

# THE USE OF TECHNICAL EXPERTS IN SOFTWARE COPYRIGHT CASES: RECTIFYING THE NINTH CIRCUIT’S “NUTTY” RULE

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## ABSTRACT

Courts have long been skeptical about the use of expert witnesses in copyright cases. More than four decades ago, and before Congress extended copyright law to protect computer software, the Ninth Circuit in *Krofft Television Productions, Inc. v. McDonald’s Corp.* ruled that expert testimony was inadmissible to determine whether Mayor McCheese and the merry band of McDonald’s characters infringed copyright protection for Wilhelmina W. Witchiepoo and the other imaginative H.R. Pufstuf costumed characters. Since the emergence of software copyright infringement cases in the 1980s, substantially all software copyright cases have permitted expert witnesses to aid juries in understanding software code. As the Second Circuit recognized in *Computer Associates International, Inc. v. Altai, Inc.*, the ordinary observer standard “may well have served its purpose when the material under scrutiny was limited to art forms readily comprehensible and generally familiar to the average lay person,” but as to computer programs, district courts must have “discretion . . . to decide to what extent, if any, expert opinion, regarding the highly technical nature of computer programs, is warranted in a given case.”

In a shocking departure from the decisions of every other circuit that has confronted software copyright infringement litigation, the Ninth Circuit reaffirmed and applied the bar on expert testimony originating in *Krofft Television Productions* to all copyright disputes, including those involving highly technical computer software code. The court in *Antonick v. Electronic Arts, Inc.* held that lay juries must decipher and analyze software code—distinct hexadecimal assembly code languages for different processors—without the assistance of expert witnesses, a rule that the authoring judge characterized at the oral argument as “nutty.”

The Ninth Circuit’s rule overlooks the key distinction between the use of technical experts to *analyze* substantial similarity as opposed to enabling lay judges and jurors to *perceive* the underlying works. Just as it would be absurd to ask a lay jury with no familiarity with Kanji characters to assess whether a translation of HARRY POTTER AND THE PHILOSOPHER’S STONE into Japanese infringed the English original without the aid of a bilingual translator, it makes no sense to ask a non-technical jury to compare computer source codes written in different assembly languages to determine substantial similarity without expert assistance. We contend, consistent with the views of every court outside of the Ninth Circuit that has addressed the issue, that courts should permit the use of technical experts to enable lay judges and juries to perceive the meaning of computer languages and computer code.

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### I. INTRODUCTION

Copyright law has long relied on the views of lay audiences to assess the critical infringement question: whether the defendant’s work is substantially similar to protected elements of the plaintiff’s work of authorship. The Seventh Amendment right to a jury trial reinforces lay juries’ role in resolving copyright cases. For much of U.S. history, lay jurors were capable of comparing literary and artistic works through direct observation of the manuscripts, pictures, and sculptures. Copyright law achieved a democratic

character. Subject to the jury instructions regarding the contours of the law, a diverse group of lay people assesses infringement if either party so requests.

Consequently, courts have long been skeptical about the use of expert witnesses in copyright cases. Courts have long allowed experts to assist in the objective assessment of which aspects of the copyrighted work are protectable. All the same, courts have also prohibited experts from assisting the fact-finder in comparing the works in question to determine substantial similarity of protected expression—the subjective or intrinsic inquiry. With the extension of copyright protection to computer software, however, the Second Circuit recognized that while the ordinary observer standard “may well have served its purpose when the material under scrutiny was limited to art forms readily comprehensible and generally familiar to the average lay person,” district courts must have “discretion . . . to decide to what extent, if any, expert opinion, regarding the highly technical nature of computer programs, is warranted in a given case.”<sup>1</sup> Most other circuits to confront software copyright cases came to the same conclusion.<sup>2</sup>

In a shocking departure from the decisions of every other circuit that has confronted software copyright infringement litigation, the Ninth Circuit has continued to bar expert testimony on the intrinsic test in cases involving highly technical computer software code. It held in *Antonick v. Electronic Arts, Inc.* that lay juries must decipher and analyze software code—distinct hexadecimal<sup>3</sup> assembly code languages for different processors—without the assistance of

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1. *Comput. Assocs. Int'l, Inc. v. Altai, Inc.*, 982 F.2d 693, 713 (2d Cir. 1992).

2. *See, e.g., Gates Rubber Co. v. Bando Chem. Indus.*, 9 F.3d 823, 834–35 (10th Cir. 1993) (“[W]e decline to set forth any strict methodology for the abstraction of computer programs. . . . [W]e foresee that the use of experts will provide substantial guidance to the court in applying an abstractions test.”).

3. Hexadecimal provides a convenient way of representing binary information, which is very important for computer systems. Computer systems store information in arrays of on/off switches. Thus, the basic unit of information in computer systems is a binary digit (“0” or “1”) or “bit.” *See generally Bit*, WIKIPEDIA, <https://en.wikipedia.org/wiki/Bit> (last visited Aug. 29, 2020). Hexadecimal features a base of sixteen symbols (“0”–“9,” “A”–“F”) as opposed to the more common decimal (“0”–“9”) system. *See generally Hexadecimal*, WIKIPEDIA, <https://en.wikipedia.org/wiki/Hexadecimal> (last visited Aug. 29, 2020). Hence, hexadecimal symbols provide a human-friendly representation of binary-coded values. Each hexadecimal digit represents four binary digits, also known as a “nibble,” which is half a byte. A “byte” is a unit of digital information that most commonly consists of eight bits. *See generally Byte*, WIKIPEDIA, <https://en.wikipedia.org/wiki/Byte> (last visited Aug. 29, 2020). Historically, the byte was the number of bits used to encode a single character of text in a computer and for this reason was the smallest addressable unit of memory in many computer architectures. For example, a single byte can have values ranging from 00000000 to 11111111 in binary form, which can be conveniently represented as 00 to FF in hexadecimal.

expert witnesses,<sup>4</sup> a rule that the authoring judge characterized at the oral argument as “nutty.”<sup>5</sup>

This Article explores the role of technical experts in copyright cases. Part II traces the history of expert witness skepticism in copyright infringement analysis. Part III discusses the departure from that skepticism in software copyright cases in most circuit courts. Part IV surveys the Ninth Circuit’s unusual infringement jurisprudence. Part V then extensively and critically examines *Antonick v. Electronic Arts, Inc.*, which prohibited the use of expert witness testimony to assist a jury deciphering complex computer languages. Part VI contends the time is long overdue for the Ninth Circuit, home to much of the computer software industry, to join the chorus of other circuits that allows expert witnesses to assist juries in perceiving complex computer programs.

## II. THE HISTORICAL ROOTS OF EXPERT WITNESS SKEPTICISM

The earliest use of expert testimony in adversarial common law litigation is usually traced back to 1782 and Chief Justice Mansfield’s famed decision in *Folkes v. Chadd*.<sup>6</sup> Scholars have long regarded this case as having developed the “foundation” for the rules governing expert witnesses.<sup>7</sup> *Folkes* was a property dispute, and the witnesses involved in the case were primarily engineers. In permitting the court to receive their testimony, Justice Mansfield developed the position that the opinions of experts when “formed on facts was very proper evidence.”<sup>8</sup> Even though *Folkes* was not a copyright case, Justice Mansfield’s role in it is noteworthy given his prominence at the time, especially in the world of copyright law.<sup>9</sup>

By the turn of the nineteenth century, it appears to have become fairly common for litigants in English music copyright cases to present the court with the testimony of experts. The 1835 decision in *D’Almaine v. Boosey* is a perfect example.<sup>10</sup> The facts involved an operatic composition assigned to the plaintiff, which the defendant had copied and published but with some

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4. See *Antonick v. Elec. Arts, Inc.*, 841 F.3d 1062, 1065–66 (9th Cir. 2016).

5. *Infra* note 197.

6. See *Folkes v. Chadd*, 99 Eng. Rep. 589 (1782).

7. See, e.g., Tal Golan, *Revisiting the History of Scientific Expert Testimony*, 73 BROOKLYN L. REV. 879, 887 (2008).

8. *Folkes*, 99 Eng. Rep. at 590.

9. Judge Mansfield had decided in 1769 the celebrated case of *Millar v. Taylor*. See 98 Eng. Rep. 291 (1769).

10. *D’Almaine v. Boosey*, 160 Eng. Rep. 117 (1835).

significant substantive embellishments.<sup>11</sup> Among other arguments, the defendant claimed that these embellishments rendered his work an altogether different one and thus his publication non-piratical.<sup>12</sup> In support of their claims, both the plaintiff and defendant relied on affidavits from “experienced musician[s],” which the court accepted as entirely unproblematic.<sup>13</sup> Perhaps more importantly, in finding for the plaintiff the court itself granted relief on a prior (unnamed) decision dealing with musical compositions, and noted how that prior decision was significant because it was based on the views of the famed musician and composer “Sir George Smart, who was a witness in the case.”<sup>14</sup>

It remains unclear when U.S. courts developed a regularized sense of comfort with expert testimony in copyright matters. What we do know is that they seem to have largely followed the English model of allowing experts in cases involving musical compositions. The court adopted and followed the English case of *D’Almaine* in the notable case *Jollie v. Jaques*.<sup>15</sup> A decision of the federal district court in New York, the case involved a matter largely similar to *D’Almaine*, and the court was called upon to examine whether the defendant’s work was an infringement of the plaintiff’s despite having added multiple variations.<sup>16</sup> Relying on the English precedent, the court denied the plaintiff’s request for an injunction. Important for us though is the fact that in support of its argument the defendant presented the testimony of “an expert, who had examined and compared the two pieces of music.”<sup>17</sup> The court accepted this testimony as uncontroversial, in almost identical manner as the court had in *D’Almaine*.

A federal district court adopted a similar approach a few years prior to *Jollie*. In *Reed v. Carusi*,<sup>18</sup> the plaintiff alleged an infringement of the copyright in its ballad, a musical composition. As part of its unsuccessful defense, the defendant claimed that the plaintiff’s work was itself drawn from a prior source—and to support this claim the defendant introduced the testimony of

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11. *See id.* at 118–21.

12. *See id.* at 122.

13. *Id.* at 118–19.

14. *Id.* at 123.

15. *Jollie v. Jaques*, 13 F. Cas. 910, 913 (C.C.S.D.N.Y. 1850). For an excellent discussion of the substantive issue involved in both *D’Almaine* and *Jollie*, see Joseph P. Fishman, *Music as a Matter of Law*, 131 HARV. L. REV. 1861, 1877–79 (2018).

16. *See Jollie*, 13 F. Cas. at 913–14.

17. *Id.* at 913.

18. *Reed v. Carusi*, 20 F. Cas. 431 (C.C.D. Md. 1845).

various experts in music, which was delivered to the jury without any documented controversy.<sup>19</sup>

Neither of the two leading copyright treatises from the nineteenth century—*Curtis on Copyright* and *Drone on Copyright*—however, address the issue directly.<sup>20</sup> All the same, neither expresses any disagreement with the English cases that rely on the affidavits of experts, or with the U.S. cases that adopt a similar approach.

