust view of copyright misuse, regardless of the view they adopt for patent misuse.<sup>274</sup>

## 6. EARLY PATENT MISUSE CASES INVOLVING TIES PRESUMED ILLEGAL RESTRAINT OF TRADE

In condemning ties as misuse, the Court in the early patent misuse cases presumed that patent tie-ins restrained trade sufficiently to undermine incentives to innovate. This presumption was a logical corollary to the Court's view at the time, that patent tie-ins were per se violations of the antitrust laws. Thus, the Court seems to have originally conceptualized misuse as conduct, such as a tie, that restrains trade sufficiently to constitute an antitrust violation if it were litigated under the Clayton or Sherman Acts. A procompetitive or neutrally competitive tie, which the Court presumed did not exist, would not have constituted misuse.

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272. Excepting the requirement of substantiality for a per se tying antitrust violation, courts harmonize the antitrust view with the traditional view when they presume market power from the existence of a copyright.

273. See *supra* notes 81-91 and accompanying text.

274. Constitutional concern over misuse is heightened when courts refuse to enforce a copyright holder's exclusive rights without requiring affirmative proof that a plaintiff's conduct undermines copyright policy. Furthermore, accepting the contractual view of misuse, if the copyright holder has not extended his market power beyond the legal scope of his statutory monopoly then the public, by upholding defendant's misuse defense, breaches its contract with the innovator. To minimize these constitutional concerns and the risk of breach of contract, courts should subject the copyright holder's tie to the scrutiny of the antitrust laws, since they are an accepted proxy for conduct that thwarts antitrust policy.

Not only does the reasoning of early misuse cases such as *Morton Salt* support the conclusion that antitrust policy and the misuse doctrine were meant to be coextensive, but so does the reasoning of the *Loew's* Court.<sup>275</sup> The *Loew's* Court explained that the Court had relied upon patent misuse cases to develop its antitrust standards for tying cases.<sup>276</sup> Specifically, the Court had read the misuse cases as standing for the proposition that patent tie-ins were presumptively an illegal restraint of trade in violation of the antitrust laws.<sup>277</sup> By premising antitrust standards for ties on patent misuse cases, the Court suggested that misuse analyses were identical to antitrust analyses. The consistency that the *Loew's* Court found between patent misuse and antitrust tying violations should be respected in copyright cases today.

#### 7. THE 1988 PATENT MISUSE REFORM ACT AND THE DEPARTMENT OF JUSTICE'S APPROACH TO INTELLECTUAL PROPERTY TIES SUPPORT USE OF ANTITRUST STANDARDS WHEN PLAINTIFF'S ALLEGED MISCONDUCT IS A TIE-IN

In the 1988 Patent Misuse Reform Act (PMRA),<sup>278</sup> Congress moved away from the traditional view of misuse involving ties and toward an antitrust standard. The relevant part of PMRA reads:

No patent owner otherwise entitled to relief for infringement or contributory infringement of a patent shall be denied relief or deemed guilty of misuse or illegal extension of the patent right by reason of his having . . . conditioned the license of any rights to the patent or the sale of the patented product on the acquisition of a license to rights in another patent or purchase of a separate product, unless, in view of the circumstances, the patent owner has market power in the relevant market for the patent or patented product on which the license or sale is conditioned.<sup>279</sup>

Moreover, Senators DeConcini and Leahy interpret PMRA to require courts to consider, in addition to proof of market power, the various procompetitive effects and business justifications of plaintiff's tie before condemning it as misuse; only if the net effect of the tie is to undermine innovation does the tie constitute misuse.<sup>280</sup>

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275. *Loew's*, 371 U.S. at 46.

276. *Id.*

277. *Id.*

278. Pub. L. No. 100-73, 102 Stat. 4674 (H.R. 4972). For an in-depth discussion of PMRA, see Burchfiel, *supra* note 178, at 89-92; Mark A. Lemley, Comment, *The Economic Irrationality of the Patent Misuse Doctrine*, 78 CAL. L. REV. 1599, 1620-26 (1990).

279. 35 U.S.C. § 271(d)(5) (Supp. 1993).

280. Senator Leahy, for example, stated: "Courts will have to go through the process of evaluating the patent owner's market power . . . and must consider the availability of

The Department of Justice (DOJ) also recognizes the potentially procompetitive effects of restrictive intellectual property licensing arrangements under a rule of reason.<sup>281</sup> The DOJ's rule of reason not only requires an affirmative showing of a restraint of trade but also requires the Department to determine the net effect of the licensing restriction in light of any procompetitive effects of the contract. The DOJ's policy is to prosecute only licensing arrangements where the net effect is an illegal restraint of trade. Not surprisingly, the DOJ does not investigate licenses that "represent simply an effort by the creator of intellectual property to appropriate the full value of that property," because if the creator cannot appropriate this value, his incentives to innovate are decreased.<sup>282</sup>

In sum, the antitrust view is the appropriate measure for copyright misuse when plaintiff's alleged misconduct is a tie-in. If courts apply the traditional view they risk not only rooting out procompetitive practices that benefit society, but also undermining the very policy they purport to protect. Given recent developments in economic theory of tying arrangements, and given that copyrights often confer little market power, courts should not presume an anticompetitive effect from copyright tie-ins, nor presume that ties restrain trade enough to undermine copyright policy without violating the antitrust laws. Rather, courts should require a defendant to affirmatively prove that plaintiff's tie restrains trade and that the net effect of the license is to undermine incentives to innovate. Otherwise, courts will continue to threaten the public interest by condemning licensing arrangements that do not undermine, and may in fact promote, copyright policy.

## V. COPYRIGHT MISUSE: NEVER A FIRST-BEST SOLUTION

It is likely that courts will continue to recognize the misuse defense in copyright infringement cases. Moreover, the Supreme Court may hear the issue in the not-too-distant future, given the stark differences among

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substitutes, and the existence of any business justification or there [sic] benefits, before concluding that the patent has been misused." 134 CONG. REC. S17,149 (daily ed. Oct. 21, 1988). Senator DeConcini explained: "The patent owner may still argue that any substantially anticompetitive impact of the tie-in is outweighed by benefits of the arrangement, including both procompetitive benefits and other potential business justifications." *Id.* at S17,148.

281. See *Guidelines*, *supra* note 221, at S-17.

282. *Id.* As of the date this article went to publication, the DOJ was considering new Guidelines under which it would analyze intellectual property licenses. See *Draft DOJ Antitrust Guidelines for the Licensing and Acquisition of Intellectual Property*, 67 Antitrust & Trade Reg. Rep. (BNA) No. 1676 (Aug. 11, 1994). Like the 1988 Guidelines, the proposed Guidelines would not presume market power from a copyright, would analyze licenses under a rule of reason, and would only prosecute licenses for which efficiency justifications do not overwhelm any anticompetitive effect. *Id.* §§ 2.2, 3.4, and 5.3.

courts. Assuming arguendo that the misuse defense should be available to infringers as an affirmative defense, the above analysis demonstrates that, when the alleged misconduct is a tie-in, courts should adopt the antitrust view and not the traditional view. However, the antitrust view is simply the lesser of two evils. It does not solve the concerns that arise when copyright holders use their legal monopolies to foreclose competition in tied markets; the antitrust view is simply the lesser of two evils.

When the plaintiff's alleged misconduct is a tie-in, courts should reject the copyright misuse defense completely. For two primary reasons, the misuse defense is never the first-best solution when the copyright holder ties: first, the misuse defense undermines copyright policy,<sup>283</sup> and second, antitrust litigation is available to root out tying arrangements that threaten copyright policy.

## A. Copyright Misuse Defense Undermines Copyright Policy

### 1. MISUSE DEFENSE DEVALUES COPYRIGHTS

The purpose of copyright is to promote creativity and innovation.<sup>284</sup> Copyrights fulfill their purpose by granting copyright holders exclusive rights over their work, creating the opportunity for monopoly profits. The potential to earn monopoly profits, then, provides the incentive to innovate that satisfies the constitutional charge to Congress "To Promote the Progress of Science and useful Arts."<sup>285</sup> However, the efficacy of the copyright in creating incentives depends on judicial enforcement of the copyright holder's exclusive rights.<sup>286</sup> If a copyright holder cannot enforce his exclusive rights against infringers, he loses his ability to earn monopoly profits or to recapture as damages profits lost to infringers. With an attenuated opportunity to capture all monopoly profits attributable to a copyright, there is less of an incentive to create copyrightable works.<sup>287</sup>

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283. Although the arguments discussed *infra* Part V.A apply to both the antitrust and traditional views of misuse, they do not upset this commentator's conclusion that the antitrust view is superior to the traditional view. Rather, they bolster the above analysis, since the risks of misuse discussed below are greater when courts adopt the traditional instead of the antitrust view.

284. See *supra* Part II.

285. U.S. CONST. art. I, § 8.

286. See *supra* notes 13-15 and accompanying text.

287. See, e.g., *Sega Enterprises Ltd. v. Accolade, Inc.*, 785 F. Supp. 1392, 1399 (N.D. Cal. 1992), *rev'd on other grounds*, 977 F.2d 1510 (9th Cir. 1992) ("The grant of a copyright is intended to motivate creative activity by the provision of a special reward. . . . Without

Assume a (potential) copyright holder's perspective on copyright misuse. Although copyright holders may create works in order to earn certain psychic rewards, they also create to earn profit. Thus, a potential creator's decision to create is—at least partly—driven by an expected profit. A creator's incentive to innovate increases with his expected profit from innovation. Anything undermining the creator's expected profit, therefore, undermines his incentive to innovate.

It is worth repeating that a fundamental determinant of the expected profit is the copyright holder's ability to enforce his exclusive rights against infringers. If a plaintiff-copyright holder is found to have misused his copyright, the court will refuse to enforce his exclusive rights, and infringers are free to pirate the copyrighted work until the plaintiff purges himself of his misconduct. No matter how carefully the copyright holder drafts his licensing arrangement, he is never certain that a court will find him free of misuse. While less of a concern under the antitrust view than the vague public policy approach of the traditional view, the risk of misuse nonetheless threatens the copyright holder, who can never be "altogether sure that he is not violating some provision" of the antitrust laws.<sup>288</sup> The misuse defense, whether defined in terms of the traditional or antitrust view, increases the likelihood that the copyright holder will be unable to enforce his exclusive rights. The fact that the misuse defense itself encourages infringement exacerbates this concern.<sup>289</sup>

Because the misuse defense provides a real risk for the copyright holder that he will be unable to enforce the exclusive rights upon which his profit potential depends, the defense drives down the expected profit generated by a given copyright, which in turn devalues copyrights.<sup>290</sup> As copyrights devalue, the demand for them decreases. As this demand decreases, individual and corporate effort to create copyrightable works decreases.<sup>291</sup> The result is less innovation and creativity. Because the misuse defense devalues copyrights by undermining the opportunity for copyright holders to earn the maximum profit from a copyright grant, the defense undermines incentives to innovate.

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the economic incentive to create which copyright protection provides, this incentive and the advantages it creates for society may well be lost.").

288. See Zechariah Chafee, Jr., *Coming into Equity with Unclean Hands*, 47 MICH. L. REV. 1065, 1072 (1949).

289. See *infra* Part V.B.

290. See Andewelt, *supra* note 108 ("Any significant tampering with the patent owner's exclusive rights can lead to a perception of decreased value of a patent, and this perception can result in decreased R&D and hence decreased progress of science.").

291. Cf. *id.*; Richard Levin, Panel Discussion, *The Value of Patents and Other Legally Protected Commercial Rights*, 53 ANTITRUST L.J. 535, 549 (1985) ("Anything that enhances the value of a patent to the inventor necessarily provides a greater incentive to innovate.").

Moreover, any efforts by a copyright holder to increase prices to recoup lost profits captured by infringers will prove futile. After purging, the best that a copyright holder can do, given his cost structure and the demand he faces, is maximize profits by setting marginal revenue equal to his marginal cost. This pricing strategy does not recoup any earlier losses the copyright holder experienced because he was denied relief against infringers. If the copyright holder chooses not to purge and raises his price, he will simply lose additional market share and profits by pricing himself out of the market. In either case, once the misuse defense divests a copyright holder of profit attributable to his creation, that profit cannot be regained. As a result, there is no means by which to restore to a copyright grant the value it loses when courts find a misuse of the copyright grant.

In conclusion, facing the risk of misuse, potential creators will expect less profit from a copyright grant because they might be unable to enforce their exclusive rights against infringers. As the value of expected profits decreases, the incentive to innovate and obtain a copyright decreases.

## 2. MISUSE DEFENSE ENCOURAGES INFRINGEMENT

The threat to infringers of being subject to the remedy provisions of the Copyright Act<sup>292</sup> promotes copyright policy by deterring infringement. The credibility of this threat depends on the courts enforcing the copyright holder's exclusive rights. The expected cost of infringement, therefore, is a function of the probability that the court will grant the copyright holder relief and the amount of that relief.