Eaton S. Drone, in particular, spends a good amount of time describing the test for “piracy,” i.e., copyright infringement, where the use of experts has since become a matter of controversy. Recognizing that the comparison of the works is usually a laborious and time-intensive process that entails a complex analysis of the two works, Drone notes how “[i]n the United States, the usual practice in cases involving much labor has been to make a reference to a master.”<sup>21</sup> He further notes that “[t]he master may be required not only to report the facts, but also to give his opinion as to whether the plaintiff’s work is original, and whether it has been infringed by the defendant.”<sup>22</sup> While this account tracks the modern practice of a court-appointed expert or master, it is nevertheless telling in two respects. First, it involves the court—rather than the parties—directly relying on the master. And second, the rationale for such reliance, in Drone’s view, was not expertise over subject-matter but rather the labor and time involved in undertaking a scrutiny and comparison of the works, which was seemingly unworthy of the court’s attention at the time. This suggests that treatise-writers and perhaps courts as well hardly saw nineteenth-century U.S. copyright law as requiring specific expertise beyond knowledge of the doctrine and the standard legal principles and methods of argumentation and reasoning commonly deployed. A comparison of the works—however complex—was a matter of perception, which required little more than time and patience and was entirely a question of fact and judgment internal to a court’s ordinary role.

To the extent that such expertise was required or allowed, it seems to have been relegated to the domain of music. This trend continued through the nineteenth century and into the early part of the twentieth century. The developmental jurisprudence around the law relating to infringement of musical works routinely contains references to expert reports, testimony, and

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19. *See id.* at 432.

20. *See generally* EATON S. DRONE, A TREATISE ON THE LAW OF PROPERTY IN INTELLECTUAL PRODUCTIONS (1879); GEORGE TICKNOR CURTIS, A TREATISE ON THE LAW OF COPYRIGHT (1847).

21. DRONE, *supra* note 20, at 513.

22. *Id.* at 514.

affidavits presented to courts for proof of copying.<sup>23</sup> And while courts for the most part relied on the notion of the “average ear,” they nevertheless appear to have somewhat routinely allowed expert opinions to influence their views on originality and copying.

As copyright litigation matured, savvy litigants and their lawyers attempted to cloak perceptibility with the need for expertise that was well beyond something a judge ordinarily possessed. In so doing, they implicitly pushed the idea that courts should make use of expert witnesses with knowledge of the subject-matter at issue in the lawsuit, a claim that went well beyond music. In the late 1920s, Moses Malevinsky, counsel to Anne Nichols in the seminal case of *Nichols v. Universal Pictures Corp.*,<sup>24</sup> sought to offer his own scientific theory as the basis for assessing similarity of dramatic works, a theory which he had published as a freestanding monograph at the time of the litigation.<sup>25</sup> While acknowledging Malevinsky’s “deep study of the technical construction of plays and motion pictures,” District Judge Henry Goddard concluded that Malevinsky’s theory called for a “new test, or at least a new method of approach” that impermissibly would extend protection to ideas.<sup>26</sup> On appeal, Judge Learned Hand was especially skeptical of the use of experts to aid the court in judging copyright infringement:

We cannot approve the length of the record, which was due chiefly to the use of expert witnesses. Argument is argument whether in the box or at the bar, and its proper place is the last. The testimony of an expert upon such issues, especially his cross-examination, greatly extends the trial and contributes nothing which cannot be better heard after the evidence is all submitted. It ought not to be allowed at all; and while its admission is not a ground for reversal, it cumpers the case and tends to confusion, for the more the court is led into the intricacies of dramatic craftsmanship, the less likely it is to stand upon the firmer, if more naive, ground of its considered impressions upon its own perusal. We hope that in this class of cases such evidence may in the future be entirely excluded, and the case

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23. For a general overview, see generally Paul W. Orth, *The Use of Expert Witnesses in Musical Infringement Cases*, 16 U. PITT. L. REV. 232 (1955).

24. *Nichols v. Universal Pictures Corp.*, 34 F.2d 145 (S.D.N.Y. 1929) [hereinafter *Nichols I*], *aff'd*, 45 F.2d 119 (2d Cir. 1930) [hereinafter *Nichols II*].

25. See MOSES MALEVINSKY, *THE SCIENCE OF PLAYWRITING* (1925); see generally MARK ROSE, *AUTHORS IN COURT: SCENES FROM THE THEATER OF COPYRIGHT* 98–103 (2016) (discussing Malevinsky’s unusual trial strategy, which included himself testifying for seven days).

26. See *Nichols I*, 34 F.2d at 147.

confined to the actual issues; that is, whether the defendant copied it, so far as the supposed infringement is identical.<sup>27</sup>

The modern formulation of copyright infringement analysis emerged sixteen years later in the Second Circuit. Ira Arnstein, a litigious and prolific but largely unknown composer, alleged that five of famed composer Cole Porter's popular compositions infringed multiple Arnstein compositions.<sup>28</sup> Porter denied ever hearing Arnstein's composition. The case unfolded shortly after the promulgation of the Federal Rules of Civil Procedure, which played a significant role in the formulation of the modern infringement framework.

*Arnstein* set forth a two-part test focused on what became known as "illicit" copying. As formulated then, the plaintiff had to prove "(a) that defendant copied from plaintiff's copyrighted work and (b) that the copying (assuming it to be proved) went to [sic] far as to constitute improper appropriation."<sup>29</sup> The first prong allowed expert testimony. "On this issue, analysis ('dissection') is relevant, and the testimony of experts may be received to aid the trier of the facts."<sup>30</sup> The second prong required proof of "illicit copying (unlawful appropriation)."<sup>31</sup> Judge Jerome Frank declared that "the test is the response of the ordinary lay hearer; accordingly, on that issue, 'dissection' and expert testimony are irrelevant."<sup>32</sup> Judge Frank's reasons for the categorical rejection of expert testimony on this second question remain perplexing and appear to have been motivated more by the unique interpersonal interaction between the judges on the panel than any rational belief in the value of experts.<sup>33</sup> Nevertheless, it found its way into the majority's opinion.

The *Arnstein* court, however, did not altogether preclude the use of expert testimony during the actual comparison of the two works, even where it was the jury who determines the issue. To the contrary, the court emphasized that expert testimony (there from trained musicians) could instead aid the fact-finder in assessing the responses of the intended audience (music listeners) for the work.<sup>34</sup> The court explicitly determined that use of expert testimony may

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27. *Nichols II*, 45 F.2d at 123.

28. See *Arnstein v. Porter*, 154 F.2d 464, 467 (2d Cir. 1946); see generally GARY A. ROSEN, UNFAIR TO GENIUS: THE STRANGE AND LITIGIOUS CAREER OF IRA B. ARNSTEIN (2012).

29. *Arnstein*, 154 F.2d at 468.

30. *Id.*

31. *Id.*

32. *Id.*

33. See Shyamkrishna Balganes, *The Questionable Origins of the Copyright Infringement Analysis*, 68 STAN. L. REV. 791, 832–37 (2016).

34. See *Arnstein*, 154 F.2d at 473 ("[Expert testimony of musicians] may aid the jury in reaching its conclusion as to the responses of [lay listeners].").

be appropriate in aiding the fact-finder even under the second prong.<sup>35</sup> Yet, it forewarned that such expertise not become "controlling" on the question, but instead an aid to the decision-maker.<sup>36</sup>

The *Arnstein* framework was developed against the backdrop of a deep skepticism towards courts' reliance on summary judgment to decide the question of infringement. In the many years since the decision, much has changed on that front.<sup>37</sup> Not only has the standard for summary judgment as articulated in *Arnstein* been significantly overhauled, but courts' very resort to summary judgment is now actively encouraged in the jurisprudence.<sup>38</sup> Despite this reality, courts around the country continue to rely on Judge Frank's two-step formulation.

The modern reliance on summary judgment to decide infringement has further complicated the two-part test formulated in *Arnstein*, which was designed for use principally in trials. With courts in most jurisdictions able to decide both steps of the test on a motion for summary judgment,<sup>39</sup> the prohibition on expert testimony to aid the second step is often rendered functionally moot. Since they make use of such testimony on the first step, the prohibition on using it for the second merely translates into courts avoiding a complete (or "determinative") reliance on such testimony in their decision on the second prong. Nevertheless, to the extent that infringement cases proceed to trial—either bench or jury—the prohibition on expert testimony on the second prong remains widespread. And here the unfortunate reality remains that even though *Arnstein* did not altogether preclude expert testimony on the second prong but merely prohibited treating it as determinative, the Ninth Circuit, as we shall see, has treated the rule as a firm prohibition.

### III. COMPUTER SOFTWARE CASES: AN EXCEPTION TO THE TRADITIONAL RULE LIMITING EXPERT TESTIMONY

As the computer software marketplace emerged in the early 1970s, Congress included computer software within the scope of "literary works" in

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35. *See id.*

36. *See id.*

37. *See* Balganesch, *supra* note 33, at 852–53.

38. *Id.*

39. *See* ROBERT C. OSTERBERG & ERIC C. OSTERBERG, SUBSTANTIAL SIMILARITY IN COPYRIGHT LAW § 3 (2018).

the Copyright Act of 1976.<sup>40</sup> In view of the technological complexity of computer software—entailing unusual and technical computer languages that are unfamiliar to lay judges and juries<sup>41</sup>—courts came to see that expert testimony would be necessary to perceive the similarity of computer programs. In *Whelan Associates, Inc. v. Jaslow Dental Laboratory, Inc.*,<sup>42</sup> the Third Circuit recognized that the *Arnstein* limitation on the use of expert witnesses in the subjective stage of the infringement analysis did not make sense in computer software cases:

The ordinary observer test, which was developed in cases involving novels, plays, and paintings, and which does not permit expert testimony, is of doubtful value in cases involving computer programs on account of the programs' complexity and unfamiliarity to most members of the public. See Note, *Copyright Infringement of Computer Programs: A Modification of the Substantial Similarity Test*, 68 MINN. L. REV. 1264, 1285–88 (1984). Cf. Note, *Copyright Infringement Actions: The Proper Role for Audience Reactions in Determining Substantial Similarity*, 54 S. CAL. L. REV. 385 (1981) (criticizing lay observer standard when objects in question are intended for particular, identifiable audiences). Moreover, the distinction between the two parts of the *Arnstein* test may be of doubtful value when the finder of fact is the same person for each step: that person has been exposed to expert evidence in the first step, yet she or he is supposed to ignore or “forget” that evidence in analyzing the problem under the second step. Especially in complex cases, we doubt that the “forgetting” can be effective when the expert testimony is essential

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40. The Act includes “literary works” within the class of “works of authorship.” See 17 U.S.C. § 102(a)(1). The House Report explains:

The term ‘literary works’ does not connote any criterion of literary merit or qualitative value: it includes catalogs, directories, and similar factual, reference, or instructional works and compilations of data. It also includes computer data bases, and computer programs to the extent that they incorporate authorship in the programmer’s expression of original ideas, as distinguished from the ideas themselves.

H.R. REP. NO. 94-1476, at 54 (1976) (emphasis added). Other provisions of the 1976 Act, however, maintained traditional exclusions for ideas and functional features, 17 U.S.C. § 102(b), and Congress added additional safeguards against overbroad protection in 1980, Act of Dec. 12, 1980, Pub. L. No. 96-517, 94 Stat. 3007, 3028 (codified at 17 U.S.C. §§ 101, 117) (adopting recommendations of the NAT’L COMM’N ON NEW TECH. USES OF COPYRIGHTED WORKS, FINAL REPORT 1 (1979)). See Peter S. Menell, *Rise of the API Copyright Dead?: An Updated Epitaph for Copyright Protection of Network and Functional Features of Computer Software*, 31 HARV. J.L. & TECH. 305, 315–18 (2018).

41. See Peter S. Menell, *An Analysis of the Scope of Copyright Protection for Application Programs*, 41 STAN. L. REV. 1045, 1051–57 (1989).

42. *Whelan Assocs., Inc. v. Jaslow Dental Lab’y, Inc.*, 797 F.2d 1222 (3d Cir. 1986).

to even the most fundamental understanding of the objects in question.

On account of these problems with the standard, we believe that the ordinary observer test is not useful and is potentially misleading when the subjects of the copyright are particularly complex, such as computer programs. We therefore join the growing number of courts which do not apply the ordinary observer test in copyright cases involving exceptionally difficult materials, like computer programs, but instead adopt a single substantial similarity inquiry according to which both lay and expert testimony would be admissible. *See E.F. Johnson Co. v. Uniden Corp.*, 623 F. Supp. 1485, 1493 (D. Minn. 1985); *Hubco Data Products Corp. v. Management Assistance Inc.*, 2 Copyright L. Rep. (CCH) para. 25,529 (D. Idaho Feb. 3, 1983) (enunciating bifurcated test, but relying entirely on expert testimony); *Midway Mfg. Co. v. Strobon*, 564 F. Supp. 741, 752–53 (N.D. Ill. 1983) (relying entirely on expert testimony to find substantial similarity); *see also* Fed. R. Evid. 701 (“If [expert testimony] will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness . . . may testify thereto in the form of an opinion or otherwise.”).<sup>43</sup>

In the landmark *Altai* case, the Second Circuit distinguished *Arnstein* and held that the prohibition on expert testimony was inapplicable to comparisons of computer software under the second prong because “we cannot disregard the highly complicated and technical subject matter at the heart of these claims.”<sup>44</sup> The court observed that “computer programs are likely to be somewhat impenetrable by lay observers—whether they be judges or juries—and, thus, seem to fall outside the category of works contemplated by those who engineered the *Arnstein* test.”<sup>45</sup> Consequently, the *Altai* court concluded that “on substantial similarity with respect to computer programs, we believe that the trier of fact need not be limited by the strictures of its own lay perspective,” and it was at “the discretion of the district court to decide to what extent, if any, expert opinion, regarding the highly technical nature of computer programs, is warranted in a given case.”<sup>46</sup> The *Altai* decision expressly permits expert testimony at the discretion of the district court.<sup>47</sup>

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43. *Id.* at 1232–33 (citations omitted). While we agree with the *Whelan* court’s determination that software experts ought to be permitted to aid judges and juries in perceiving the works at issue in computer software cases, we question the manner in which the *Whelan* court applied copyright’s limiting doctrines. *See* Menell, *supra* note 41, at 1074.

44. *Comput. Assocs. Int’l, Inc. v. Altai, Inc.*, 982 F.2d 693, 713 (2d Cir. 1992).

45. *Id.*

46. *Id.*

47. *See id.*

Other courts followed the Second Circuit's lead. The Tenth Circuit has "[i]n substantial part . . . adopt[ed]" the *Altai* test in *Gates Rubber Co. v. Bando Chemical Industries, Ltd.*<sup>48</sup> Although *Gates Rubber* did not explicitly address expert testimony at all stages of the test, *Altai* allows such testimony, and the *Gates Rubber* court endorsed use of experts in at least some of the inquiry.<sup>49</sup> The Fifth Circuit has also adopted the *Altai* test, although it did not explicitly address the use of experts to aid comparison.<sup>50</sup>

Three other circuits have approved the use of expert testimony to evaluate substantial similarity in cases involving difficult or complex works other than software. The Fourth Circuit in *Dawson v. Hinshaw Music Inc.* firmly rejected the approach of refusing to permit expert testimony in a music case, noting that "only a reckless indifference to common sense would lead a court to embrace a doctrine that requires a copyright case to turn on the opinion of someone who is ignorant of the relevant differences and similarities between two works."<sup>51</sup> The court replaced the "ordinary observer" with the "intended audience" of the work and permitted the fact-finder to rely on expert testimony.<sup>52</sup> The *Dawson* court noted that "the advent of computer programming infringement actions" forced the trend towards allowing expert testimony for complex subject matter.<sup>53</sup>

The Sixth Circuit addressed the use of experts in a case alleging copyright infringement of technical patent drawings.<sup>54</sup> Its two-step test contemplates use of expert testimony; in its second step, "the trier of fact should make the substantial similarity determination from the perspective of the intended audience. *Expert testimony will usually be necessary to educate the trier of fact in those elements for which the specialist will look.*"<sup>55</sup>

Although the First Circuit uses a traditional "ordinary observer" test, it recognized in a case involving architectural works that "*the need for expert testimony may be greater in cases involving complex subject matters* where an ordinary

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48. *Gates Rubber Co. v. Bando Chem. Indus.*, 9 F.3d 823, 834 (10th Cir. 1993).

49. *See id.* at 834–35 ("[I]n most cases we foresee that *the use of experts will provide substantial guidance to the court* in applying an abstractions test.") (emphasis added).

50. *See Eng'g Dynamics, Inc. v. Structural Software, Inc.*, 26 F.3d 1335, 1342 (5th Cir. 1994), *opinion supplemented on denial of reh'g*, 46 F.3d 408 (5th Cir. 1995).

51. *Dawson v. Hinshaw Music Inc.*, 905 F.2d 731, 735 (4th Cir. 1990).

52. *Id.* at 736 ("When conducting the second prong of the substantial similarity inquiry, a district court must consider the nature of the intended audience of the plaintiff's work. . . . Such an inquiry may include, and no doubt in many cases will require, admission of testimony from members of the intended audience or, possibly, from those who possess expertise with reference to the tastes and perceptions of the intended audience.")

53. *Id.* at 735.

54. *See Kohus v. Mariol*, 328 F.3d 848 (6th Cir. 2003).

55. *Id.* at 857 (emphasis added).

observer may find it difficult to properly evaluate the similarity of two works without the aid of expert testimony.”<sup>56</sup> The D.C. Circuit has noted the trend of allowing expert testimony for comparison of complex works like software, though without explicitly addressing the issue.<sup>57</sup>

#### IV. THE UNWITTING ORIGIN OF THE NINTH CIRCUIT'S "NUTTY" RULE: *KROFFT TELEVISION PRODUCTIONS, INC. V. MCDONALD'S CORP.*

Even though *Arnstein* was decided under a now-overruled standard for summary judgment,<sup>58</sup> it remains influential. And unfortunately, so does the misunderstanding of its views on the use of expert testimony. Nowhere is this more prominent than in the Ninth Circuit, which purported to develop its own two-part test based on *Arnstein*.

In *Krofft*, the Ninth Circuit was called upon to develop an approach to the infringement analysis that recognized copyrightable works as embodying both protected and unprotected elements.<sup>59</sup> In recognizing therefore that protectability was a seemingly objective enterprise that entailed analyzing components of a work against a set of objective principles—such as originality, the idea-expression dichotomy, scènes-à-faire, and the like—the court adopted a two-part formulation:

The test for infringement therefore has been given a new dimension. There must be ownership of the copyright and access to the copyrighted work. But there also must be substantial similarity not only of the general ideas but of the expressions of those ideas as well.

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56. *T-Peg, Inc. v. Vermont Timber Works, Inc.*, 459 F.3d 97, 116 (1st Cir. 2006) (emphasis added). It then explicitly “le[ft] to the district court the determination of whether this may be a case in which expert testimony would be helpful on the issue of substantial similarity.” *Id.* (reversing the district court’s decision in part for rejecting expert testimony on substantial similarity). Although *T-Peg* endorses a rule that allows use of experts in some circumstances, at least one later First Circuit opinion indicates that the issue is not fully settled. *See Airframe Sys., Inc. v. L-3 Commc’ns Corp.*, 658 F.3d 100, 106 n.7 (1st Cir. 2011) (“Where, as here, the copyrighted work involves specialized subject matter such as a computer program, some courts have held that the ‘ordinary observer’ is a member of the work’s ‘intended audience’ who possesses ‘specialized expertise.’ . . . This court has yet to directly address this issue, and it is unnecessary to do so here.”) (citing *Dawson, Kobus, Altai*, and *Whelan*).

57. *See Sturdza v. U.A.E.*, 281 F.3d 1287, 1300–01 (D.C. Cir. 2002) (noting that “[a] growing number of courts now permit expert testimony regarding substantial similarity in cases involving computer programs, reasoning that such testimony is needed due to the complexity and unfamiliarity of computer programs to most members of the public” and remanding for further development) (internal quotations omitted).

58. *See Balganesch, supra* note 33, at 852–55.

59. *See Sid & Marty Krofft Television v. McDonald’s Corp.*, 562 F.2d 1157 (9th Cir. 1977).

Thus two steps in the analytic process are implied by the requirement of substantial similarity. . . .

We shall call [the test for the similarity of ideas] the ‘extrinsic test.’ It is extrinsic because it depends not on the responses of the trier of fact, but on specific criteria which can be listed and analyzed. Such criteria include the type of artwork involved, the materials used, the subject matter, and the setting for the subject. Since it is an extrinsic test, analytic dissection and expert testimony are appropriate. Moreover, this question may often be decided as a matter of law. . . .

The test to be applied in determining whether there is substantial similarity in expressions shall be labeled an intrinsic one — depending on the response of the ordinary reasonable person. . . .

This same type of bifurcated test was announced in *Arnstein*. . . . We believe that the court in *Arnstein* was alluding to the idea-expression dichotomy which we make explicit today.<sup>60</sup>

In developing its own two-part formulation, *Krofft* fundamentally misunderstood the analytical basis and rationale behind the *Arnstein* test and its rules about expert testimony. Appreciating this misunderstanding requires delving a little bit deeper into the *Arnstein* test and the analytical basis of its rules.