Judicial recognition of the misuse defense,<sup>293</sup> which increases the probability that the court will exonerate an infringer, weakens copyright policy by encouraging infringement.<sup>294</sup> First, by decreasing the relative cost of infringing a copyright as compared to purchasing the product, the defense encourages consumers to infringe rather than purchase. Second, by decreasing the relative cost of infringing as compared to innovating and creating, the defense undermines potential competitors' incentive to

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292. 17 U.S.C. §§ 501-11 (1988).

293. Adjudication of the misuse defense presumably increases litigation costs by protracting litigation and increasing its complexity. Thus, the defense undermines copyright policy by consuming resources that could have been dedicated to research and development.

294. Even if the misuse defense did not increase the frequency or likelihood of infringement, the discussion in the preceding section demonstrates that it nonetheless devalues copyrights. The fact that the defense also promotes infringement exacerbates the extent of the devaluation: Not only is the copyright holder less likely to win a suit against an infringer, but he is more likely to be infringed.

create new works to compete with current copyrighted works. Rather, competitors may opt to divert resources from research and development and other creative efforts, searching for licensing practices that may constitute misuse.<sup>295</sup> Having found such a practice, the competitor may decide to risk his chances with infringement and copy the good to market as his own in an effort to capture the copyright holder's market share and profits. This is an especially real threat for computer software companies.<sup>296</sup>

## B. Leave It to the Antitrust Laws: A Theory of Bifurcation

As argued above, the traditional view of misuse is a poor means of enforcing copyright policy when plaintiff's alleged misconduct is a tie. Moreover, the above criticisms of all views of misuse suggest that the antitrust view, while it is superior to the traditional view, is also a less than optimal means of protecting copyright policy. The optimal solution for protecting copyright policy from anticompetitive copyright tie-ins is a judicial policy that captures the upside of the antitrust view, without displacing incentives to innovate with incentives to infringe. "Bifurcation," a process whereby courts bifurcate issues of antitrust law from issues of infringement and discard the copyright misuse defense entirely, meets these criteria.

### 1. ANTITRUST LAWS PROTECT COPYRIGHT POLICY

When both the plaintiff and the defendant in an infringement action have violated the law, both should be held liable. The misuse defense, however, protects the infringer at the expense of the copyright holder, whom the copyright laws are supposed to protect against piracy. If the copyright holder's tie does not violate the antitrust laws, there is no justification for the courts denying him relief against an infringer, for the plaintiff has not misused his copyright to contravene copyright policy.<sup>297</sup> If the copyright holder's tie does constitute misuse by violating the antitrust laws, there is still no justification for the courts denying him relief against an infringer.

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295. See Abromats, *supra* note 105, at 651; Arar, *supra* note 107, at 1303; Sean M. Aylward, *Copyright Law: The Fourth Circuit's Extension of the Misuse Doctrine to the Area of Copyright: A Misuse of the Misuse Doctrine?*, 17 U. DAYTON L. REV. 661, 695 (1992).

296. For examples of computer software and program infringement cases where the alleged infringing defendant is a competitor of the copyright holder, see Atari Games Corp. v. Nintendo of America Inc., 975 F.2d 832 (Fed. Cir. 1992); Lasercomb America, Inc. v. Reynolds, 911 F.2d 970 (4th Cir. 1990); Sega Enter. Ltd. v. Accolade, Inc., 785 F. Supp. 1392 (N.D. Cal. 1992), *rev'd on other grounds*, 977 F.2d 1510 (9th Cir. 1992).

297. *See supra* Part IV.C.

The misuse defense and the antitrust laws share the same concern for rooting out and deterring anticompetitive ties that undermine innovation. Without the threat of misuse, therefore, an incentive nonetheless exists for copyright holders not to enter licensing arrangements that undermine copyright policy by illegally restraining trade. Ties that restrain trade sufficiently to undermine incentives to innovate violate the antitrust laws. The risk of losing an antitrust challenge and being subject to the remedies accorded a successful antitrust plaintiff, including the possible award of treble damages,<sup>298</sup> deters copyright holders from engaging in such licensing practices. Moreover, the remedy provisions of the antitrust laws create incentives for private enforcement (the award of treble damages especially encourages these "private attorney general" actions),<sup>299</sup> which supplements government enforcement. In fact, antitrust counterclaims are often the premise upon which defendant-infringers argue misuse. If not coupled with the misuse defense, the antitrust laws thus would collaterally protect copyright policy without undermining the copyright holder's ability to enforce his exclusive rights. Because both the copyright holder and infringer are answerable for their conduct, bifurcation provides the upside of misuse (i.e., rooting out and deterring illegal ties), without its downside of undermining incentives to innovate while creating incentives to infringe. Misuse, therefore, is never the first-best solution to protect copyright policy against the anticompetitive effects of copyright ties.

The viability of bifurcation as an alternative to misuse for protecting copyright policy depends on whether the antitrust laws provide optimal deterrence against illegal tying arrangements. If the misuse defense addressed harms other than those addressed by the antitrust laws, perhaps the additional sanction of misuse would be necessary to provide optimal deterrence of ties that subvert copyright policy. But the misuse defense and the antitrust laws are concerned with the same anticompetitive effects of ties. The antitrust laws, with their possibility of both public and private enforcement and their harsh remedies against a defendant if he ties, adequately deter illegal ties, independent of the misuse defense. This assertion is bolstered by the fact that historically the courts and Congress have been responsive to concerns that the antitrust laws, as then written and interpreted, did not sufficiently remedy the anticompetitive potentialities of certain practices. Both the courts and

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298. 15 U.S.C. § 5.

299. As the Court expressed in *Zenith Radio Corp. v. Hazeltine Research, Inc.*, 395 U.S. 100, 130-31 (1969): "[T]he purpose of giving private treble-damage and injunctive remedies was not merely to provide private relief, but was to serve as well the high purpose of enforcing the antitrust laws."

Congress have taken steps since the original enactment of the Sherman Act to heighten antitrust enforcement.<sup>300</sup>

Assuming arguendo that the antitrust laws are a suboptimal deterrent of anticompetitive conduct, antitrust laws should be carefully reviewed, amended, and enforced in order to achieve the desired results. The development of the common law of the misuse defense is a poor means of achieving copyright policy. Granted, it may prove desirable for courts and Congress, in response to perceived suboptimal deterrence of the antitrust laws, to create incentives for parties who would not otherwise have standing to bring private attorney general actions to achieve optimal enforcement of the laws. The affirmative defense of misuse may be viewed as a judicial innovation to create such an incentive, since it encourages collateral antitrust enforcement through infringement suits. However, by allowing a willful infringer to exonerate himself from liability by enforcing the public policy against restraints of trade, the misuse defense "creates a very strange class of private attorneys general,"<sup>301</sup> whose members may have undermined public policy more than the copyright holder.<sup>302</sup>

If antitrust laws are not a suboptimal deterrent, there is a real risk that courts will over deter tying licenses by recognizing the misuse defense. The misuse defense increases the expected cost to copyright holders of creating a tying contract. First, the sanctions of misuse and the antitrust laws overlap. If a court finds that a tying copyright holder has violated the antitrust laws, not only can an infringer infringe with impunity by invoking the misuse defense, but the copyright holder is also

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300. For discussions and evidence of judicial and congressional action taken to heighten enforcement of the antitrust laws since the enactment of the Sherman Act, see, e.g., *Eastman Kodak Co. v. Image Technical Services, Inc.*, 112 S. Ct. 2072, 2090 (1992); *California v. American Stores Co.*, 495 U.S. 271, 285-88 (1989); *Cargill, Inc. v. Monfort of Colorado, Inc.*, 479 U.S. 104, 124-27 (1986); *Brown Shoe Co. v. United States*, 370 U.S. 294, 311-23 (1961); *Northern Pacific Ry. Co. v. United States*, 356 U.S. 1, 5 (1958); *Standard Oil Co. v. United States*, 221 U.S. 1, 59-60 (1911); *Northern Securities Co. v. United States* 193 U.S. 197, 329-33, 345-46 (1904); *SCHERER & ROSS, supra* note 4, at 11-13, 174-76, 324-27, 509.

301. *Kelly v. Kosuga*, 358 U.S. 516, 520 (1959).

302. Zechariah Chafee, Jr., *Coming into Equity with Unclean Hands*, 47 MICH. L.REV. 1065, 1072 (1949). In *Radio Corporation of America v. Majestic*, 53 F.2d 641 (D. Conn. 1931), the court hints at the absurdity of allowing individuals, who themselves have violated the law, to collaterally enforce antitrust policy. The RCA court, in rejecting the defendant's antitrust defense to the plaintiff-patentee's infringement suit, stated:

The situation here . . . is quite analogous to a case where A sues B for injunction to restrain B's continuing to trespass upon A's land and B pleads as a defense that A is using his land in violation of law by maintaining a brewery thereon, and that in addition to being in violation of the law, the brewery constitutes a common-law nuisance to the general public. Such a defense would, obviously, have to be stricken out.

*Id.* at 643.

subject to the remedy provisions of the antitrust laws. Second, the misuse defense increases the probability that the copyright holder's practice will be challenged as an antitrust violation, since the defense increases an infringer's valuation of his antitrust counterclaim. By increasing the expected cost of tying, the stacking of misuse on antitrust sanctions deters both legal and illegal ties.<sup>303</sup> If the antitrust laws strike the optimal balance between the marginal benefit of rooting out one more illegal tie and the marginal cost of doing so (measured by the benefits lost to society when the risk of antitrust sanctions deters efficient tie-ins), or if the antitrust laws themselves deter ties better than the misuse defense, courts' allowing an infringer to stack misuse on an antitrust counterclaim undermines the public interest. If a third scenario—that the antitrust laws suboptimally deter illegal ties—best captures reality, then, as reasoned above, the antitrust laws and not misuse are the correct medium through which Congress and the courts can approach optimal deterrence.

## 2. HISTORICAL DENIAL OF ANTITRUST DEFENSE SUPPORTS BIFURCATION

Prior to the birth and maturity of the misuse doctrine, courts systematically rejected the view that a copyright holder's antitrust violation, effected by use of the copyrighted work, constituted an affirmative defense against infringement allegations.<sup>304</sup> These courts, which bifurcated issues of antitrust law from issues of infringement, supported their holdings along two primary avenues of reasoning. The courts argued, first, that the remedies of the antitrust laws are exclusive, and that a plaintiff's antitrust violation, therefore, could not be invoked as

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303. Michael K. Block and Joseph G. Sidak, *The Cost of Antitrust Deterrence: Why Not Hand a Price Fixer Now and Then?*, 68 GEO. L.J. 1131, 1138 (1980).

304. Peter Pan Fabrics, Inc. v. Candy Frocks, Inc., 187 F. Supp. 334 (S.D.N.Y. 1960); Harms, Inc. v. Sansom House Enter., Inc., 162 F. Supp. 129 (E.D. Pa. 1958); Buck v. Cecere, 45 F. Supp. 441 (W.D.N.Y. 1942); Buck v. Newsreel, Inc., 25 F. Supp. 787 (D. Mass. 1938); Buck v. Spanish Gables, Inc., 26 F. Supp. 36 (D. Mass. 1938); Buck v. Hillsgrave Country Club, 17 F. Supp. 643 (D.R.I. 1937); Vitagraph, Inc. v. Grobaski, 46 F.2d 813 (W.D. Mich. 1931); M. Whitmark & Sons v. Pastime Amusement Co., 298 Fed. 470 (E.D.S.C. 1924), *aff'd mem.*, 2 F.2d 1020 (4th Cir. 1924); Harms v. Cohen, 279 F. 276 (E.D. Pa. 1922).

The antitrust defense was also frequently rejected as an affirmative defense to patent infringement. See Radio Corp. of America v. Majestic Distributors, 53 F.2d 641 (D. Conn. 1931); Edison Electric Light Co. v. Sawyer-Man Electric Co., 53 F. 592 (2d Cir. 1892), *cert. denied*, 149 U.S. 785 (1893); F.A.D. Andrea, Inc. v. Radio Corp. of America, 14 F. Supp. 226 (D. Del. 1936); Radio Corp. of America v. Duovac Radio Tube Corp., 6 F. Supp. 275 (E.D.N.Y. 1931); General Electric Co. v. Wise, 119 F. 922 (N.D.N.Y. 1903); Brown Saddle Co. v. Troxel, 98 F. 620 (N.D. Ohio 1899); American Soda-Fountain Co. v. Green, 69 F. 333 (E.D. Pa. 1895); Strait v. National Harrow Co., 51 F. 819 (N.D.N.Y. 1892).

an affirmative defense to exonerate an infringer for his liabilities,<sup>305</sup> and second, that a party who violates the antitrust laws is not thereby divested of his property and the rights, such as the right to exclude trespassers, that inhere in his property.<sup>306</sup> As the court in *M. Whitmark & Sons v. Pastime Amusement Co.* reasoned:

The Sherman Act does not make the party to an interstate monopoly an outlaw. It does not prevent such a party from asserting his rights in the courts. It does not give any person the right to trespass upon the rights of such party, or to deprive him unlawfully of his property. There is no provision in the Act divesting the members of combinations in restraint of trade of their property. The illegality of such a combination cannot be tested collaterally. The Act itself provides the remedies against the illegal combination and these remedies are exclusive.<sup>307</sup>

A third ground upon which courts often rejected an infringer's antitrust defense was the "snowball effect." Courts reasoned that if an infringer could exonerate himself from liability by arguing plaintiff's antitrust violation, any individual could take possession of another's goods with impunity so long as the owner was using the goods in violation of the antitrust laws.<sup>308</sup>

Despite this line of cases, the rejected antitrust defense has nonetheless evolved into an affirmative defense against an infringement

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305. See, e.g., *Buck v. Hillsdale Country Club*, 17 F. Supp 643 (D.R.I. 1937); *Harms v. Cohen*, 279 F. 276 (E.D. Pa. 1922); *General Electric Co. v. Wise*, 119 F. 922 (N.D.N.Y. 1903).

306. See, e.g., *Edison Electric Light Co. v. Sawyer-Man Electric Co.*, 53 F. 592 (2d Cir. 1892), cert. denied, 149 U.S. 785 (1893); *F.A.D. Andrea, Inc. v. Radio Corp. of America*, 14 F. Supp. 226 (D. Del. 1936); *Radio Corp. of America v. Duovac Radio Tube Corp.*, 6 F. Supp. 275 (E.D.N.Y. 1931); *Brown Saddle Co. v. Troxel*, 98 F. 620 (N.D. Ohio 1899).

307. *Whitmark & Sons*, 298 Fed. at 480 (citations omitted).

308. For example, in *Harms v. Cohen*, 279 F. 276 (E.D. Pa. 1922), the court stated:

If an infringer . . . may set up as a defense that the copyright is the object of an unlawful combination, and is being used to carry into effect the purposes of an unlawful combination, may he thus escape liability for his own wrongful act? If he can set up an unlawful combination as a defense against his infringement of the copyright, then any one who wrongfully trespasses upon or takes the property of another may set up as a defense that the property was being held and used by a member of an unlawful combination in carrying out the purposes of that combination. It would follow, if one took possession of cattle or beef belonging to a corporation or individual, a member of a combination for fixing the price of cattle or beef of trade, he would be relieved from liability to pay for the property so taken, or from returning it to its owner, upon producing proof that the owner was engaged in such unlawful combination. In this same manner one might with impunity take possession of oil, gasoline, sugar or other commodities belonging to members of an alleged trust or combination in restraint of trade. But there is no provision in the Sherman Act divesting members of combinations in restraint of trade of their property.

*Id.* at 279.

allegation with the development of the misuse doctrine. By repackaging the copyright holder's antitrust violation as conduct that undermines copyright policy, courts have been able to sustain the antitrust defense under the guise of misuse and thereby formulate a new copyright common law that sits uncomfortably next to courts' earlier precedent disfavoring the antitrust defense. Unfortunately, with the maturity of the misuse defense, the tension between the early line of cases rejecting the antitrust defense and the more recent opinions recognizing the misuse doctrine has been ignored at the expense of copyright holders.

The misuse defense is a wolf in wolf's clothing. Given that the antitrust defense, when disguised and sustained as misuse, undermines copyright policy, courts should reject the misuse defense when plaintiff's alleged misconduct is a tie and defer to the antitrust laws to protect copyright policy. The reasoning of pre-misuse doctrine precedent imposing bifurcation by denying the antitrust defense to infringers supports this conclusion.

## VI. CONCLUSION

An infringer of a copyright should not be able to argue as an affirmative defense that the copyright holder has misused his copyright to undermine innovation and creativity when the copyright holder's alleged misconduct is a tie. The misuse defense claims to protect copyright policy by discouraging and rooting out licensing practices that threaten innovation and creativity. However, the defense offends the very objectives that it purports to promote, because it undermines the intrinsic value of copyrights and makes it relatively less costly to infringe than to create. Courts could better serve copyright policy and promote public welfare by discarding the misuse defense, which creates disincentives to innovate and incentives to infringe.

An alternative doctrine, bifurcation, would root out illegal ties that hinder innovation without displacing incentives to innovate with incentives to infringe. Bifurcation not only holds copyright holders accountable for their ties under the antitrust laws, but unlike the misuse doctrine, bifurcation also holds infringers accountable for their infringements.

Given the widespread and increasing recognition of the defense of copyright misuse, it is unlikely that the bifurcation doctrine will be adopted. Rather, the choice appears to be between the traditional and antitrust views of misuse. To the extent that antitrust violations and misuse are coextensive when a copyright holder's misconduct is a tie, the antitrust view of misuse is superior to the traditional view. Since only ties that rise to the level of an antitrust violation threaten incentives to

innovate and create, those courts preferring the traditional view of misuse not only threaten to favor an infringer at the expense of a copyright holder who has not used his copyright to offend copyright policy, but more importantly, they threaten the public interest. Not only does the traditional view root out procompetitive ties, but it undermines copyright policy by retarding the proliferation of works to the public and undermining economic incentives to innovate.

# **COMMENT**

## **DIGITAL LITIGATION: THE PREJUDICIAL EFFECTS OF COMPUTER-GENERATED ANIMATION IN THE COURTROOM**

**JOHN SELBAK<sup>†</sup>**

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## I. INTRODUCTION

On August 2, 1985, the crew of Delta Flight 191 tried to abort a landing after a wind shear tossed the plane into a violent wind pattern.<sup>1</sup> The plane, caught in a powerful wind vortex, was thrown to the ground a mile from the runway.<sup>2</sup> It crashed into a field, skidded onto a highway, hit a car and killed the driver. It then traveled another 1700 feet before smashing into a water tower.<sup>3</sup> One hundred and twenty-eight passengers, eight Delta crew members, and one person on the ground died.<sup>4</sup>

The Delta 191 crash led to a legal battle over who would pay the \$150 million to \$200 million of claims for wrongful death, loss of aircraft and other damages.<sup>5</sup> Litigants filed suit, claiming that Federal Aviation Administration and National Weather Service employees should have advised the crew of the weather disturbances and warned the crew to change its landing approach.<sup>6</sup> The core of the government's defense presentation at trial was a computer-generated animation illustrating its theory of the events that took place on August 2. Ultimately, the forty-five minute simulation was a key factor convincing U.S. District Court Judge David Belew to rule for the United States.<sup>7</sup>

While the use of computer-generated animation have become more common in litigation during the past several years, the Justice Department's presentation at the Delta 191 trial was truly monumental in terms of the length and sophistication of the technology used.<sup>8</sup> The trial marked the beginning of a new era for the use of computer-generated animations as demonstrative evidence in litigation settings, and it prompted wider acceptance of the technology by other judges and courts.<sup>9</sup>

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1. Paul Marcotte, *Animated Evidence: Delta 191 Crash Re-created Through Computer Simulations at Trial*, ABA JOURNAL, Dec. 1989 at 52.

2. *Id.*

3. *Id.* at 53.

4. *Id.*

5. *Id.*

6. *Id.*

7. *Id.* at 53-54.

8. *Id.* at 53. Four attorneys and six experts worked with Z-Axis Corp. of Denver, Colorado, for nearly two years to create the animation. The animation used forty different parameters to recreate the plane's flight, such as acceleration, roll, pitch and heading. *Id.*

9. Roy Krieger, *Sophisticated Computer Graphics Come of Age - And Evidence Will Never Be the Same*, ABA JOURNAL, Dec. 1992, at 92. The bench decision favoring the United States included more than a dozen references to the computer-generated animation in support of key findings of fact. *In re Air Crash at Dallas/Fort Worth Airport on Aug. 2, 1985*, 720 F. Supp. 1258 (N. D. Tex. 1989), *aff'd*, 919 F.2d 1079 (5th Cir. 1991), *cert. denied sub nom.* Connors v. United States, 112 S. Ct. 276 (1991).

Nevertheless, this enticing technology with all of its much-touted advantages creates a significant potential for misuse and prejudice. Judges unfamiliar with the mechanics of computer-generated animation may not adequately evaluate questions of preliminary facts regarding the simulation, as they are required to do before admitting it into evidence.<sup>10</sup> Similarly, juries are especially prone to believe evidence which is presented visually, regardless of its veracity.<sup>11</sup> Furthermore, juries may discard common sense when confronted with computer evidence, and instead accept as proven fact whatever the computer proposes as the calculated result or outcome.

This Comment argues that computer-generated animations should be allowed in the courtroom only under close scrutiny from the courts. Part II briefly discusses the existing technology and its use in the courtroom. Part III describes the admissibility requirements under the current Federal Rules of Evidence and analyzes case law regarding novel scientific evidence introduced at trial. Part IV addresses problems with computer-generated animations' application in the courtroom. Part V discusses this author's proposed methods to reap the benefits from the technology without sacrificing justice. Finally, Part VI offers an outlook towards future technologies and their potential for prejudice.

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10. See FED. R. EVID. 104(a). Federal Rule of Evidence 104(a) states in relevant part:

QUESTIONS OF ADMISSIBILITY GENERALLY. Preliminary questions concerning the qualification of a person to be a witness, the existence of a privilege, or the admissibility of evidence shall be determined by the court . . . . In making its determination it is not bound by the rules of evidence except those with respect to privileges.

*Id.* Judges determine whether evidence should or should not be admitted, and play an integral part in the outcome of the trial through this determination. However, as the Rule mentions, judges are generally not bound by the rules of evidence when determining preliminary questions of fact and may find evidence admissible without support from the rules. *Id.*

11. Krieger notes that "the 'Weiss-McGrath Report' found a 100 percent increase in juror retention of visual over oral presentations and a 650 percent increase in juror retention of combined visual and oral presentations over oral presentations alone." Krieger, *supra* note 9, at 93. See also Jennifer E. King, *Animation Seizes Jury, Judge's Attention*, ILLINOIS LEGAL TIMES, May 1993, at 1 (quoting David Weinberg, director of litigation services at Engineering Animation, Inc. in Chicago, stating that "[w]e have polled juries, and in every case [the jurors] have said that the animation played an important factor in their decision").

## II. THE STATE OF COMPUTER ANIMATION IN LITIGATION

### A. Existing Technology

Computer-generated animation is the primary type of computer demonstrative evidence that has been used in the courtroom.<sup>12</sup> Computer animation consists of two-dimensional, animated images projected either on a computer screen or on a larger-screen video monitor. Animations can include syntheses of images, text, and sound to create a fanciful visual aid, or can be used to demonstrate concepts otherwise indescribable in still pictures. It has been used to vividly recreate crimes and to explain to the jury concepts and theories that can best only be illustrated through demonstrative visual evidence. Without computer animation the concepts often would be difficult to bring into the courtroom.

There are two principal categories of computer animation: (1) demonstrative animations used as visual aids or enhancements and (2) scientific animations. Scientific animation differs from demonstrative animation in two important ways. First, scientific animations are more mathematically accurate.<sup>13</sup> Second, the motion in scientific animations attempts to follow the laws of physics rather than track the imagination of an artist.<sup>14</sup>

Despite technological advances in recent years, computer animations are still in their infancy. The concept, as presented in popular descriptions, is far more advanced than the actual capability of the technology.<sup>15</sup> Current limits of computer speed and disk storage create this lag between concept and actual practice.<sup>16</sup>

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12. Computer animation has been described as follows: "[A] special type of motion picture that is generated with the aid of a computer. It is an extension of CAD/CAM, or computer-aided design and computer-aided manufacturing." James W. Dabney, *Animation Is Invading Courtrooms*, NEW YORK LAW JOURNAL, Apr. 6, 1993, at 4. The newer animation technology created by CAD attempts to picture images through the illusion of three-dimensional arrays for a more realistic rendering of the object that is animated. *Id.*

13. David Weinberg, *Seeing is Believing With Scientific Animation*, MASSACHUSETTS LAWYERS WEEKLY, Sept. 13, 1993, at S1.

14. *Id.*

15. *Id.*

16. The two most important hardware capabilities of the personal computer in terms of animation are computer chip speed and hard disk size. The faster the computer chip speed, the more frames can be drawn, erased and reprocessed in a single second. Krieger, *supra* note 9, at 94. As the number of frames processed increases, the animation becomes smoother, more accurate, and reflects greater detail. *Id.* The hard disk of a computer is the main storage medium. Since a single frame can use, at a minimum, anywhere from 100 to 500 kilobytes of memory, a limited, standard-issue hard drive of 120 megabytes can

Nevertheless, the current capabilities of computer animation are advanced enough to be useful in many courtroom circumstances. The simulation operator can easily shift viewpoints within the animation during the presentation so that the audience can see objects and events from any vantage point.<sup>17</sup> Motion can also be altered to hypothetical variants to illustrate relationships between objects in the simulation. An airplane crash, a seat belt injury or the movement of a complex engine can be shown in slow motion so that the action can be understood frame by frame.<sup>18</sup> These valuable advantages have encouraged lawyers to present computer-generated animations at trial.