To begin with the basics, the first step in the *Arnstein* formulation—the question of factual copying—is an entirely evidentiary question. Indeed, it is for this reason that some have referred to this step as the question of “probative similarity,” to the extent that it relies on a comparison of the two works *in order to infer such copying*.<sup>61</sup> Yet, the question is not whether the defendant simply copied from the plaintiff’s work. Instead, it is whether the defendant copied *protectable expression* from the plaintiff’s work. And this is because, as a corollary of the fundamental precept of copyright law that not all copying is infringement,<sup>62</sup> all works contain both protectable and unprotectable elements. Indeed, this part of the test is meant to weed out the possibility that the plaintiff and defendant both drew from a common source, the public domain, or indeed altogether unprotected materials, such as ideas or unoriginal expression. It is for this reason that *Arnstein*’s reference to expert

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60. *Id.* at 1164.

61. See, e.g., Alan Latman, “Probative Similarity” as Proof of Copying: Toward Dispelling Some Myths in Copyright Infringement, 90 COLUM. L. REV. 1187, 1194–95 (1990).

62. See *Feist Publ’ns, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 361 (1991) (“Not all copying, however, is copyright infringement.”).

testimony here is in conjunction with its mention of analytic “dissection,” a reference to the process of breaking down the work into its constituent parts in order to analyze the origin and protectability of different components.<sup>63</sup> As should be apparent, the expert is meant to aid the court in determining just this breakdown—i.e., how much of the plaintiff’s work is itself unprotected since it draws on prior sources or materials that are in the public domain. Expert testimony, in other words, aids on the question of protectability that is implicit—yet crucial—in the first step of *Arnstein*. Built into the infringement analysis is thus an implicit emphasis on protectability.

At least as framed by the court, *Krofft*’s first step—extrinsic copying—has little to do with actual copying by the defendant. All the same, even in the Ninth Circuit, and by *Krofft*’s own admission,<sup>64</sup> such actual copying is needed. This then reveals that in *Krofft* there is in reality a step zero, which covers a part of *Arnstein*’s first step. The Ninth Circuit refers to this as the question of “access” rather than factual copying,<sup>65</sup> but it is a crucial preliminary to any further analysis. Access is meant to allow courts to infer actual copying and then proceed to the question of substantial similarity, which *Krofft* breaks down into two further steps. By framing its step zero as being about access, the Ninth Circuit effectively eliminates the issue of copying from this step and, instead, merely focuses on whether the defendant had reasonable access to the plaintiff’s work, regardless of what the defendant actually did with such access. To the extent that the *Krofft* test must give effect to the idea that works embody uncopyrightable elements, the extrinsic test becomes crucial.

Bringing the *Krofft* framework on parallel with the *Arnstein* test on the first step would thus imply having the extrinsic test expressly address the issue of protectability, before proceeding to a side-by-side comparison of the two works. Yet, the extrinsic test—as formulated in *Krofft*—does just the opposite. In focusing on the similarity of “ideas” and other potentially unprotectable elements (such as the “type of artwork involved, the materials used, the subject matter, and the setting for the subject”), *Krofft* sidesteps focusing on protectability.<sup>66</sup> Later panels of the Ninth Circuit have noted this absurdity and attempted to re-focus the extrinsic test on protectability by characterizing it as being about “objective manifestations of creativity” focused on “the measurable, objective elements that constitute . . . expression,”<sup>67</sup> as well as by

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63. See *Arnstein v. Porter*, 154 F.2d 464, 468 (2d Cir. 1946).

64. See *Krofft*, 562 F.2d at 1163 (“The real task in a copyright infringement action, then, is to determine whether there has been copying of the expression of an idea rather than just the idea itself.”).

65. *Id.* at 1172.

66. See *id.* at 1164.

67. *Shaw v. Lindheim*, 919 F.2d 1353, 1359 (9th Cir. 1990).

noting that “only those elements of a work that are protectable and used without the author’s permission can be compared . . . .”<sup>68</sup> All the same, even in this reformulation the focus does not appear to be primarily on protectability. It instead emphasizes the objective breakdown of the work in order to enable a court to determine whether the similarity is sufficient to allow for a subjective comparison.

The second step in *Arnstein* focuses on wrongful copying and asks the fact-finder, i.e., ordinarily the jury, to determine whether the defendant’s copying of protected expression from the plaintiff’s work was sufficient in both qualitative and quantitative terms so as to amount to an infringement. Hence the test uses the phrase “wrongful” or “illicit” copying. The comparison is meant to be subjective in that the fact-finder is meant to rely on his or her perception (or equivalent sensorial facility) and intuition for the determination. With perceived similarity being the crucial touchstone of this step, the framework attempts to limit (though not prohibit) expert testimony, which could obviously influence such perception. A professional musician’s ability to distinguish two musical compositions will thus obviously be different from a lay person’s comparison of them, and the test strongly prefers the latter.<sup>69</sup> Yet it is crucial to recognize that the reason why this framework can be comfortable in relying on such subjectivity without worrying about the fact-finder’s misunderstanding about the protected elements of the work is because the prior step focused entirely on protectability. In other words, the *Arnstein* framework quite neatly parses out *protectability* and *perceivable similarity* in its two steps, even if it presents other problems.

*Kroffit*’s second step replicates the subjective assessment contained in the *Arnstein* second step. It thus focuses on the perception of the works by lay fact-finders. And while it endorses *Arnstein*’s idea of keeping expert testimony out of this analysis by noting that “expert testimony [is] not appropriate,”<sup>70</sup> it pays little attention to the fact that the extrinsic test may not have sufficiently addressed the question of protectability. The extrinsic test’s focus on “objective” elements may at times overlap with copyright’s criteria for protection, but it need not have to. Finding a similarity in plot lines or characters in two works is of little use if those common elements are themselves drawn from another source. This inevitably means that the notion

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68. *Apple Comput., Inc. v. Microsoft Corp.*, 35 F.3d 1435, 1443 (9th Cir. 1994).

69. Judge Frank vividly made this point in *Arnstein v. Porter*. See 154 F.2d 464, 473 (2d Cir. 1946) (“The impression made on the refined ears of musical experts or their views as to the musical excellence of plaintiff’s or defendant’s works are utterly immaterial on the issue of misappropriation; for the views of such persons are caviar to the general—and plaintiff’s and defendant’s compositions are not caviar.”).

70. *Kroffit*, 562 F.2d at 1164.

of protectability—central to copyright—cannot be eliminated altogether from the intrinsic test. And for this, expert testimony is essential and cannot be foregone.

The *Krofft* test's conflation of protectability and perceivability remained largely manageable in practice when the dispute involved non-technical subject matter that lay audiences routinely encountered—literary works, artistic works, musical works, and the like. When it came to technical subject matter such as computer software, the problem became exacerbated. Here, like with literary works in a foreign language, lay juries are incapable of making analytical sense of the expression itself. Without being able to understand and contextualize the expression, they became forced to invariably conflate protectability and similarity. Juries had to shoot in the dark in making side-by-side comparisons of subject matter of which they had little understanding and were unlikely to have ever encountered before.

*Altai* recognized this problem—inherent in both the *Arnstein* and *Krofft* tests, but more trenchant in the latter—and modified the prohibition on expert testimony during comparisons of computer software. Since the Ninth Circuit never expressly endorsed (or applied) this modification in *Altai*, the circuit continues to adhere to the original formulation tracing back to *Krofft* and without any consideration of its implications for technical subject matter.<sup>71</sup> Therein emerged the nuttiness of the Ninth Circuit's rule.

## V. *ANTONICK V. ELECTRONIC ARTS: MANIFESTATION OF THE "NUTTY" RULE*<sup>72</sup>

Several cases in the Ninth Circuit suggested that wooden application of the *Krofft* rule limiting the use of experts would not make much sense in software cases,<sup>73</sup> but it was not until *Antonick v. Electronic Arts Inc.*<sup>74</sup> that the Ninth Circuit

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71. In *Bronn Bag Software v. Symantec Corp.*, Judge Sneed noted in a concurring opinion that the Ninth Circuit precedent “provides a poor analytic structure by which to determine the substantial similarity of an allegedly infringing computer program,” preferring the Third Circuit’s “integrated substantial similarity test pursuant to which both lay and expert testimony would be admissible.” 960 F.2d 1465, 1478 (9th Cir. 1992) (Sneed, J., concurring).

72. This Part draws on Appellant’s Brief, *Antonick*, 841 F.3d 1062 (9th Cir. 2016) (No. 14-15298), 2014 WL 3909266 [hereinafter *Antonick* 9th Circuit Opening Brief], and Complaint, *Antonick v. Electronic Arts, Inc.*, No. C 11–1543 CRB, 2014 WL 245018 (N.D. Cal. Jan. 22, 2014) [hereinafter *Antonick* Complaint].

73. *See id.*; *Broderbund Software, Inc. v. Unison World, Inc.*, 648 F. Supp. 1127, 1136 (N.D. Cal. 1986) (suggesting that “an integrated test involving expert testimony and analytic dissection may well be the wave of the future in [computer software cases]” but noting that the Ninth Circuit’s position “is clearly marked out in *Krofft*, and controls the analysis here”).

74. *Antonick v. Electronic Arts Inc.*, 841 F.3d 1062 (9th Cir. 2016).

directly confronted the admissibility of expert witness testimony in computer software cases. The backstory to this litigation is important to understanding the Ninth Circuit's surprising decisions to bar expert testimony that would enable lay jurors to compare the works at issue.

#### A. DEVELOPMENT OF THE MADDEN FOOTBALL VIDEO GAME

The *Antonick* case grew out of the development of Madden Football, the iconic video game that launched the sports video game industry.<sup>75</sup> As an industry observer aptly noted in 2013, the 25th anniversary of the game,

From its humble beginnings on an Apple II computer in 1988 to the modern marvels now featured on PS3 and Xbox 360 (and soon to further amaze on the next generation consoles), Madden's evolution largely mirrors the evolution of video games in general. Few franchises—really, only Mario and Zelda—have had the cultural staying power and impact of Madden.<sup>76</sup>

Prior to Madden Football, video games were relatively primitive in their simulation of sport activities. In the early 1980s, the state of the art for video football games featured only three or five players per side due to the limitations of early microcomputers. The early games did not hold users' attention for long because the players ran predetermined routes and the outcomes were determined by static rules. In 1983, Robin Antonick, a former college football player and skilled computer programmer, conceived of a far more authentic football video game that could simulate 11-on-11 player action and sophisticated dynamic models of player behavior. He showed a prototype to William "Trip" Hawkins, founder and Chief Executive Officer of Electronic Arts (EA), then a fledging video game publisher.<sup>77</sup> Hawkins was impressed. Soon thereafter EA hired Antonick as an independent contractor to develop a commercial version of the game. The EA-Antonick contract provided Antonick with royalties on versions of the game that Antonick developed as well as games derived from his versions.