### B. Judicial Review of Computer-Generated Animation

Since appellate courts review a trial court's decision regarding the admissibility of evidence on an abuse of discretion standard, it is unlikely that a trial judge's evidentiary determination regarding the admissibility of a computer-generated animation will be overturned.<sup>19</sup> To date, very few appellate cases have directly addressed the admissibility of computer animation as either demonstrative or substantive evidence. The wide latitude trial judges are afforded in making evidentiary decisions may help explain the lack of appellate review.<sup>20</sup> Therefore, it seems that the standard of review of a judge's decision on the admissibility of an animation would create a difficult burden for an appellant to overcome.<sup>21</sup>

### C. Examples of Computer-Generated Animations Used at Trial

Computer-generated animation's growing use,<sup>22</sup> coupled with its increasing affordability,<sup>23</sup> has made it the buzz word of the litigation

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be filled with between 240 to 1200 frames, which is only enough to create between eight to forty seconds of rough animation.

17. Weinberg, *supra* note 13, at S1.

18. *Id.*

19. CHRISTOPHER B. MUELLER AND LAIRD KIRKPATRICK, EVIDENCE UNDER THE RULES; TEXT, CASES AND PROBLEMS, 1993, at 54.

20. See generally, *id.* at 53-54.

21. *Id.* at 54. See also Wheeler v. John Deere Co., 935 F.2d 1090, 1099 (10th Cir. 1991) (the admission or exclusion of evidence lies within the sound discretion of the trial court and cannot be reversed absent an abuse of discretion).

22. A study by the American Bar Association in 1992 reported that 13 percent of medium-sized law firms have used computer animation in cases, and that 45 percent of them planned to use it in the future. King, *supra* note 11, at 1.

23. The costs of creating computer-generated animations have decreased due to the drop in software prices, hardware prices and the increased accessibility of the technology. What once cost \$1,500 to \$5,000 per second of animation now can be processed on a personal computer for as little as \$100 per second. Jeanette Borzo and Kelley Damore, *Low-cost 3-D Animation Earns Its Day in Court; Makes Evidence Come Alive for Jury*, INFOWORLD, Sept. 13, 1993, at 1. More importantly, by purchasing a \$3,500 program such

community.<sup>24</sup> Computer animations have been used in cases involving such diverse areas as toxic spills, building collapses, transportation accidents, building ordinance reviews and criminal prosecutions.<sup>25</sup> The following cases illustrate the various situations in which attorneys have made use of computer animation to bolster their presentations.

Perhaps the most widely publicized use of computer animation in California occurred in the State's prosecution of James Mitchell following the death of his brother Artie Mitchell.<sup>26</sup> At trial, James claimed that he shot his brother in self defense.<sup>27</sup> A forensics expert worked with a criminalist to create an animated reconstruction of the events of the murder based on physical evidence gathered from the scene.<sup>28</sup> The animation was used at trial "to show the trajectory of the bullets and possible location of the victim when the shots were fired."<sup>29</sup> Mitchell appealed his conviction, claiming that the animation should not have been admitted.<sup>30</sup> The Court of Appeal noted the trial court's discretion in admitting expert testimony reconstructions so long as there is "preliminary proof that conditions are substantially identical and that the reconstruction is an accurate depiction."<sup>31</sup> Ultimately, the court held that it was error to admit the reconstruction because the reconstruction relied upon inadmissible evidence.<sup>32</sup> Nevertheless, the court affirmed the conviction because it held that the error was harmless.<sup>33</sup>

In another trial, an attorney presented animated evidence of the mechanics of a printing press to support his client's claim that the defendant stole crucial design drawings of the press.<sup>34</sup> The attorney retained a firm whose engineers created detailed three-dimensional computer images of the printing press and its component parts. By animating these pictures, the firm demonstrated the workings of the press. The plaintiff also provided two expert witnesses who explained the importance of the plates by using the animated sequences. The jury

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as AutoDesk 3D Studio, many law firms can do the work in-house and save even more money. *Id.* For a similar discussion regarding the cost of animation, see Krieger, *supra* note 9, at 94.

24. See, e.g., James W. Dabney, *Animation is Invading Courtrooms*, NEW YORK LAW JOURNAL, Apr. 6, 1993, at 4, for a discussion of the uses of computer animation.

25. Krieger, *supra* note 9, at 93.

26. People v. Mitchell, (Cal. App. First Dist. Div. 2), Marin County Superior Court No. SC-12462-A (1994).

27. *Id.* at 1.

28. *Id.* at 11.

29. *Id.*

30. *Id.* at 1-2.

31. *Id.* at 27.

32. *Id.*

33. *Id.* at 32.

34. Weinberg, *supra* note 13, at S1.

returned a \$2.7 million verdict for the plaintiff and later explained that the "animation helped in giving them information they needed to decide the case."<sup>35</sup>

An aviation attorney used computer animation to help a trial expert demonstrate the operation of a device that controlled aerodynamic flow over an airplane wing.<sup>36</sup> Since the device controlled particles the size of molecules traveling at supersonic speeds, the attorney suspected the jury would have a difficult time understanding the evidence.<sup>37</sup> After the attorney assembled an animation and introduced it to explain the mechanics of the devise, the jury was able to follow the complex physics testimony, and found in favor of the attorney's client.<sup>38</sup>

A Whatcom County, Washington prosecutor used computer animation to convict a husband of the murder of his wife.<sup>39</sup> The husband claimed that, while on a hunting trip, his wife was killed when she tripped on a log and accidentally dropped the gun, which discharged into her chest.<sup>40</sup> The computer animation, which used data from a survey of the crime scene, showed that the wound could not have been inflicted by any means other than the defendant facing his wife and shooting her at close range.<sup>41</sup>

A medical malpractice case involving a mother who died in childbirth was successfully defended with the help of computer animation.<sup>42</sup> The child survived, but suffered serious brain damage. The computer video showed that the baby was too big to pass through the mother's pelvic bones, and that the crushing of those bones led to a rupture of part of the womb, allowing fluid to fill the mother's lungs which caused her death.<sup>43</sup>

The animation of a proposed building presented to the Chicago City Council and Planning Commission convinced the two groups to issue the pending building permits.<sup>44</sup> The animation was designed to show the proposed development over time, as well as to replicate a shadow study using calculations of the sun's movement and resulting shadows.<sup>45</sup>

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35. *Id.*

36. *Id.*

37. *Id.*

38. *Id.*

39. Eric Dawes, *Washington State Prosecutor*, BUSINESS WIRE, Aug. 13, 1993.

40. *Id.*

41. *Id.*

42. Roger Harris, *A Picture is Worth a 1,000 Words: Computer Animation Used in Courtrooms*, BUSINESS FIRST - LOUISVILLE, June 14, 1993, at 1.

43. *Id.*

44. King, *supra* note 11, at 1.

45. *Id.*

### III. ADMISSIBILITY REQUIREMENTS FOR COMPUTER ANIMATION

#### A. General Rule on Admissibility of Potentially Prejudicial Evidence

Federal Rule of Evidence 403 provides the best rationale for the exclusion of computer animation evidence, and will likely be the most commonly cited rule for the exclusion of this type of evidence.<sup>46</sup> Rule 403 provides that, “[a]lthough relevant, evidence may be excluded if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury, or by considerations of undue delay, waste of time, or needless presentation of cumulative evidence.”<sup>47</sup> Advocates seeking to use animation will attempt to demonstrate that the probative value of the evidence outweighs any danger of unfair prejudice.<sup>48</sup>

#### B. Standards of Admissibility—Admitting the Animation into Evidence

The admission of computer animation evidence under the Federal Rules of Evidence, requires satisfying Rules 803(24), 901, 401, 402, and 702.

##### 1. OVERCOMING HEARSAY OBJECTIONS THROUGH THE “CATCHALL” EXCEPTION

When computer animation evidence involves data generated through the computer’s software, “[b]oth the data and the software (as out-of-court statements of the programmer) are subject to hearsay objections.”<sup>49</sup> Hearsay is evidence comprised of an “out of court statement offered to . . . prove the truth of the matter asserted.”<sup>50</sup> Rule 802 excludes hearsay from trial testimony unless it meets one of the exceptions listed in rules 803 or 804. Therefore, the process of admitting the animation begins by seeking an exception to the ban on hearsay evidence.

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46. Roy Krieger, *Getting It Admitted*, ABA JOURNAL, Dec. 1989, at 96.

47. FED. R. EVID. 403.

48. Since the focal point of this Comment is the prejudicial nature of computer animation evidence, the balancing test found in Rule 403 warrants further analysis and is discussed in greater detail in Part IV, *infra*.

49. David Siegel and Brian Pass, *High Technology at Trial: Use It or Lose It*, PLI Order H4-5138, Mode 444 PLI/Lit 605 (1992).

50. MUELLER & KIRKPATRICK, *supra* note 19, at 115.

Proponents of computer animation often employ Rule 803(24), the so-called "catchall" exception, to avoid the hearsay prohibition because computer animations usually do not neatly fit into any of the enumerated hearsay exceptions. This Rule provides that exceptions may be found to the hearsay rule for evidence which has

equivalent circumstantial guarantees of trustworthiness, [and if] the court determines that (A) the statement is offered as evidence of a material fact; (B) the statement is more probative on the point for which it is offered than any other evidence which the proponent can procure through reasonable efforts; and (C) the general purposes of these rules and the interests of justice will best be served by admission of the statement into evidence.<sup>51</sup>

Rule 803(24) requires the party seeking to admit the evidence to notify the other side of the animation's existence, and counsel's intent to enter it into evidence.<sup>52</sup> The drafters of the "catchall" rule appear to have foreseen the rule's role in adapting the system to new technologies. Specifically, the Advisory Committee Note for 803(24) states that the catchall is intended to

provide for treating new and presently unanticipated situations which demonstrate a trustworthiness within the spirit of the specifically stated exceptions. Within this framework, room is left for growth and development of the law of evidence in the hearsay area, consistently with the broad purposes expressed in Rule 102.<sup>53</sup>

Due to computer animation's exceptional ability to explain important and complex issues easily to the jury, and the current trust placed in the technology by judges, Rule 803(24) appears to be a ready gateway to the animation's entry into evidence. As can be seen in the following sections, however, a larger problem lies in the ability of parties to completely bypass even the minimal safeguards afforded by Rule 803(24).

## 2. OVERCOMING HEARSAY OBJECTIONS BY PASSING OFF THE ANIMATION AS DEMONSTRATIVE EVIDENCE

The rationale for excluding hearsay often rests on the need for cross-examination of the person who made the statement that is being offered for its truth.<sup>54</sup> While most of what is labeled as hearsay is eventually admitted,<sup>55</sup> the admission occurs only after the statement meets a certain standard of trustworthiness established by the rules to

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51. FED. R. EVID. 803(24).

52. *Id.*

53. FED. R. EVID. 803(24) advisory committee's note.

54. MUELLER & KIRKPATRICK, *supra* note 19, at 116-17.

55. *Id.* at 116.

ensure that it does not prejudice the party against whom it is offered.<sup>56</sup> This measure of trustworthiness inherent in the Rules is an important bar against unreliable evidence being admitted at trial.<sup>57</sup>

By successfully classifying computer animation evidence as demonstrative evidence, rather than as opinion or inference evidence, the party seeking its admission avoids the hearsay prohibitions entirely.<sup>58</sup> For example, demonstrative evidence such as graphs, charts, diagrams, sketches and illustration are not offered for their truth and therefore are not hearsay.<sup>59</sup> The hearsay objection provides little protection against this type of demonstrative evidence, and most attorneys seeking admission of evidence can invoke another exception under Rule 803 or 804 if the court rejects their arguments based on 803(24).<sup>60</sup> The opposing party may suffer prejudice if the court too freely admits a computer animation as demonstrative evidence, thus entirely avoiding hearsay concerns.

A leading case concerning the admissibility of computer animation as demonstrative evidence is *People v. McHugh*.<sup>61</sup> In *McHugh*, the defendant sought to introduce a computer reenactment illustrating his alternative theory of the accident.<sup>62</sup> Upholding the reenactment's admission, the court ruled that "[t]he evidence sought to be introduced here is more akin to a chart or diagram than a scientific device. Whether

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56. FED. R. EVID. 803(24).

57. *Id.* at advisory committee's note. The Advisory Committee Notes following 803(24) state that the rule does "not contemplate an unfettered exercise of judicial discretion, but [it does] provide for treating new and presently unanticipated situations which demonstrate a trustworthiness within the spirit of the specifically stated exceptions." *Id.*

58. Siegal and Pass offer the following description of the lower threshold applied to demonstrative evidence:

A lesser showing is needed to introduce computer generated evidence such as charts, diagrams and simulations that are offered as demonstrative evidence. Because this type of evidence lacks independent probative value, generally all that is required is a demonstration that the evidence is fair and accurate. In short, demonstrative evidence avoids hearsay problems because it is not offered for its truth. Demonstrative evidence can be used independently or in connection with the testimony of an expert witness. Facts or data relied on by experts need not otherwise be admissible into evidence if the information is "of a type reasonably relied upon by experts in the particular field." Fed. R. Evid. 703.

Siegel & Pass, *supra* note 49, at 605.

59. *Id.* at 605. Since demonstrative evidence is illustrative by nature, nothing more is asserted which is not already contained in the verbal testimony previously admissible in the case.

60. Usually, the other exceptions that are best suited for overcoming hearsay objections to computer data evidence are Rule 803(6), the business records exception and Rule 803(8), the public records exception. *See id.*

61. 476 N.Y.S.2d 721 (1984).

62. *Id.* at 722.

a diagram is hand drawn or mechanically drawn by means of a computer is of no importance."<sup>63</sup>

The view of the *McHugh* court is the one most often subscribed to in deciding admissibility issues regarding computer animation.<sup>64</sup> However, elements of *McHugh*'s reasoning may conflict with the reality of computer programming. For example, the *McHugh* court stated that "[c]omputers are simply mechanical tools—receiving information and acting on instructions at lightning speed."<sup>65</sup> The idea that computers are mindless machines ignores the programmers' assumptions and algorithms embedded in the software which produces the animation itself.<sup>66</sup>

### 3. ADMITTING THE ANIMATION AS SCIENTIFIC EVIDENCE

Another alternative to avoid hearsay objections is to admit the animation as scientific evidence. Scientific evidence is expert testimony created by or with an expert as an explanatory aide. This method avoids the hearsay prohibition by reclassifying the animation as a visual interpretation of the testimony offered by an expert in court. Since computer animation is a new technology that most courts have not explicitly addressed, the animation likely will be treated as novel scientific evidence if it is presented in that way.

If the animation is admitted as scientific evidence, an expert must testify alongside it.<sup>67</sup> This requirement ensures that the jury will be able to understand the nature of the evidence presented, and allows the

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63. *Id.* At the time of the *McHugh* test, the test most commonly used for novel scientific evidence was that enumerated in *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923). However, even under the modern test of *Daubert v. Merrell Dow Pharmaceutical, Inc.*, 113 S. Ct. 2786 (1993), the holding would have been the same since *Daubert* provides an even broader test for admissibility. For a fuller discussion, see *infra* notes 70-102 and accompanying text.

64. Siegel & Pass, *supra* note 49, at 605.

65. *McHugh*, 476 N.Y.S.2d at 722-23.

66. The computer animation process, discussed *infra* at notes 127-137 and accompanying text, is a multi-step process which includes collection of data, storyboarding the events, creation of computer models, scripting the animation motion, rendering the frames, and editing the animation before copying it to a storage medium. See generally David W. Muir, *Debunking the Myths About Computer Animation*, PLI Order No. H4-5138, Mode 444 PLI/Lit 591 (1992).

67. Rule 702 provides that, "[i]f scientific, technical or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training or education, may testify thereto in the form of an opinion or otherwise." FED. R. EVID. 702. The admissibility requirements for computer animation are actually more detailed, and include "(1) qualification of the expert who produced or supervised the animation; (2) qualification of the computer hardware; (3) qualification of the computer software; (4) qualification of the input data and assumptions; and (5) qualification of the computer output." Muir, *supra* note 66.

opposing party to cross-examine the expert as a means of countering the evidence presented.

Under the Federal Rules' requirement that evidence be both relevant and authenticated, sufficient guarantees that the evidence is trustworthy must be shown.<sup>68</sup> Since the Federal Rules do not explicitly address the admissibility of novel forms of evidence,<sup>69</sup> a few courts have developed judicial tests.

#### a. Test for novel scientific opinion evidence

Until June of 1993, the accepted test for determining the reliability and admissibility of novel scientific evidence under the Federal Rules was the test expressed in *Frye v. United States*.<sup>70</sup> *Frye* involved an attempt to admit evidence from a systolic blood pressure machine, an early precursor of the polygraph ("lie detector") test.<sup>71</sup> Prior to trial the defendant passed the test and, at trial, defense counsel offered the scientist who conducted the test as an expert to testify to the results obtained.<sup>72</sup> Excluding the evidence, the court stated that:

[j]ust when a scientific principle or discovery crosses the line between the experimental and demonstrable stages is difficult to define. Somewhere in this twilight zone the evidential force of the principle must be recognized, . . . [but] the thing from which the deduction is made must be sufficiently established to have gained general acceptance in the particular field in which it belongs.<sup>73</sup>

*Frye* therefore announced the general acceptance test, which required that any scientific evidence which "has not yet gained such standing and scientific recognition among physiological and psychological authorities" should be excluded.<sup>74</sup>

Most jurisdictions accepted the *Frye* standard as the dominant standard for determining admissibility of novel scientific evidence at trial.<sup>75</sup> However, the Supreme Court addressed the issue and reversed the standard in June 1993 in *Daubert v. Merrell Dow Pharmaceutical, Inc.*<sup>76</sup>

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68. MUELLER & KIRKPATRICK, *supra* note 19, at 2.

69. The federal rules do, however, seem to lean towards a liberal acceptance of such technologies. See FED. R. EVID. 803(24) Advisory Committee's Note.

70. 293 F. 1013 (D.C. Cir. 1923). While this Comment will discuss on the Court's eventual move away from *Frye*, it is important to note that a majority of states still adhere to *Frye*'s admissibility requirements.

71. *Id.* The test was based on the theory that "[t]ruth is spontaneous, and comes without conscious effort, while the utterance of a falsehood requires a conscious effort, which is reflected in the blood pressure." *Id.*

72. *Id.* at 1014.

73. *Id.*

74. *Id.*

75. See E. GREEN & C. NESSON, PROBLEMS, CASES AND MATERIALS ON EVIDENCE 649.

76. 113 S. Ct. 2786 (1993).

In *Daubert*, the Court was asked to rule on the issue of whether the adoption of the Federal Rules of Evidence superseded the *Frye* test.<sup>77</sup> A unanimous Court held that the rules had in fact superseded *Frye*.<sup>78</sup>

*Daubert* involved expert testimony regarding the effects of the drug Bendectin on unborn children and its relation to birth defects.<sup>79</sup> To counter Merrell Dow's expert testimony that Bendectin did not cause birth defects, the petitioners submitted the affidavits of eight qualified experts who concluded that Bendectin can cause birth defects.<sup>80</sup> The district court excluded the plaintiff's evidence and granted summary judgment for Merrell Dow,<sup>81</sup> and the Ninth Circuit Court of Appeals affirmed the decision.<sup>82</sup> Both courts disallowed petitioner's evidence on the basis that the expert testimony proffered failed the general acceptance test of *Frye*.<sup>83</sup> The petitioner's expert testimony was not sufficiently established to have general acceptance in its field because the opinions were not based on current methods and peer review.

Recognizing the debate whether the *Frye* test remained valid after the adoption of the Federal Rules of Evidence,<sup>84</sup> the Supreme Court heard the *Daubert* case and concluded that the Federal Rules had indeed superseded the *Frye* standard.<sup>85</sup> The Court asserted that "[i]n principle, under the Federal Rules no common law of evidence remains. . . . In reality, of course, the body of common law knowledge continues to exist, though in the somewhat altered form of a source of guidance in the

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77. *Id.* at 2793.

78. *Id.* at 2791, 2793. The Court's decision with regards to the superseding effect of the Federal Rules was unanimous. However, Chief Justice Rhenquist, joined by Justice Stevens, dissented in part because they felt that the majority's attempt to interpret the federal rules was premature and should be left for development in future cases. *Id.* at 2799-2800. The case was remanded for further proceedings consistent with the Court's holding. *Id.* at 2799.

79. *Id.* at 2791.

80. *Id.*

81. *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 951 F.2d 1128 (9th Cir. 1991).

82. *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 727 F. Supp. 570 (S.D. Cal. 1989).

83. *Daubert*, 113 S. Ct at 2792. The District Court relied on *United States v. Kilgus*, 571 F.2d 508 (9th. Cir. 1978), which was the version of *Frye* adopted in the Ninth Circuit. *Daubert*, 727 F. Supp. at 572.

84. See, e.g., Roger S. Hanson, *James Alphonso Frye Is Sixty-Five Years Old; Should He Retire?*, 16 W. St. U. L. Rev. 357 (1989); *Proposals for a Model Rule on the Admissibility of Scientific Evidence*, 26 JURIMETRICS J. 235 (1986).

85. *Daubert*, 113 S. Ct at 2793. However, the Court was aware in making its decision that there were arguments on both sides as to *Frye*'s survivability. *Id.* at 2794. Compare *United States v. Williams*, 583 F.2d 1194 (2nd Cir. 1978), cert. denied, 439 U.S. 1117 (1979) (holding that *Frye* is superseded by the rules of evidence); with *Christopherson v. Allied-Signal Corp.*, 939 F.2d 1106, (5th Cir. 1991) (en banc), cert. denied, 112 S.Ct. 1280 (1992) (holding that *Frye* and the rules combined provide a framework for determining admissibility of expert testimony).

exercise of delegated powers.<sup>86</sup> Since “[n]othing in the text of [Rule 702] establishes ‘general acceptance’ as an absolute prerequisite to admissibility . . . [and] . . . the drafting history makes no mention of *Frye*,” the Court found that a rigid general acceptance requirement would be at odds with the liberal thrust of the Federal Rules in favoring opinion testimony.<sup>87</sup>

With the *Frye* test repudiated, seven of the nine justices<sup>88</sup> joined in the second part of Justice Blackmun’s majority opinion in his interpretation of the Rules of Evidence.<sup>89</sup> Parsing Rule 702 into its essential elements, Blackmun concluded that the “subject of an expert’s testimony must be based on ‘scientific . . . knowledge.’ ”<sup>90</sup> Realizing that the mere words “scientific knowledge” left federal judges with little guidance on what types of evidence Rule 702 allowed, the Court articulated four criteria for acceptability: (1) whether the theory can be tested or falsified; (2) whether the theory or technique has been subjected to peer review and publication; (3) the potential rate of error; and (4) the existence and maintenance of standards controlling the technique’s operation.<sup>91</sup>

In summary, the *Daubert* court’s rejection of *Frye* and its interpretation of Rule 702 expanded the scope of admissible scientific evidence. Rather than subjecting the evidence to a general acceptance showing, the evidence need only be based on “scientific knowledge.” The Court determined that this interpretation of Rule 702 was more consistent with the Federal Rules’ general trend in removing evidentiary

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86. *Daubert*, 113 S. Ct. at 2794 (quoting U.S. v. Abel, 469 U.S. 45, 51-52 (1984)). See also *Bourjaily v. United States*, 483 U.S. 171 (1987) (holding that the common law rule is superseded where the Court is unable to find it in the Rules).

87. *Id.*

88. *Id.* at 2791. Justice Blackmun’s opinion was fully joined by Justices White, O’Connor, Scalia, Kennedy, Souter and Thomas. Chief Justice Rehnquist, joined by Justice Stevens, filed an opinion concurring with the decision to find that the Federal Rules superseded *Frye*, but dissenting from further defining any new tests or interpretations of Rule 702.

89. *Id.* at 2795.

90. *Id.* at 2795. The Court further defined “scientific knowledge” through an analysis of the words and their denotation:

The adjective “scientific” implies a grounding in the methods and procedures of science. Similarly, the word ‘knowledge’ connotes more than subjective belief or unsupported speculation. The term “applies to any body of known facts or to any body of ideas inferred from such facts or accepted as truths on good grounds.” (citations omitted).

91. *Id.* at 2797-98. Relating back to *Frye*, the Court recognizes that general acceptance did have a role to play in the evidentiary determination: “Widespread acceptance can be an important factor in ruling particular evidence admissible, and a ‘known technique that has been able to attract only minimal support within the community’ . . . may properly be viewed with skepticism.” *Id.* (citations omitted).

constraints on novel evidence and moving more towards a liberal standard admitting opinion evidence.<sup>92</sup>

b. Implications of *Daubert*

At the outset it is clear that *Daubert* lessened the barriers to the admission of novel scientific evidence by rejecting the general acceptance test of *Frye*. *Daubert* also highlighted the Federal Rules' broad acceptance of opinion evidence.<sup>93</sup> Both of these developments have increased the probability that most courts will admit computer animation into the courtroom under the current standards. However, animations created from inadmissible hearsay evidence remain inadmissible unless they are justified under an exception to this prohibition.<sup>94</sup> If the animation is classified as mere opinion evidence, this safeguard in the Federal Rules is bypassed. In this regard, the *Daubert* Court's liberalization of the standards for scientific and opinion evidence will naturally lead to greater use of these classifications in an attempt to evade any potential hearsay objections.