After that deal was signed and Antonick had begun work on the commercial version of the video game, Hawkins persuaded John Madden, former coach of the Oakland Raiders and a popular NFL broadcaster, to lend his name to the game. Antonick and Hawkins translated Madden's playbook

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75. See John Gaudiosi, *Madden: The \$4 billion video game franchise*, CNN (Sept. 5, 2013, 11:51 AM), <https://money.cnn.com/2013/09/05/technology/innovation/madden-25/>.

76. Timothy Rapp, *Madden 25: Rounding Up Reviews of Iconic Game*, BLEACHER REP. (Aug. 27, 2013), <https://bleacherreport.com/articles/1751592-madden-25-rounding-up-reviews-of-iconic-game>.

77. Trip Hawkins, a former Apple employee, founded Electronic Arts in 1982. See generally *Electronic Arts*, WIKIPEDIA, [https://en.wikipedia.org/wiki/Electronic\\_Arts](https://en.wikipedia.org/wiki/Electronic_Arts).

and play calling into computer algorithms and integrated them into the computer program.

In December 1986, EA and Antonick revised the agreement, pursuant to which Antonick would develop the newly titled "John Madden Football" videogame for the Apple II, Commodore 64, and IBM platforms.<sup>78</sup> In addition to receiving compensation for those "Works,"<sup>79</sup> Antonick would be entitled to royalties on all "Derivative Works," defined as:

any computer software program or electronic game which either (a) constitutes a derivative work of the Work within the meaning of the United States copyright law or (b) produces audiovisual effects which infringe the copyright in the audiovisual effects produced by the Work. Derivative Works include, for example, significant enhancements of the Work to add additional features or improve performance and adaptations of the Work to operate on computers or operating systems other than those described in the Specifications.<sup>80</sup>

EA also promised to (1) protect against unauthorized use of Antonick's intellectual property, including his Development Aids,<sup>81</sup> and (2) offer Antonick a right of first refusal to develop Derivative Works.

Over the next two years, Antonick developed the computer source code for the original John Madden Football video game, which was implemented on the Apple II computer ("Apple II Madden"). Antonick's game took the sports video game genre from primitive abstract games with few players and simple actions to sophisticated simulation of multi-faceted, 11-on-11 football action integrating player data, complex strategies, and user manipulation of player controls.

In February 1987, Antonick and EA executed Amendment I to the 1986 Contract. Among other things, Antonick agreed to a higher royalty rate on sales of Works and "Derivative Works by Artist" and, depending on the microprocessor used, a lower or higher royalty rate on "Derivative Works by Publisher." Antonick was to receive a royalty for any Derivative Work in the same "Microprocessor Family" as the Apple II's microprocessor. Amendment I limited Antonick's right of first refusal to Derivative Works developed for certain Microprocessor Families, but also provided that if Antonick developed

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78. *See* ELEC. ARTS, INC., SOFTWARE DEVELOPMENT AND PUBLISHING AGREEMENT § 4 [hereinafter 1986 Contract].

79. *Id.* at § 5.

80. *Id.* at Exhibit A § 1.03 (defining "Derivative Work").

81. "Development Aids" included "equipment, firmware, and software utilities . . . used or developed by [Antonick] which might be useful . . . in developing any Derivative Work." *Id.* at Exhibit A § 5.05.

a Derivative Work for a “new” Microprocessor Family, his right of first refusal would be revived with respect to that family. Finally, EA promised “not to use or otherwise provide” Antonick’s Development Aids to employees or third parties in preparing Derivative Works on different microprocessor families.

As a means of simulating actual National Football League games, Antonick integrated the physics of player and ball movement with a player ratings model based on multiple attributes. Drawing on his football knowledge, Antonick combined the player ratings structure with an elaborate system of hundreds of offensive and defensive plays. After EA signed John Madden to collaborate and lend his name to the game, Antonick adapted and refined the existing plays and play-calling to incorporate Madden’s ideas.

Around that time, Richard Hilleman, an EA employee, joined the project as the Apple II Madden producer. Antonick spoke with Hilleman regularly, discussing, among other things, the execution of game features and solutions to implementation issues.

Pursuant to the agreements, Antonick was required to deliver detailed documentation of his code and other intellectual property, including (1) “complete assembled source code with sufficient comments to allow the easy understanding of each routine, subroutine and table by an individual conversant with 6502 assembly language”; (2) “an overall program description, including the file name of each module of code,” “a narrative of the flow of control,” “a complete list of subroutines with a short description of each,” and “an explanation of key data structures”; and (3) a description of “any firmware or software utilities used.”<sup>82</sup>

In 1988, EA released Apple II Madden. According to EA, the game was an “overnight success” that “exceeded its high expectations” and “went on to sell more copies than any other sports game of its time.”<sup>83</sup> On the heels of this acclaim, Antonick programmed Madden games for the Commodore 64 and IBM-compatible computer platforms. In 1989, he began work on Madden games for the Nintendo and Sega Genesis entertainment systems. In October 1989, Antonick and EA entered into Amendment VIII to the 1986 Contract, requiring Antonick to develop a “script” and a technical design review for Sega Genesis and Nintendo versions and providing that Antonick would receive “additional compensation” in the form of 3% royalties on sales of any “Nintendo Derivative Work” or “Sega Genesis Derivative Work.” As

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82. See Antonick 9th Circuit Opening Brief, *supra* note 72, at 9–10.

83. Plaintiff’s Opposition to Electronic Arts’ Second Motion for Summary Judgment at 5, Antonick v. Elec. Arts Inc., No. 3:11-CV-01543-CRB (Document 224) [hereinafter Plaintiff’s Opposition to Second MSJ].

producer on the Nintendo version, Hilleman reviewed Antonick's design script and discussed Antonick's ideas for console games.

In an abrupt shift of course, Hilleman told Antonick in August 1990 that EA had decided not to publish Derivative Works for Nintendo or Sega Genesis.<sup>84</sup> Instead, Hilleman said that EA was going in a different direction with a Sega Genesis game with "more of an arcade style." Hilleman said that EA had already hired another company, Park Place Productions, to develop the new Sega game "independently" of Antonick's work. Because there would be a separation between Antonick's work and the development of the Sega game, Antonick would have no royalty or other rights in the Sega game. Hilleman also told Antonick that the "Nintendo marketplace had started to disintegrate" and to stop working on Nintendo Madden.

Just three months later—barely in time for the holiday shopping season—EA released its first version of Sega Madden.<sup>85</sup> EA continued to issue Madden games for Sega Genesis, Super Nintendo, and other platforms annually since 1992. After Antonick completed the second IBM game in 1992, his work with EA was substantially over, and he moved on to other projects. EA's Madden Football franchise would go on to remarkable sustained success, racking up billions of dollars in revenue.<sup>86</sup>

B. ANTONICK'S DISCOVERY THAT EA BASED SEGA MADDEN ON APPLE II MADDEN

In conjunction with its celebration of Madden Football's twentieth anniversary in 2009, EA released publicity materials describing the game's history. To Antonick's surprise, the materials traced the Sega Madden to Antonick's Apple II Madden version. Antonick viewed a CNBC interview of Trip Hawkins, who also connected the design and coding of the later editions of the Madden Football video game software franchise back to Apple II Madden. Antonick looked further into the matter and discovered on the website of Park Place co-founder Troy Lyndon that he credited EA's Hilleman with helping to develop 1990 Sega Madden, noting that Hilleman spent "countless hours" with Park Place programmer Jim Simmons to make the game more realistic. Antonick then realized that, contrary to Hilleman's assurances in 1990, Sega Madden had not been developed independently of

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84. *Id.* at 7–9.

85. *See* Transcript of Proceedings at 478, *Antonick*, No. 3:11-CV-01543-CRB [hereinafter Trial Transcript].

86. By 2013, EA had sold more than 100 million copies of Madden NFL, generating more than four billion dollars in total sales. *Madden NFL*, WIKIPEDIA, [https://en.wikipedia.org/wiki/Madden\\_NFL](https://en.wikipedia.org/wiki/Madden_NFL) (last visited Sept. 4, 2020).

Apple II Madden.<sup>87</sup> Hilleman, who had worked on Apple II Madden and had intimate knowledge of its design and code, apparently played a direct and critical role in developing Sega Madden.

Antonick alleged that until these revelations, he had no reason to question EA's account of how Sega Madden was developed. The Sega Genesis gaming platform had a more powerful microprocessor than the Apple II resulting in a more realistic visual simulation. Therefore, the Madden Sega screen displays differed substantially from the Madden Apple II visual appearance.<sup>88</sup> Yet the underlying code could well have been derived from Madden Apple II. Antonick did not have access to the Sega Madden source code and therefore could not have assessed the extent to which Park Place based Sega Madden on Apple II Madden's software code and design.

As a result of the 2009 information, Antonick became suspicious that Park Place had not, as EA informed him, developed Sega Madden independently. EA had assured Antonick that it would safeguard his source code and design documents, and would ensure that the development of any subsequent works that were outside of the "derivative works" definition would only be produced using a "clean room" process.<sup>89</sup> Growing out of a seminal copyright case involving Sega,<sup>90</sup> the software industry came to follow a "clean room" process for independently developing interoperable software,<sup>91</sup> but the 2009

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87. In a November 2009 interview, Lyndon stated that "Hilleman came down to our office and liver there for well over a month with Simmons turning something that looked good into something that actually played great football." Antonick Complaint, *supra* note 72, at ¶ 77.

88. The parties stipulated that "[p]laying or viewing a John Madden Football video game for the Sega Genesis or Super Nintendo would not have allowed the person looking at the screen or playing the game to determine how a particular game element was expressed in source code." Trial Transcript, *supra* note 85, at 466.

89. Antonick Complaint, *supra* note 72, at ¶¶ 59–65.

90. *See* Sega Enters. Ltd. v. Accolade, Inc., 977 F.2d 1510 (9th Cir. 1992) (holding that reverse engineering of copyrighted software to discover its unprotected features constitutes fair use).

91. The "clean room" process was formalized during the first wave of software copyright litigation as a means of developing interoperable software and ensuring that proprietary materials do not infect software development. The clean room process typically involves three teams of engineers and legal specialists. The first team—referred to as the "specification" or "dirty room" team—works with the target software to determine the functional specifications. A second "coordination" or "audit" team, comprised of attorneys and engineers, establishes clear ground rules for managing the clean room process, screens programmers for the "clean room" team so as to ensure they have never seen the copyright-protected code, documents the activities and communication of the "dirty room" and "clean room" teams, oversees the process, and advises on what constitutes functional specifications and how to determine code segments that are unprotectable—segments that are unoriginal, standard programming practices, and necessary for interoperability or to accomplish specific processes or methods.

revelations appeared to contradict EA's assurances that Sega Madden was not derived from Antonick's work product.<sup>92</sup> EA was entitled to pursue such derivative works, but was required pursuant to its contracts with Antonick to pay him an ongoing royalty.

C. ANTONICK'S COMPLAINT AND THE COPYRIGHT INFRINGEMENT ISSUE

In March 2011, Antonick filed suit against EA alleging breach of contract and fraud.<sup>93</sup> The complaint implicated copyright law through the clause of the Antonick-EA contact that entitled Antonick to royalties if subsequent versions of Madden Football "constitute[] a derivative work of [Apple II Madden] within the meaning of the United States copyright law."<sup>94</sup> The contract defined "Derivative Works" to include, for example, "significant enhancements of the Work to add additional features or improve performance and adaptations of the Work to operate on computers or operating systems other than those described in the Specifications."<sup>95</sup> Hence, the Antonick contract cause of action turned on whether Sega Madden was derived, the copyright sense, from Apple II Madden.

The Copyright Act defines a "derivative work" as

a work based upon one or more preexisting works, such as a translation, musical arrangement, dramatization, fictionalization, motion picture version, sound recording, art reproduction, abridgment, condensation, or any other form in which a work may

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The coordination team seeks to ensure that no copyright-protected expression or misappropriated trade secrets get communicated to the clean room team. It is only after those checks are completed that the process of independently coding an interoperable program commences. The functional specifications detailing the particular processes or results that the target program accomplishes is then passed to the "clean room" team of programmers. This team remains shielded from the copyright-protected code. It designs, writes, and tests code aimed at accomplishing the target functional specifications. See Jorge Contreras, Laura Handley & Terrence Yang, *NEC v. Intel: Breaking New Ground in the Law of Copyright*, 3 HARV. J.L. & TECH. 209 (1990); G. Gervaise Davis III, *Scope of Protection of Computer-Based Works: Reverse Engineering, Clean Rooms and Decompilation*, 370 COMPUT. L. INST. 115 (PLI Patents, Copyrights, Trademarks, and Literary Property Practice Course Handbook Series No. G-370, 1993); Menell, *supra* note 39, at 448–49; P. Anthony Sammi, Christopher A. Lisy & Andrew Gish, *Good Clean Fun: Using Clean Room Procedures in Intellectual Property Litigation*, 25 INTELL. PROP. & TECH. L.J. 3 (2013).

92. See Plaintiff's Opposition to Second MSJ, *supra* note 83, at 9–12.

93. See Antonick Complaint, *supra* note 72; John Gaudiosi, *Madden Creator Sues Electronic Arts for Millions in Royalties*, FORBES (Apr. 1, 2011, 5:39 PM), <https://www.forbes.com/sites/johngaudiosi/2011/04/01/madden-creator-sues-electronic-arts-for-millions-in-royalties/#cbfdcba4d32a>.

94. Antonick Complaint, *supra* note 72, at 7.

95. *Id.*

be recast, transformed, or adapted. A work consisting of editorial revisions, annotations, elaborations, or other modifications which, as a whole, represent an original work of authorship, is a “derivative work.”<sup>96</sup>

Courts base the determination of whether a subsequent work constitutes a derivative work on whether it violates the right to reproduce, i.e., whether it is an infringement of the copyrighted work.<sup>97</sup> Therefore, the key legal issue was whether Sega Madden infringed Apple II Madden.

D. PRE-TRIAL PROCEEDINGS: IMPROPER WHITTILING OF THE PLAINTIFF’S BASIS FOR SHOWING THAT EA DERIVED SEGA MADDEN FROM APPLE II MADDEN

The case was ultimately assigned to Judge Charles Breyer of the Northern District of California. EA sought to dismiss the complaint on the ground that Antonick waited too long to file suit. Judge Breyer denied EA’s motion to dismiss and ordered the case to be tried in three phases: (1) EA’s statute of limitations defense; (2) EA’s liability with respect to Madden games released before 1996; and (3) EA’s liability with respect to non-Madden games<sup>98</sup> and post-1996 Madden games.<sup>99</sup> Phases (1) and (2) were to be done seriatim with the same jury. Phase 3, if necessary, would follow at a later time.<sup>100</sup>

In view of the technical and legal complexity of the case, the parties engaged in extensive discovery disputes and motion practice. Remarkably, EA failed to locate complete copies of the source code for Apple II Madden and early versions of Sega Madden. Nonetheless, Antonick had retained source code for versions of the games that he designed and other documentation, including a sixty-page game manual detailing the Apple II Madden design. He

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96. 17 U.S.C. § 101 (defining “derivative work”).

97. *See* Litchfield v. Spielberg, 736 F.2d 1352, 1354 (9th Cir. 1984) (holding that a work is derivative “only if it would be considered an infringing work if the material which it has derived from a prior work had been taken without the consent of the copyright proprietor of such prior work” (emphasis in original) (citing United States v. Taxe, 540 F.2d 961, 965 n.2 (9th Cir. 1976))); MELVILLE NIMMER, 2 NIMMER ON COPYRIGHT § 8.09[A][1] (2019) (suggesting that right to prepare derivative works is superfluous in that “[u]nless enough of the pre-existing work is contained in the later work to constitute the latter an infringement of the former, the latter, by definition, is not a derivative work”).

98. Antonick alleged that other EA sports games, such as NCAA Football and NHL Hockey, also constituted derivative works of Apple II Madden for which royalties should have been paid. *See* Antonick Complaint, *supra* note 72, at 23.

99. *See* Antonick v. Elec. Arts, Inc., 841 F.3d 1062, 1065 (9th Cir. 2016) (noting the trial phases).

100. *See id.*; Antonick 9th Circuit Opening Brief, *supra* note 72, at 16; Eriq Garner, *Electronic Arts Faces Jury Trial over Madden NFL*, HOLLYWOOD REP. (Apr. 26, 2013, 10:42 AM), <https://www.hollywoodreporter.com/thr-esq/electronic-arts-faces-jury-trial-447243>.

retained Michael Barr, an experienced computer engineering expert.<sup>101</sup> Barr prepared a detailed report analyzing Antonick's source code files, source code and EA's technical files containing source code for eight distinct versions of Madden football games for Sega Genesis and Super Nintendo, as well as various documents, declarations, discovery responses, and depositions.<sup>102</sup>

Antonick alleged that Simmons, Park Place's lead programmer, was woefully behind schedule producing Sega Madden and called in EA's Hilleman, who was intimately familiar with Antonick's design and code, in order to meet the tight production deadline. Antonick also alleged that although Sega Madden was written in a different assembly code language for the Sega Genesis console (which used the Motorola 68000 microprocessor as opposed to the Apple II's MOS Technology 6502 microprocessor),<sup>103</sup> Simmons and his team followed the Apple II Madden design down to the non-standard field dimensions,<sup>104</sup> player directional tracking system,<sup>105</sup> particular play routes, naming (including misspellings) and ordering of plays, player rating model, decision points, data flow architecture, and game engine design (e.g., representation of ball carrier positioning and player pursuit, use of randomness in conjunction with player ability to introduce variable uncertainty). Barr's analysis showed that Sega Madden's compilation of features, as well as sub-feature design, choice, and particular code elements, were substantially similar to Apple II Madden.

In response, EA sought to whittle down Antonick's basis for proving that Sega Madden was a derivative work through summary judgment motions, motions *in limine*, and jury instructions. Drawing on inapt lines of cases limiting the scope of copyright protection for *general* functional features of computer

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101. See Michael Barr, Expert Resume, Antonick, v. Elec. Arts Inc., No. 3:11-cv-01543-CRB (N.D. Cal. Jan. 22, 2014), 2012 WL 7160593.

102. See Fed. R. Civ. P. 26(a)(2)(B); Report of Michael Barr at Exhibit B, *Antonick*, No. 3:11-cv-01543-CRB [hereinafter "Barr Report"] (explaining "[t]he source code for a pair of programs written in different assembly languages will look very different to the casual observer—even if they do the very same things—just as a pair of contracts for the same purpose but written in German and Spanish will appear visually different") (under seal).

103. See Barr Report, *supra* note 102, at 18, 27–29.

104. Whereas the NFL uses a field width of 53.33 yards, Antonick used an 80-yard width. This feature carries over to many aspects of the coding and representation of the video game as the game players, unlike actual NFL players, will move more quickly up and down the field than they will laterally.

105. Barr opined that the use of the same directional tracking system made it easier for Park Place to emulate many other aspects of Antonick's game design, subroutines, and coding. See Barr Report, *supra* note 102, at 51.

software,<sup>106</sup> EA persuaded Judge Breyer to restrict the basis for asserting similarity to two of the ten elements that Antonick sought to use in showing that Sega Madden constituted a derivative work of Apple II Madden: (1) non-standard field width and (2) plays and formations.<sup>107</sup> Thus, the court severely impeded Antonick's core compilation theory, but the granular design and coding decisions relating to plays and formations left some room for pursuing the derivative work case. Further stacking the deck in EA's favor, Judge Breyer drew on another line of inapt cases<sup>108</sup> to require that Antonick prove not merely that Sega Madden was substantially similar to Apple II Madden, but that it was *virtually identical*.<sup>109</sup>

These rulings fundamentally misconstrued applicable copyright principles. Copyright law protects original compilations of even individually unprotectable elements.<sup>110</sup> Although all of the individual words in a language are unprotectable, copyright law robustly protects the compilation that

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106. See *Incredible Techs., Inc. v. Virtual Techs., Inc.*, 400 F.3d 1007 (7th Cir. 2005) (involving an independently developed video golf game); *Apple Comput., Inc. v. Microsoft Corp.*, 35 F.3d 1435 (9th Cir. 1994) (involving a microcomputer graphical user interface using a desktop metaphor, much of which was licensed to the defendant); *Data East USA, Inc. v. Epyx, Inc.*, 862 F.2d 204 (9th Cir. 1988) (involving an independently developed video karate game); *Oracle Am., Inc. v. Google Inc.*, 872 F. Supp. 2d 974 (N.D. Cal. 2012) (involving the declarations necessary for interoperability). We explain further below why these cases are inapt. See *infra* text accompanying notes 115–118.

107. See Jury Instructions at 5–6, *Antonick*, No. 3:11-cv-01543-CRB (Document 509) [hereinafter Jury Instructions]; Phase Two Pretrial Order, *Antonick*, No. 3:11-cv-01543-CRB (Document 460), 2013 WL 9774980; Memorandum and Order re Defendant's Third Motion for Summary Judgment, *Antonick*, No. 3:11-cv-01543-CRB (N.D. Cal. Jan. 22, 2014) [hereinafter Third MSJ Order] (sealed).

108. See *Mattel, Inc. v. MGA Entm't, Inc.*, 616 F.3d 904 (9th Cir. 2010); *Incredible Techs.*, 400 F.3d 1007; *Satava v. Lowry*, 323 F.3d 805 (9th Cir. 2003); *Apple Comput., Inc. v. Microsoft Corp.*, 35 F.3d 1435 (9th Cir. 1994); *Harper House, Inc. v. Thomas Nelson, Inc.*, 889 F.2d 197 (9th Cir. 1989); *Data East USA*, 862 F.2d 204. We explain below why these cases are inapt. See *infra* text accompanying notes 123–125.