The Tenth Circuit Court of Appeals noted the implications of *Daubert* for animated evidence in *Robinson v. Missouri Pacific Railroad Co.*<sup>95</sup> In *Robinson*, a video animation of stop motion photography recreated an accident between a car and a moving train<sup>96</sup> After holding that the trial judge did not abuse his discretion by allowing the video animation,<sup>97</sup> the court cited *Daubert* as defining the "trial court's special role as gatekeeper with respect to expert evidence and opinion."<sup>98</sup> Although the *Robinson* court felt the case was "a close one,"<sup>99</sup> the opinion relied on the standards articulated in *Daubert* to find that the crash movements depicted in the animation could have been explained on scientific principles, even

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92. *Id.* at 2794. The Court specifically states that the "rigid 'general acceptance' requirement would be at odds with the Federal Rules and their 'general approach of relaxing the traditional barriers to opinion testimony.' " *Id.* (quoting *Beech Aircraft Corp. v. Rainey*, 488 U.S. 153, 169 (1988)).

93. *Daubert*, 113 S.Ct. at 2794.

94. Generally, animations are based on data that would normally be classified as inadmissible hearsay unless an exception could be found for admitting the evidence. Siegel & Pass, *supra* note 49, at 605. However, Rule 703 allows the admissibility of much that would be inadmissible if it is admitted as expert opinion testimony. FED. R. EVID. 703. For a more detailed discussion, see *infra*, part IV.A. and accompanying notes.

95. 16 F.3d 1083 (1994).

96. Stop-motion photography involves moving actual models by hand and videotaping each scaled movement so that each second is composed of ten frames. The simulation in *Robinson* resulted in a two-minute silent color video reenacting the accident that was the subject of the litigation.

97. *Id.* at 1088.

98. *Id.*

99. *Id.* at 1086.

though the simulation presented certain assumptions made outside the realm of scientific knowledge.<sup>100</sup> The court concluded that the *Daubert* standard was a "flexible one," at least in terms of admitting evidence and of the "trial court's consideration of objections to scientific evidence."<sup>101</sup> The court believed that *Daubert's* flexibility combined with liberal pretrial discovery rules provided the best solution to the situation:

[C]oncerning future similar issues under Rule 702, we suggest that as "gatekeeper" the district court carefully and meticulously make an early pretrial evaluation of issues of admissibility, particularly of scientific expert opinions and films or animations illustrative of such opinions. Recent amendments to the federal discovery rules will permit an early and full evaluation of these evidentiary problems.<sup>102</sup>

#### 4. ADDITIONAL REQUIREMENTS FOR ADMITTING COMPUTER ANIMATION EVIDENCE

##### a. Rule 901—Authentication

Following introduction at trial, Rule 901(a) requires that the proponent of the evidence provide "authentication or identification . . . to support a finding that the matter in question is what its proponent claims."<sup>103</sup> Thus as with other evidence, the animation must be properly authenticated and presented to the court. Rule 901(b) provides, by way of illustration only, the following as an example of authentication: "[e]vidence describing a process or system used to produce a result . . . [may be authenticated by] showing that the process or system produces an accurate result."<sup>104</sup> Most computer animation evidence could be authenticated in this way by presenting expert testimony as to the process used to develop the simulation, accompanied with an explanation of the assumptions, variables and programs the developers used.<sup>105</sup>

##### b. Rule 402—Relevance

Since all evidence presented must meet the relevance test, Rule 401 requires the court to consider the relevance of the animation.<sup>106</sup> The party

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100. *Id.* at 1089.

101. *Id.*

102. *Id.*

103. FED. R. EVID. 901(a).

104. FED. R. EVID. 901(b)(9).

105. Krieger, *supra* note 46, at 96.

106. Under Rule 401, "[r]elevant evidence" means evidence having any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would be without the evidence." Most interpretations of the rule have found that if the evidence advances the inquiry in any

seeking to utilize the computer evidence must show its relevance to the facts that need to be established. Once relevance is established, the evidence is easily admissible through Rule 402, which declares that "all relevant evidence is admissible."<sup>107</sup> The burden then shifts to the opponent of the evidence to show why the evidence should not be admitted once it has been established as relevant.

#### **IV. THE PREJUDICIAL EFFECTS OF COMPUTER ANIMATION AS EVIDENCE**

Rule 403 states, "[a]lthough relevant, evidence may be excluded if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury."<sup>108</sup> The Advisory Committee's Note following the rule states that "[s]ituations in this area call for balancing the probative value of need for evidence against the harm likely to result from its admission."<sup>109</sup> The Note also defines "unfair prejudice" as a "tendency to suggest decision on an improper basis, commonly, though not necessarily, an emotional one."<sup>110</sup>

Some of the objections to admitting computer-animated evidence, for fear of prejudicial effects, include: (1) it can escape clear classification; (2) it confuses the jury and misleads them in their fact-finding role; (3) it creates a handicap to opponents who cannot afford to use the technology; and, (4) it can be readily manipulated in the courtroom, at least for "real time" computer-animated evidence. Taken individually, these objections to admitting computer-animated evidence may not be enough to tip the balancing test against the admission of such evidence. But when considered together, such objections may outweigh the probative value provided by computer-animated evidence. Each objection is discussed separately below.

##### **A. Confusion over the Nature of Computer Evidence**

In some circumstances, computer animation is prejudicial because it lacks a definitive evidential classification. Attorneys seeking to properly introduce their animations may classify their presentations as either demonstrative, scientific, or opinion evidence. These alternative

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way, it will be deemed relevant. MCCORMICK ON EVIDENCE § 185 (E. Cleary ed., 3d ed. 1984).

107. The exact language of Rule 402 states, "All relevant evidence is admissible, except as otherwise provided by the Constitution of the United States, by Act of Congress, by these rules, or by other rules prescribed by the Supreme Court pursuant to statutory authority. Evidence which is not relevant is not admissible." FED. R. EVID. 402.

108. FED. R. EVID. 403.

109. *Id.* Advisory Committee's Notes.

110. *Id.*

classifications by proponents further obscure the nature of the evidence. This potential confusion as to the nature of the evidence increases the danger of confusing the jury and blurring lines between an expert's opinion of the facts and a presentation of the facts themselves.

As mentioned above, hearsay evidence is often admitted after meeting one of the recognized exceptions.<sup>111</sup> However, if this evidence is of a scientific or technical nature, it must also satisfy Rules 702, 703 and the *Daubert* test. On the other hand, if the animation is classified as demonstrative evidence, no such test is required.<sup>112</sup> Therefore, the *Daubert* test of ensuring the reliability of novel scientific evidence, discussed *supra* in section III.B.3., is completely bypassed, removing one more measure of the evidence's reliability.

Federal Rule 702 also opens the door to allow expert testimony that is in a form other than traditional opinion evidence.<sup>113</sup> Rule 702 admits "scientific, technical or other specialized knowledge" if it will "assist the trier of fact to understand the evidence or determine a fact in issue."<sup>114</sup> The important allowance of Rule 702 is that it allows testimony "in the form of an opinion or otherwise."<sup>115</sup> This inclusive standard appears to permit the admission of most computer graphics, whether the animations themselves represent expert conclusions or merely illustrate the basis of opinion by expert testimony.<sup>116</sup>

Consequently, an animation's probative value is compromised by the jury's inability to ascertain what type of evidence it is evaluating. Not only is the line between demonstrative and actual scientific evidence blurred, but the possibility that the animation is nothing more than opinion testimony raises the question of whether the animation is evidence at all. The Rules do not require that the attorneys or the court disclose to the jury the nature of the presented evidence. Without direction, the jury may wrongly assume that whatever the computer shows them is the correct, scientifically-validated answer to the inquiry. This conclusion, of course, may be far from the truth, and essentially removes from the jury their fact-finding role.<sup>117</sup>

Some courts are beginning to address the misclassification techniques proponents have used to introduce computer animations into

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111. See *supra* notes 49-53 and accompanying text.

112. See *supra* notes 54-66 and accompanying text.

113. Krieger, *supra* note 9, at 96.

114. FED. R. EVID. 702.

115. *Id.* (emphasis added).

116. Krieger, *supra* note 9, at 96.

117. If computer animation is presented as a scientific process in which the laws of physics and science are incorporated, the jury may look to the computer for the answer, rather than view the animation as a visual depiction of counsel's opinions or theories about the case.

evidence. For example, the Court of Appeals of Arizona in *Bledsoe v. Salt River Valley Water Users' Assoc.*<sup>118</sup> held that the trial court had erred in permitting counsel to employ a computer animation during closing argument because it was misclassified.<sup>119</sup> At trial, the proponent argued that the evidence was for demonstrative purposes, and the trial court agreed, although it was "a more sophisticated way of presenting his theory as to how the accident happened."<sup>120</sup> However, the Court of Appeals ruled that the animation should not have been classified as demonstrative evidence because it was more like a depiction of a computer expert's opinion of how the accident happened.<sup>121</sup> Therefore, the court held that counsel was required to lay the foundation for those opinions prior to their introduction, and opposing counsel should have been permitted to cross-examine the expert about them.<sup>122</sup>

Misclassifying the nature of computer evidence prejudicially affects the judicial process in several ways. First, it unduly confuses the jury as to whether the evidence is demonstrative or scientific. Secondly, it allows an astute party to avoid the trustworthiness requirements of the hearsay rule by entering substantive evidence under the guise of demonstrative evidence. Lastly, it completely avoids the evidentiary requirements established to ensure the reliability of the novel scientific evidence presented.

## B. Problems Inherent in the Process and the Technology

The problems in the animation process affect the judicial system in two ways. First, the fact-finder is often unaware of the unconscious biases and necessary assumptions made by the animation's creator and, therefore, the fact-finder cannot reach a fully informed decision.<sup>123</sup> Second, juries may surrender their role as fact-finder by accepting computer evidence as a factual conclusion.<sup>124</sup>

### 1. THE BIASES INHERENT IN THE ANIMATION PROCESS

Far from the simple input/output decisions that the *McHugh* court used to characterize computer-generated evidence, computer animation is a long process that involves human speculation and assumptions at each

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118. 880 P.2d 689 (Ariz. Ct. App. 1994).

119. *Id.* at 691.

120. *Id.*

121. *Id.*

122. *Id.*

123. *Id.*

124. See *infra* notes 142-152 and accompanying text.

stage of development.<sup>125</sup> Even the most conscientious animator must make assumptions in order to provide for a continuous simulation of the events alleged to have taken place.<sup>126</sup>

The animation process generally involves six steps. The first step is to collect the data for the animation.<sup>127</sup> The developer gathers data from a wide variety of sources, some more accurate than others. These sources include police reports, public records, witness interviews, depositions, expert investigations, and photographs.<sup>128</sup> The second step is to storyboard each frame, "a process by which key events are sketched out and words are added to the still images to describe the motion that is proposed for animation."<sup>129</sup> The third step involves actually drawing, composing or building the image models that will be used in the animation on the computer.<sup>130</sup> Once these images are complete, the animator next must script the movement of the images on a time line that marks the occurrence of certain events.<sup>131</sup> The fifth step is rendering, in which the computer fills out the images appearing in each frame of the animation by incorporating the variables established in the program.<sup>132</sup>

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125. J. Stratten Shartel, *Caution is Warranted in Use of New Technologies in Court*, PRENTICE HALL LAW AND BUSINESS, May 1992, at 3.

126. *Id.*

127. Muir, *supra* note 66 at 591.

128. *Id.* The list of sources is not exhaustive. However, from just this list, it is clear that the evidentiary basis of the animation immediately subjects it to hearsay analysis. Further, the danger in classifying the evidence as "demonstrative" is evident since a collage of potentially inadmissible evidence may be admitted without meeting any of the hearsay exclusions or exceptions. *See discussion, supra*, at Part IV.A.

129. *Id.*

130. *Id.* There are three ways in which these images are constructed. One method is to use a digitizer, which is akin to an electronic drawing pad that senses the movement of an electronic pen and duplicates the images onto a computer, but in three-dimensional quality. The second instrument used is a three-dimensional digitizer. The object is placed on the digitizer and points are touched, with the computer drawing it based on its distance and depth from the last point touched. The third method is to employ a Computer Aided Design (CAD) program to draw a three-dimensional wireframe model on the computer, and then allow the computer to animate it. Whatever process is used, the animator can then apply textures and colors from the computer's library of characteristics. For example, once an object has been imaged, say a couch, the animator can then assign a plush cloth texture to it and color it gray. *Id.*

131. *Id.* This process of placing events on a time line usually is done by closely following the data collected as to times and locations of events or objects. The rendering process fills in the gaps between one occurrence and the other. *Id.*

132. *Id.* While the rendering process is a "hands-off" process for the animator, and one example of where the computer is "acting on instructions at lightning speed," *McHugh*, 476 N.Y.S.2d at 723, it is still completely dependent on the data input. Therefore, the potential for bias is still inherent in even the most computer-based step of the process.