109. See Jury Instructions, *supra* note 107, at 6 (instructing the jury that Antonick “must prove by a preponderance of the evidence that considering Sega Madden as a whole—that is, considering both the protected and unprotected elements—an ordinary reasonable observer would find Sega Madden *virtually identical* to Apple II Madden” (emphasis added)); Third MSJ Order, *supra* note 107.

110. See 17 U.S.C. § 103 (protecting compilations); 17 U.S.C. § 101 (defining a “compilation” as “a work formed by the collection and assembling of preexisting materials or of data that are selected, coordinated, or arranged in such a way that the resulting work as a whole constitutes an original work of authorship”). See generally MELVILLE NIMMER, 1 NIMMER ON COPYRIGHT § 3.04[B] (2019) (discussing the legal standard for protection of compilations); *Eng'g Dynamics, Inc. v. Structural Software, Inc.*, 26 F.3d 1335 (5th Cir. 1994) (finding an original compilation of otherwise uncopyrightable components to be protected); *Kregos v. Associated Press*, 937 F.2d 700 (2d Cir. 1991) (finding the format of baseball form containing pitching statistics copyrightable).

comprises a novel. Similarly, although copyright law does not protect individual colors, copyright generally subsists in paintings comprising an original compilation of colors. In the computer software context, even though individual 1's and 0's of object code and general processes and algorithms are not copyrightable, original compilations of specific coding and design choices are generally protectable, unless there is only one or a few ways of accomplishing the functional task.<sup>111</sup> The robustness of copyright protection for computer programs—their thickness or thinness—depends, as in other copyrightable works, on the range of expressive choice.<sup>112</sup> The design and coding of a very intricate video game, such as *Apple II Madden*, attracts significant copyright protection as a compilation of protectable and unprotectable elements, even though particular names, plays, directional tracking designs, and decision points are individually unprotectable. And even though the rules of football cannot be monopolized through copyright protection, the compilation of particular ways that they are implemented in a sophisticated software product can be copyrightable.

Even after the first football video game is published, others are free to independently develop their own football video games, but they are not free to copy highly particularized design and coding choices of the first comer without authorization. Nor can they develop sequels or more advanced versions that draw significantly upon on the granular design and coding elements of the original work.<sup>113</sup> Second comers usually lack access to the source code, which is typically not publicly released. Video game publishers typically protect their source code as trade secrets. They distribute their games

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111. See NAT'L COMM'N ON NEW TECH. USES OF COPYRIGHTED WORKS, FINAL REPORT 18-21 (1979). Courts have treated this report as legislative history to the 1980 amendments to the 1976 Act. See *Vault Corp. v. Quaid Software Ltd.*, 847 F.2d 255, 260–61 (5th Cir. 1988); *Apple Comput., Inc. v. Franklin Comput. Corp.*, 714 F.2d 1240, 1252 (3d Cir. 1983).

112. See Shyamkrishna Balganesh, *The Normativity of Copying in Copyright Law*, 62 DUKE L.J. 203, 221–26 (2012) (discussing thickness as a variable in copyright infringement analysis).

113. The language in the EA-Antonick contract arguably went further than copyright law's derivative work right in stating that "derivative works" "include, for example, significant enhancements of the Work to add additional features or improve performance and adaptations of the Work to operate on computers or operating systems other than those described in the Specifications." See 1986 Contract, *supra* note 78. Based on the contract's preceding sentence stating that "derivative works" for which royalties were due "constitute[] a derivative work of [Apple II Madden] within the meaning of the United States copyright law," Judge Breyer accorded no weight to the express enhancement example in the contract. *Id.* This interpretation was questionable as the scope of the derivative work right under the 1976 Act was somewhat ambiguous at the time that the contract was drafted, and the enhancement example provides a concrete indication of the parties' intent.

in object code format from which it is very difficult to decipher the source code.<sup>114</sup>

EA drew Judge Breyer off-course by focusing on software cases that fundamentally differed from the alleged copying that occurred in the *Antonick* case. In *Data East USA, Inc. v. Epyx, Inc.*,<sup>115</sup> and *Incredible Technologies, Inc. v. Virtual Technologies, Inc.*,<sup>116</sup> the plaintiff sought to monopolize karate and golf video games, respectively, by seeking to block *independently* developed video games based on the general rules of these sports as well as general hardware and software constraints. In *Oracle America, Inc. v. Google Inc.*, Oracle seeks to protect arguably unprotectable declarations necessary for computer system interoperability.<sup>117</sup> And in *Apple Computer, Inc. v. Microsoft Corp.*, Apple sought to block Microsoft and others to whom it licensed many elements of its graphical user interface from implementing the desktop metaphor for organizing microcomputer screen layout and functionality.<sup>118</sup>

While all of these cases are important to understanding the general contours of copyright protection for computer software, they differ fundamentally from the issues raised in *Antonick v. Electronic Arts*. In *Data East* and *Incredible Technologies*, the defendants *independently developed* their software from scratch; they had no access to the source code or particular design architecture of the plaintiff's software. Furthermore, unlike *Antonick v. Electronic Arts*, those cases related to audiovisual elements, not the underlying code. The games appeared similar to the plaintiffs' works because they followed the rules and context of the sport (soccer or golf) and general software and video game principles. In *Oracle v. Google*, Google *independently implemented* the source code using only the declarations necessary for interoperability.<sup>119</sup> And in *Apple v. Microsoft*, a prior licensing agreement

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114. Trade secret protection, however, is not absolute. Trade secret law does not bar reverse engineering. See Peter S. Menell, *Tailoring Legal Protection for Computer Software*, 39 STAN. L. REV. 1329, 1351–53 (1987). Competitors can at times (but often at great cost) reverse engineer the functional specifications of computer programs. They can use those functional specifications to produce interoperable or otherwise competing products without violating copyright law. See *Sega Enters. v. Accolade, Inc.*, 977 F.2d 1510 (9th Cir. 1992); Donald S. Chisum, Rochelle Cooper Dreyfuss, Paul Goldstein, Robert A. Gorman, Dennis S. Karjala, Edmund W. Kitch, Peter S. Menell, Leo J. Raskind, Jerome H. Reichman & Pamela Samuelson, *LaST Frontier Conference on Copyright Protection of Computer Software*, 30 JURIMETRICS J. 15, 23–25, 32 (1989).

115. *Data East USA, Inc. v. Epyx, Inc.*, 862 F.2d 204 (9th Cir. 1988).

116. *Incredible Techs., Inc. v. Virtual Tech., Inc.*, 400 F.3d 1007 (7th Cir. 2005).

117. See Menell, *supra* note 40, at 376–89.

118. See *Apple Comput., Inc. v. Microsoft Corp.*, 799 F. Supp. 1006 (N.D. Cal. 1992), *aff'd in part, rev'd in part*, 35 F.2d 1435 (9th Cir. 1994).

119. See Menell, *supra* note 40, at 366–67.

afforded the defendants use of many of the elements of Apple's graphical user interface. Furthermore, the desktop metaphor for a user interface was both obvious and developed originally by Xerox for its Star workstation.<sup>120</sup> Apple's design team based the Apple Lisa and Apple Macintosh on the Xerox Star design and Smalltalk, an object-oriented programming language also developed at Xerox's Palo Alto Research Center (PARC).<sup>121</sup> Moreover, Apple hired Larry Tesler, one of the developers of the Xerox Star, to join the Apple development team.<sup>122</sup> None of these cases involved an insider with access to source code.

By contrast, the central issue in *Antonick v. Electronic Arts* was whether EA and Park Place used Antonick's detailed program design, documentation, and source code in developing Sega Madden. Simmons allegedly had unfettered access to Antonick's design documents and code, and he received guidance and supervision from Hilleman and other EA employees intimately familiar with Antonick's granular programming choices. Under impossibly tight time-to-market pressure, EA and Park Place's inexperienced programmer took shortcuts—copying protectable design and coding elements—to complete in three months what Antonick's experienced team had taken four years to accomplish.

EA also drew Judge Breyer off-course on the standard for similarity by focusing on cases involving simple, narrowly protected elements, none of which involved the sophisticated, granular, integrated design and coding choices involved in the Madden football video games. *Harper House, Inc. v. Thomas Nelson, Inc.*,<sup>123</sup> involved the largely standardized visual layout of a day planner (comprising a calendar and ruled lines). *Data East* and *Incredible Technologies* solely involved the *conventional audiovisual elements* for karate and golf videogames. *Apple Computer, Inc. v. Microsoft Corp.* involved largely unoriginal (and licensed) graphical office icons. *Satava v. Lowry*,<sup>124</sup> involved a jellyfish sculpture encased in a domed glass cylinder. And *Mattel, Inc. v. MGA*

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120. See *Xerox Star*, WIKIPEDIA, [https://en.wikipedia.org/wiki/Xerox\\_Star](https://en.wikipedia.org/wiki/Xerox_Star) (last visited Aug. 30, 2020).

121. Members of the Apple Lisa engineering team saw Star at its introduction at the 1981 National Computer Conference and converted their desktop manager to an icon-based interface modeled on the Star. Chris Morgan, *An Interview with Wayne Rosing, Bruce Daniels, and Larry Tesler*, 2 BYTE 90, 108 (1983); *Smalltalk*, WIKIPEDIA, <https://en.wikipedia.org/wiki/Smalltalk> (last visited Aug. 30, 2020).

122. John Markoff, *Lawrence Tesler, who Made Personal Computing Easier, Dies at 74*, N.Y. TIMES (Feb. 20, 2020), <https://www.nytimes.com/2020/02/20/technology/lawrence-tesler-dead.html>; see also *Larry Tesler*, WIKIPEDIA, [https://en.wikipedia.org/wiki/Larry\\_Tesler](https://en.wikipedia.org/wiki/Larry_Tesler) (last visited Aug. 30, 2020).

123. *Harper House, Inc. v. Thomas Nelson, Inc.*, 889 F.2d 197 (9th Cir. 1989).

124. *Satava v. Lowry*, 323 F.3d 805 (9th Cir. 2003).

*Entertainment, Inc.*,<sup>125</sup> involved a “sculpt” for human-based dolls with enlarged facial features and feet. None of these cases involved anywhere near the complexity and range of choice reflected in the Apple II Madden video game.

Consequently, the court should not have elevated the standard for similarity. While the court was correct in filtering out unprotectable elements as *separate* bases for infringement, it erred in effectively blocking the core of Antonick’s compilation infringement allegation. The full Barr Report provided just that type of analysis. He examined both the Apple II Madden compilation forest and the particularized trees.<sup>126</sup> Judge Breyer’s severe whittling of the case excluded not only most of the trees but also the forest.