The frames are then assembled to form a continuous animation which is placed onto either videotape or laser disc.<sup>133</sup>

Assumptions, speculation and opinions by experts are accepted by the rules of evidence,<sup>134</sup> but should be closely scrutinized nonetheless. Within the confines of thirty frames for each second of videotape animation, there is room for tampering with the evidence.<sup>135</sup> To a certain degree, cross-examination of the expert animator will alleviate this problem, but intentional tampering easily can be hidden within the 1800 frames contained in just one minute of animation. However, absent any bad faith attempt to alter the evidence, there still remains a great deal of data collection, human judgment and speculation at each step of the animation process. Therefore, the contention that the computer's process is an objective one is not tenable.<sup>136</sup> Parties seeking to object to the admission of computer evidence at trial should keep this fact in mind, as well as the fact that if the animation is admitted as anything—as for example demonstrative or illustrative evidence—other than substantive evidence, much of the hearsay evidence that underlies the animation will be admitted as well without any scrutiny by the court<sup>137</sup>

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133. *Id.* For real time animations, frames are kept in the computer's memory. The computer then readjusts viewpoints and positions by recalling from its large catalog of previously-rendered frames the correct one to place next in the animation sequence. Each second of animation contains thirty rendered frames. *Id.*

134. FED. R. EVID. 702. Rule 702 states that "[i]f scientific, technical or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise." *Id.*

135. Edmund B. Sabato, *Visuals for Expert Testimony 'Beyond the Blackboard,'* THE LEGAL INTELLIGENCER, July 26, 1993, at 4. Sabato, manager of Graphic Services, an engineering and consulting firm specializing in graphic design, technical illustration, and video presentation, states that even photographs can be digitally altered before being animated. He also states:

Although the technology has existed for years to airbrush, merge and alter photographs, the ability to do it quickly and undetectably has not. Image manipulation that used to require six-figure workstations and cost tens of thousands of dollars now cost hundreds. Still-video cameras allow a photographer to take pictures, edit their content, and display them on a TV monitor within minutes, without ever going to film.

*Id.*

136. Deciding a case that has been characterized as "[t]he leading case dealing with the independent use of a computer simulation," the *McHugh* court relied upon the objectivity of the animation process. Siegel & Pass, *supra* note 49, at 605

137. FED. R. EVID. 703. Rule 703 states in relevant part that, "[i]f of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject, the facts or data need not be admissible in evidence." *Id.* In regards to the sweeping admissibility this Rule could offer, the Advisory Committee's Note states that "[i]f it be feared that enlargement of permissible data may tend to break down the rules of exclusion unduly, notice should be taken that the rule requires that the facts or data 'be of a type reasonably relied upon by experts in the particular field.'" *Id.* Advisory Committee's Note. Of course, what is reasonably relied on becomes a question of fact, and

The case of *Sommervold v. Grevlos*<sup>138</sup> illustrates the inaccuracies that animations can contain. In *Sommervold*, the Supreme Court of South Dakota affirmed a trial court's decision to exclude the computer animation evidence because of its prejudicial nature and the inaccuracies which it contained.<sup>139</sup> The court found that the animation, recreating an accident involving two bicycles, was not similar enough to the actual events or the testimony to be admissible.<sup>140</sup> In upholding the exclusion of the evidence based on prejudice, the court echoed the trial court's decision that "[a] video recreation of an accident . . . stands out in the jury's mind. So it emphasizes that evidence substantially over . . . ordinary . . . spoken testimony."<sup>141</sup>

As stated above, problems with the process and technology in creating computer animation may create prejudicial effects. First, because computer animation involves assumptions, speculations, and opinions at each step of the process, it really should not be classified as either demonstrative or scientific evidence. Second, computer animation easily may be tampered with, and the detection of a tampered animation is difficult. While computer animation is impressive and most likely the wave of the future, its foundations remain the people who design the animation; these foundations retain a collage of prejudicial elements capable of evading the Federal Rules of Evidence if courts do not subject them to proper scrutiny.

## 2. RISK OF JURY MISTAKING ALL COMPUTER EVIDENCE AS FACT

Some courts have viewed computer evidence as merely a "mechanical tool"<sup>142</sup> for the presentation of evidence. For example, the Supreme Court of New York in *McHugh* found that computers were only

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is most likely to be resolved by looking at the test for novel scientific evidence found in *Daubert*. But in regards to the data most relevant to computer animations, the Advisory Committee's Note goes on to say that "[t]he language would *not* warrant admitting in evidence the opinion of an 'accidentologist' as to the point of impact in an automobile collision *based on statements of bystanders*, since this requirement is not satisfied." *Id.* (emphasis added) This last point is of great importance since every animator, as an expert 'accidentologist' or reconstructionist, many times relies mostly on the facts and data supplied by witnesses. The Advisory Committee's Note therefore implies that this practice should not allow the party to evade the exclusionary rules, which in this case would be the hearsay doctrine.

138. 518 N.W.2d 733 (1993).

139. *Id.* at 738.

140. *Id.* The animation misrepresented the speed of the bicycles, wrongly depicted the light that was cast from a nearby streetlight, and showed the wrong location of the injuries to riders. *Id.*

141. *Id.*

142. *McHugh*, 476 N.Y.S.2d at 722.

"receiving information and acting on instructions at lightning speed"<sup>143</sup> in the presentation of factual evidence. As popular as this view may be, it is misinformed. This view encourages jurors to surrender their role in factual determinations and allow the computer to resolve the factual disputes in the case.

*People v. Mitchell*,<sup>144</sup> provides an example of the risk in adopting such a view. In the case, James Mitchell was convicted for the murder of his brother, Artie Mitchell, despite James's claim that he acted in self-defense.<sup>145</sup> The prosecution used computer animation to show that, because of Artie's location behind a wall, James could not have seen any threatening gestures made by Artie.<sup>146</sup> The original animation portrayed Artie walking down the hallway with his hands at his sides.<sup>147</sup> Upon defense counsel's objection, the judge ordered that the animation be altered several times, ultimately replacing the human-like figure representing Artie with that of a geometric shape to avoid the risk that the jury might assume as proven fact the position of Artie's hands in the animation.<sup>148</sup> The *Mitchell* case illustrates that computers do not merely spit out factual information "acting on instructions at lightning speeds."<sup>149</sup> Instead, they reflect the theories and opinions advanced by counsel, based on assumptions and speculation.<sup>150</sup>

The Federal Rules of Evidence were primarily drafted because of a mistrust of unrestrained juries and the methods they might utilize in reaching a decision.<sup>151</sup> They were also drafted to "ensure accurate fact-finding."<sup>152</sup> If evidence were allowed without considering these concerns, it would violate the primary purpose of the Federal Rules.

### C. Sensory Impact on Jury

The fact that computer-animated evidence is gaining acceptance reflects its influence on juries. Jurors respond almost uniformly in favor

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143. *Id.* at 723.

144. No. 12462, Marin County Superior Court, California (1992).

145. *Id.*

146. *Id.*

147. Shartel, *supra* note 125, at 3.

148. *Id.* Defense counsel objected because there was no evidence as to how Artie positioned his arms or his body as he walked down the hallway. *Id.*

149. *McHugh*, 476 N.Y.S.2d at 723.

150. Shartel, *supra* note 125, at 3.

151. MUELLER & KIRKPATRICK, *supra* note 19, at 1. The authors state that "[it] sounds strange in a republic which places great faith in the jury system, but mistrust of juries is the single overriding reason for the law of evidence." *Id.*

152. *Id.* at 2.

of computer animation in the courtroom.<sup>153</sup> Exposed to computer animation on television and in the movies, jurors are accustomed to receiving information through this medium.<sup>154</sup> Studies measuring jurors' information retention have shown that jurors were able to recall sixty-five percent of the evidence presented three days earlier if the evidence was presented through a combination of oral and visual evidence.<sup>155</sup> Where only oral evidence was presented at trial, jurors were able to retain only ten percent of the evidence.<sup>156</sup> Studies also have shown that jurors focused primarily on the visual evidence used during trial.<sup>157</sup>

The findings from these studies prompted at least one court to preclude the use of computer-animated evidence. In *Racz v. R.T. Merryman Trucking, Inc.*,<sup>158</sup> the district court held the risk of unfair prejudice to the plaintiff from the defendant's computer-animated recreation of the accident at issue in the trial outweighed the relevance of the evidence.<sup>159</sup> The court recited the old adage, "seeing is believing," in concluding that the jury might give undue weight to a computer recreation.<sup>160</sup> The court asserted, "[b]ecause the expert's conclusion would be graphically depicted in a moving and animated form, the viewing of the computer simulation might more readily lead the jury to accept the data and premises underlying the defendant's expert's opinion, and, therefore, to give more weight to such opinion."<sup>161</sup>

Critics contend that computer animation encourages juries to suspend their skepticism. Brian Stonehill, the director of media studies at Pomona College in Claremont, California, found that computer animation "works on a visceral level that quite easily bypasses skeptical, rational faculties."<sup>162</sup> Computer animation "creates pseudo-memories of the

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153. Bruce G. Vanyo, *Communicating with 'Post Literate' Jury: Advanced Graphic Exhibits in Patent Trials*, PLI Order No. G4-3892, Mode 349 PLI/Pat 409 (1992).

154. *Id.*

155. Rebecca White Berch, *A Proposal to Amend Rule 30(B) of the Federal Rules of Civil Procedure: Cross-Disciplinary and Empirical Evidence Supporting Presumptive Use of Video to Record Depositions*, 59 FORDHAM L. REV. 347, 356 (1990).

156. *Id.*

157. Dennis Robert Anti and Susan Solomon Seif, *Demonstrative Evidence Can Be Most Effective When it is Kept Simple*, THE NATIONAL LAW JOURNAL, Aug. 2, 1993, at 32.

158. 1994 WL 124857 (E.D. Pa. 1994).

159. *Id.* at \*5.

160. *Id.* At the same time, the court found biases in the way that the animation was created. The court was particularly concerned with a decision by the reconstructionist to discount the testimony of one of the witnesses who reported facts unsympathetic to the proponent of the animation. *Id.*

161. *Id.*

162. Claire Cooper, *Computer Animation on Trial*, THE SAN DIEGO UNION-TRIBUNE, Jan. 27, 1993 at E-1.

event" and the "memorability of having witnessed the crime itself [or event in dispute], but [with] no validity in fact."<sup>163</sup>

The powerful impact of computer animation on juries is not enough reason by itself to declare such evidence prejudicial because courtroom advocacy often demands that a powerful impact be made. The Federal Rules of Evidence, however, define "unfair prejudice" as evidence resulting in the undue tendency to suggest decision on an improper basis, commonly, though not necessarily, an emotional one.<sup>164</sup> This would certainly apply to evidence which is more convincing merely because it appeals to jurors on a visceral level. A decision based on visceral impact is arguably just as bad as a decision based on emotion.

#### D. Prejudicial Effects of Not Using the Technology

The visceral influence of computer-animated evidence on jurors is compounded when an opposing party does not use animation at trial. Studies have found:

[I]f there is any juror prejudice relating to the use of advanced graphics it appears directed against the party which does not use them. In a number of cases where advanced graphics were used by one side, in post-trial interviews the jury praised the use of video exhibits and . . . criticized the other side for not presenting similar materials.<sup>165</sup>

Thus, a party opting to present a traditional case will often be prejudiced by the use of computer-animated evidence by the other side.

Cost is often the reason parties forego the use of computer-animated evidence. While computer animation has become more affordable in recent years,<sup>166</sup> the technology remains relatively expensive and is primarily used only by wealthier parties to a lawsuit or criminal trial.<sup>167</sup> In criminal cases, the prohibitive cost of computer-animated evidence will favor the prosecution, which has the state's resources at its disposal against usually less wealthy defendants.<sup>168</sup> A related concern is that litigants with limited budgets may be compelled to settle rather than seek a trial on the merits when facing opponents who are able to afford animated graphics.<sup>169</sup>

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163. *Id.*

164. *Id.* (emphasis added).

165. Vanyo, *supra* note 153, at 409.

166. See *supra* note 23 and accompanying text.

167. Shartel, *supra* note 125, at 2.

168. *Id.* at 3.

169. *Id.* See also Gordon Walker, *Show Time: Courtroom Technology is Finally Hitting its Stride - And Litigators are Finding that it has a Potent Effect on Judges and Juries*, TEXAS LAWYER, May 24, 1993 at 7 ("because the technology is still so expensive, often one side can afford it while the other can't, giving one side a potential unfair advantage"). A related concern is that parties, faced with the need to produce a \$20,000 animation to meet the

The sure winners from the use of computer-animated evidence are the engineering and computer design firms that produce the technologically enhanced evidence. If counsel on one side decides to use computer animation, opposing counsel will feel compelled to present its own animation. At a minimum, a party facing an opponent presenting computer-animated evidence will seek out an expert witness to rebut such evidence. Not surprisingly, the same firms that create computer-animated evidence also provide expert witnesses challenging the accuracy of such evidence.

### E. The Expansion Into "Real-Time" Animation

The powerful appeal of computer animation to jurors' sensory perceptions combined with an opposing party's lack of such technology begins to tip the scale against admitting such evidence. These effects are true for even the most basic "pre-recorded" computer animation. Such evidence is produced before trial, recorded on videotape and played back to the jury in an immutable form.

Computer-animated evidence, however, has become increasingly more sophisticated with the advent of "real-time" animation. Real-time animation allows counsel to manipulate the visual images in the court room, so that jurors can be shown an animated sequence from a variety of viewpoints and configurations.<sup>170</sup> With real-time animation, counsel is able to instantly perform these manipulations with a device such as a joystick or mouse.

Real-time animation also gives counsel the ability to change the animation at any time during testimony so that it may be used to test out an opposing party's claims.<sup>171</sup> For example, if an attorney presenting computer animation depicts a witness standing thirty-five feet from the scene of an accident and opposing counsel contends the witness was fifty feet away, the attorney can adjust the animation so that it depicts the witness fifty feet from the accident. The manipulation may be made in a matter of seconds through the use of a computer. This powerful tool, however, can certainly lead to prejudicial results. Since real-time animation allows counsel to instantaneously change the nature of the

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other side's presentation, will opt for settlement, preventing litigation of the issue for economic reasons.

170. Marshall S. Turner and Andrew T. Houghton, *In With the Old, In With the New; Interactive Animations Are Wave of the Future*, NEW YORK LAW JOURNAL, Feb. 16, 1993, at S-1. Real time animation is best illustrated by the following example:

At any point during the presentation . . . of an automobile accident, the visual depiction can be changed from an overhead view, to the driver's view, to the position of an eyewitness at the time of the accident.

*Id.*

171. *Id.*

evidence before the jury, there is no opportunity for the judge to decide whether to exclude a particular viewpoint or construction because it is prejudicial. Similarly, opposing counsel will be unable to view the evidence before it is shown to the jury, and can only object after harm has occurred.

The Advisory Committee's notes to Rule 403 noted that "[i]n reaching a decision whether to exclude [evidence] on grounds of unfair prejudice, consideration should be given to the probable effectiveness or lack of effectiveness of limiting instruction[s]."<sup>172</sup> Courts have specifically found that limiting instructions fail to eliminate the egregious prejudicial effect from evidence such as codefendant confessions.<sup>173</sup> Courts may also be persuaded that limiting instructions are inadequate for screening out the prejudicial effects of computer-animated graphics.

## V. RECOMMENDATIONS

Computer animation is a hybrid of scientific, demonstrative, and opinion evidence. It does not fit comfortably into any one category, though it shares elements with each of these categories of evidence. Such technology, however, should not be kept out of the courtroom simply because it does not fit into the existing scheme of evidentiary rules. Instead, the judiciary should accommodate computer technology and design new rules for dealing with this new and unique form of evidence.

Most courts have attempted to fit computer animation into existing categories of evidence, but such an approach clearly fails to safeguard against the prejudicial effects of this new form of evidence. For example, in *Kudlacek v. Fiat*,<sup>174</sup> the Supreme Court of Nebraska treated computer-generated models and simulations like other scientific tests, conditioning their admissibility on a sufficient showing that "1) the computer is functioning properly; 2) the input and underlying equations are sufficiently complete and accurate (and disclosed to the opposing party, so that they may challenge them); and 3) the program is generally accepted by the appropriate community of scientists."<sup>175</sup>

The flaw in this approach is that computer animation is an entirely different method of presenting testimony. Judges are quite capable of ruling on complicated issues arising from oral testimony. Computer

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172. FED. R. EVID. 403 Advisory Committee's Note (emphasis added).

173. See *Bruton v. United States*, 391 U.S. 123, 142 (1968) (holding that a limiting instruction did not effectively protect the accused against the prejudicial effect of admitting in evidence the confession of a codefendant which implicated him).

174. 509 N.W.2d 603 (1994). The case involved an automobile passenger who was injured. The plaintiff brought a products liability action against the manufacturer of the car, asserting defective design claims. A computer-generated model was used by the plaintiff at trial and became the partial basis for the defendant's appeal. *Id.* at 607-08, 617.

175. *Id.* at 617.

animation, however, is a visual form of testimony that has unique psychological effects not associated with other forms of evidence. Computer animation thus requires an evidentiary standard that takes into account these unique effects.

Such a standard should be expressly articulated in the Federal Rules of Evidence, making courts across the nation aware of the special problems associated with evidence in the form of computer animation. Explicit inclusion in the rules of evidence will help the courts respond to the increasing use of such evidence.

### A. Developing Guidelines for the Use of Animation

While the structure of the Federal Rules is flexible enough to apply to new types of evidence,<sup>176</sup> the special challenges that computer-animated evidence presents, as well as its hybrid nature, suggest that it should be treated separately from other types of evidence. To achieve such a goal, the following guidelines, standards and limitations should be adopted whenever dealing with computer animation.

#### 1. *FORMULATING A STANDARDIZED CLASSIFICATION FOR THE EVIDENCE*

Whether computer animation is classified as either strictly demonstrative, scientific or opinion, the animation should be classified uniformly among all jurisdictions. For example, if computer animations are defined as scientific evidence, then all jurisdictions should require experts to testify alongside the animation in court. If computer animation cannot be classified uniformly, then judges should deal with each piece of computer evidence in a motion in limine at the start of the trial. However, judges should be knowledgeable enough to recognize when a crafty attorney is trying to admit scientific evidence under the guise of mere "visual aids." Whatever is done, it is clear that future attempts to standardize criteria for defining computer-animated evidence will bolster the legitimacy of using the technology in the courtroom.

#### 2. *PRELIMINARY EVIDENTIARY DECISIONS ON ADMISSIBILITY*

A computer animation should be submitted before trial both to the judge for review and approval, and to the opposing counsels to examine the animation, consider its admissibility, and object if necessary. Regardless of how computer animation is classified, judges will be the

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176. For example, Rule 803(24) is expressly designed for this purpose. FED R. EVID. 803(24) Advisory Committee's Note. See also *supra* note 53 and accompanying text.

ultimate authority on the admissibility of the animation. Therefore, judges should be knowledgeable enough to distinguish among the various types of computer animations presented to them before ruling on the matters in a motion in limine.

Among the guidelines and criteria that should be considered to ascertain an animation's admissibility are the following: (1) the danger of misleading or confusing the jury pursuant to Rule 403, or causing them to make a decision merely on a sensory basis; (2) the prejudicial effect of the animation, including its similarity to alleged or actual events, places and persons; (3) the harm to the opposing party if the animation is admitted; (4) the harm to the proponent of the animation if the animation is excluded; (5) the accuracy and reliability of the assumptions used in the animation; and (6) the trustworthiness of the process employed to create and present the animation.

Animations that are capable of being altered or run in a "live" format—real-time animations—should not be allowed unless there is a showing by clear and convincing evidence that the possibility of altering the image will not unduly prejudice the opposing side. Since juries are strongly affected by visual evidence, the prejudicial effect of an improper viewpoint shown live in the courtroom cannot be undone. In these instances, a limiting instruction by the judge, instructing the jury to disregard the highly-prejudicial image would be largely ineffective.

### *3. INSTRUCTIONS TO THE JURY ABOUT COMPUTER EVIDENCE*

To ensure the reliability of a jury trial, judges should forewarn jurors of the nature of the computer evidence being presented. If the evidence is being offered strictly as a visual aid, the jurors should be aware of such a fact. If an expert or other witness intends to use the animation as an illustration of her testimony, this too should be made clear to the jury. Also, if the animation is a true scientific animation, one which uses the laws of physics, engineering and mathematics, then the jury should be informed of the assumptions that are inherent in the animation. Thus, just as a jury is cautioned that a closing argument is partly the attorney's opinion and not necessarily factual evidence, a jury viewing a computer animation should be forewarned about the use of such evidence.

### **B. Meeting these Goals at the Present Time**

Until these evidentiary standards, guidelines and limitations can be drafted into the Rules, the burden of ensuring fairness in trial proceedings rests on the judges who preside over them. If an animation is admitted, current practice still mandates that an expert testify

alongside the evidence, and vigorous cross-examination of that individual is necessary to ensure that the animation is what it purports to be.<sup>177</sup> During cross-examination, the opponent of the animation should be allowed to demonstrate to the jury that the events portrayed in the animation are based, at least partially, on assumptions and conjectures, and not on purely objective, scientific factual determinations.

Computer technology has revolutionized such diverse areas as telecommunications, document production, education, household appliances, automotive engineering, movie making and office automation. The next frontier seems to be the courtroom, and the technology is rapidly taking root. At a time when trials are becoming more complex, and both the public and other government entities are pressing to speed up the pace of the judicial system, computer animation technology can be very useful in expediting the process of presenting evidence to the jury. However, the American judicial system does not sacrifice fairness and proper safeguards to produce efficiency gains, and it should not start now.

## VI. FUTURE TECHNOLOGIES AND THE CONTINUED GROWTH OF THE PREJUDICIAL EFFECT

This Comment has primarily focused on computer animation. The greatest opportunities for attorneys using digital demonstrative evidence, however, lies in future technologies being developed by virtual reality innovators.<sup>178</sup> Computer programmers work constantly to both utilize and master this new technology to help construct a new world which they envision.<sup>179</sup> Advances in the quality and quantity of computer animation and virtual reality will likely come as computer speeds

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177. See *supra* note 67 and accompanying text.

178. Virtual reality has been defined in the following ways:

[A]n evolving technology that transports a person into a computer-generated, three-dimensional environment. A helmet with sensory devices and electronic goggles is the entryway to the artificial world. Once inside, players employ joysticks, backpacks, electronic pods and other equipment to interact with the simulated world.

Thomas Heath, *Shoppers Jump Headfirst Into the Nearly Futuristic; Mall Presents Virtual Reality in the Rough*, THE WASHINGTON POST, Aug. 29, 1993, at B-3. It has also been described as "[a]n interactive technology that creates an illusion, still crude rather than convincing, of being immersed in an artificial world. The user generally dons a computerized glove and a head-mounted display equipped with a TV screen for each eye." TIME, Feb. 8, 1993, at 58.

179. Miriam Horn, *Seeing the Invisible*, U.S. NEWS AND WORLD REPORT, Jan 28, 1991, at 56. This new world includes entire virtual reality cities where people can join through computer hookups to meet in this new digital world. *Id.* Virtual reality, when it comes into full fruition, will be used in such diverse areas as medicine, test piloting, entertainment and motion pictures, sports conditioning, military maneuvers, and space exploration. *Id.*

increase and new media storage devices become more readily accessible and adaptable to personal computers.

This developing technology seeks to actually project the viewer into a separate "reality."<sup>180</sup> The computer senses the viewer's movements and readjusts the entire reality to reflect the movement. In the courtroom of the future, virtual reality could transport the jury into any setting the attorney wishes, and it can replace verbal testimony with visual recreation of any "reality" the attorney or expert witness conjures up. With these leaps in animation technology, many litigators are waiting for the day when "jurors will be transported back to the scene of an accident simply by wearing a special helmet."<sup>181</sup>

Today's impressive computer animations will be no match for tomorrow's ability to travel in time or space through a man-made version of the facts. The coming technology could allow jurors to actually become fact "investigators" in the true sense of the word, rather than fact determiners.<sup>182</sup> In the least, it will provide such a realistic experience for the jury that concerns about the veracity of the proffered testimony will become secondary to the juror's sensory experiences. If the rules on prejudicial testimony, such as Rule 403, are to have any meaning in our evidentiary systems, then the judiciary and the bar must begin to recognize and address the problems that are inherent in the present and future state of computer animation technology.

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180. Persons venturing into virtual reality enter a computer-generated world in which humans can "walk" and "touch" things, interacting with the artificial environment. Mark Potts, *Future Fixtures, or Flops? Some Educated Guesses About Which of the New Consumer Technologies Will Survive*, THE WASHINGTON POST, Dec. 27, 1992, at H-1.

181. Walker, *supra* note 169, at 7.

182. Not since early common law England have jurors been allowed to investigate, ask questions, or participate in the presentation of a case. However, the coming technology of virtual reality will remove jurors from being passive viewers in the jury box, and transform them into active investigators and participants in the unfolding of each case.