Copyright law does not work that way. Novelists can enjoin those who reproduce their compilation of unprotectable words and artists can enjoin those who reproduce their compilation of unprotectable colors. By treating *Antonick v. Electronic Arts* like cases in which software developers independently produce competing sports video games without access to the underlying code, visual artists take only the idea and not the particularized expression for an artistic work (e.g., a jelly fish encased in a glass dome or a doll with pronounced facial features and feet), and a mobile phone developer uses unprotectable code necessary for interoperable sub-systems and implements the operating system in a clean room, Judge Breyer improperly ripped the heart out of the plaintiff’s case.

#### E. JURY TRIAL: VERDICTS FOR ANTONICK

The statute of limitations trial commenced on June 17, 2013.<sup>127</sup> EA contended that Antonick waited too long to file his lawsuit. Antonick countered that he only became aware of the alleged breach of contract as a result of Hawkins’ revelations during the Madden Football 20th anniversary celebration. After several days of proceedings, the jury unanimously found that Antonick did not discover or know of facts that would have caused a reasonable person to suspect that EA had breached its 1986 contract with Antonick before November, 21, 2005, and therefore the statute of limitations did not bar the case.<sup>128</sup>

After a two-week hiatus to prepare for the liability phase, the parties presented their opening arguments on July 9, 2013, to the same jury. Both

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125. *Mattel, Inc. v. MGA Ent., Inc.*, 616 F.3d 904 (9th Cir. 2010).

126. *See generally* Barr Report, *supra* note 102.

127. *See* Beth Winegarner, *EA Can’t Sink ‘Madden’ Royalties Suit in Jury Trial*, LAW360 (June 21, 2013, 7:32 PM), <https://www.law360.com/articles/452353>.

128. *See* Special Form of Verdict, *Antonick v. Elec. Arts Inc.*, No. C 11-1543 CRB (N.D. Cal. Jan. 22, 2014) (Document 441), 2013 WL 12183203.

parties (and Judge Breyer) recognized that software experts would be needed for the jury to understand computer programming and software code. During her opening statement, EA's lead counsel displayed some source code from Sega Madden and forthrightly acknowledged that "[t]here are people who can read it. I cannot."<sup>129</sup>

Antonick constructed his argument that Sega Madden was derived from Apple II Madden on circumstantial and direct forms of evidence.<sup>130</sup> Antonick contended that the only way that Park Place could have produced the fully functional, highly sophisticated Sega Madden football video in just a few months was by translating Antonick's binary play data<sup>131</sup> into source code for the Sega Genesis 68000 microprocessor. Antonick emphasized the painstaking effort required to produce well-functioning, bug-free code for a sophisticated football video game,<sup>132</sup> and Antonick reinforced his derivative work contention by showing Simmons' lack of prior experience playing football or programming football video games<sup>133</sup> and EA's failure to provide any credible explanation for how Simmons obtained or developed the critical play data.<sup>134</sup>

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129. Trial Transcript, *supra* note 85, at 649 ll. 5–6.

130. The court instructed the jury that “[e]vidence may be direct or circumstantial. You should consider both kinds of evidence. The law makes no distinction between the weight to be given to direct or circumstantial evidence. It is for you to decide how much weight to give to any evidence.” *Id.* at 2053 ll. 2–6.

131. Judge Breyer ultimately instructed the jury that “the term source code includes binary files.” *Id.* at 2055 ll. 19–20.

132. *See id.* at 675–79 (Michael Kawahara), 741–57 (Robin Antonick). Kawahara testified that a particular defensive play took over a week to create, test, and tune. *See id.* at 677 l. 25, 678 l. 1. Antonick testified that it would take “days and possibly more than a week” to test a single play against all 81 defensive plays, *id.* at 749 l. 25, 750 l. 1, and “we had to log hundreds of hours of testing per play to be able to get to the point where we felt confident that that play was executing up to the norms that we had—that standard that we had set for the ultimate NFL simulation,” *id.* at 753 ll. 10–13.

133. *See id.* at 1643 ll. 17–25 (Jim Simmons). EA sought to work with Park Place on Sega Madden because it had produced the successful “Monday Night Football” video arcade game (MNF). *Id.* at 1245 ll. 2–12 (Richard Hilleman). EA thought that Scott Orr, the lead programmer for MNF, would be leading the Sega Madden team. *See id.* at 976 ll. 21–23 (Scott Orr) (testifying that he designed MNF in 1989), 2064 ll. 11–21 (referring to Exhibit 133, a Park Place planning document for SEGA Football noting Scott Orr was to provide play data). Orr, however, only wrote the high-level script for Sega Madden and declined to code the game. *See id.* at 1591 l. 10, 1661 l. 7–1662 l. 6 (Jim Simmons). EA's Hilleman complained about Park Place's shift in staffing for Sega Madden as a “bait and switch.” *Id.* at 1157 l. 17. Antonick contended that Simmons lacked the football and video football coding experience to handle the responsibilities assigned to him and that he was chosen principally because he was a high school buddy of Troy Linden, Park Place's CEO. *See id.* at 1584 ll. 4–6 (Jim Simmons).

134. According to assistant producer Michael Brook, Sega Madden had “[n]o plays, nothing. No play calling,” as late as July 1990 for a game that was published in November 1990. *Id.* at 1557 l. 20.

Antonick suggested that EA employees with access to Antonick's code—likely Michael Brook, EA's Associate Producer for Sega Madden, and Richard Hilleman—provided Simmons with the critical source code (and play data) needed for Park Place to get Sega Madden to function properly.<sup>135</sup> EA conceded that it had access to Antonick's source code.<sup>136</sup>

Antonick offered evidence that EA rushed Sega Madden to market as part of plan to sabotage Sega's efforts to gain a strong position in the emerging video football marketplace. This entailed showing that Trip Hawkins duped Sega into thinking that EA's development of Sega's Joe Montana video football game—a competing game on the Sega Genesis platform—would use innovations planned for Sega Madden.<sup>137</sup>

Antonick called upon Michael Barr, its principal software expert, to explain the design and coding of the two video games.<sup>138</sup> Barr generally explained how embedded systems, like the Apple II and the Sega Genesis, function.<sup>139</sup> He also generally discussed programming languages, coding of embedded systems, compilers, and the distinction between source code and executable code that computer systems can process.<sup>140</sup>

Barr then explained the files that he had been provided for analyzing the source code in the case<sup>141</sup> and how he went about deciphering the code bases and design elements to gain insight into the extent to which the field width, plays, and formations in Sega Madden were derived from Apple II Madden. He used demonstrative examples from his expert report to illustrate the similarities that the different code languages and data structures would otherwise obscure. This in part involved explaining hexadecimal (base-16) representation of numerical information.<sup>142</sup> Through his deciphering of code, Barr was able to show numerous examples of code and play data that were similar or identical in Apple II Madden and Sega Madden. These examples were then illustrated to the jury using demonstrative exhibits.

Figure 1 (demonstrative Exhibit 485) illustrated how the internal numbering of offensive plays in 1990 Sega Madden matched the numbering, selection, and arrangement of plays in Apple II Madden.<sup>143</sup> The 1990 edition of Sega Madden had fewer plays than Apple II Madden, but it drew almost

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135. *See id.* at 1557–58 (Michael Brook), 1659 ll. 8–16, 1664–67 (Jim Simmons).

136. *See id.* at 2062 ll. 8–12.

137. *See id.* at 1715–19, 1748–50 (Trip Hawkins).

138. *See id.* at 1295–1325, 1342–1456, 1475–90.

139. *See id.* at 1299–1303.

140. *See id.* at 1303–05.

141. *See id.* at 1305–12.

142. *See id.* at 1322–23.

143. *See id.* at 1362–71.

entirely from the eighty-one offensive plays in Apple II Madden and used a nearly identical internal numbering system.

Figure 1: Comparison of Football Play Names and Order in Apple Madden and Sega Madden

Apple	Sega	Apple	Sega	Apple	Sega
<b>10 Series</b>		<b>40 Series</b>		<b>70 Series</b>	
11   H15 LEAD	fb lead	41 F F63 HOE	fb trap left	71 P COMEBACK	
12   F66 ODD	hb pull	42 F F61 MAN		72 P TURN IN	
13   H16 LEAD	fb lead right	43 F F54 CNTR	fb counter	73 P STREAKS	
14   F61 MAN	hb cut left	44 F F69 BOOM	fb lead	74 E F19 BILL	
15   H18 BOB	fb cut right	45 F F51 MAN		75 E H30 LOG	
16   P61 PASS	flood left	46 F H48 EVEN	hb sweep right	76 E WAGGLE	
17 PUNT		47 F SCREEN L	hb screen	77 E QUICK	
18 FIELD GOAL		48 F P63 PASS	cross right	78 E P30 PASS	
19 FAKE FG	fake field goal	49 F H48 PASS		79 E PA WHEEL	
<b>20 Series</b>		<b>50 Series</b>		<b>80 Series</b>	
21 G F69 BOOM		51 N H19 MANO	hb trap left	81 S FLOOD L	
22 G F51 MAN		52 N H13 BILL		82 N DEEP IN	
23 G F68 BOOM		53 N F68 LEAD		83 S POST OUT	
24 G F61 MAN		54 N H59 CNTR	hb counter	84 S CROSS UP	
25 G F54 CNTR		55 N F64 LEAD	fb off tackle	85 F FLAGPOST	
26 G F64 LEAD		56 N H38 TOSS		86 S TURMOIL	
27 G F69 SWEEP		57 N P64 PASS	cross in	87 T H39 TOSS	
28 G QB SNEAK		58 N P68 PASS	play action	88 T P39 PASS	
29 G P54 PASS		59 N SCREEN R	hb screen	89 S F38 TOSS	
<b>30 Series</b>		<b>60 Series</b>		<b>90 Series</b>	
31 G H39 TOSS		61 P F31 TRAP	fb center trap	91 4 FLOOD R	off91 flood right
32 G H10 LEAD		62 P H14 LEAD		92 4 QUICKOUTS	off92 quick outs
33 G H14 LEAD		63 P H16 BOB	hb off tackle	93 4 POST IN	
34 G H59 CNTR		64 P H39 TOSS	hb toss left	94 4 POST UP	off94 post up
35 G H40 ICE		65 P F42 MAN		95 4 DEEP OUT	off95 deep outs
36 G H38 TOSS		66 P H18 BOB		96 4 UP HOOK	
37 G H13 BILL		67 P FB DRAW	fb draw	97 4 FLAGPOST	off97 flag left
38 G P14 PASS		68 P P42 PASS	down and out	98 4 F CIRCLE	
39 G XY CROSS		69 P P31 PASS	cross pass	99 4 HAILMARY	
				<b>New from Sega</b>	
				off98 fb draw	
				off99 fake punt	

Barr next explained how it was possible to compare the player formations and movements across the two games. Figure 2 (demonstrative Exhibit 645) depicts the data from the Apple II Madden assembly language program.<sup>144</sup> The semicolons indicated comments. Thus, the first row indicates that this is the “Nickel,” or five defensive back formation. The second row indicates the eleven player designations (0 followed by 1-10 to equal 11). The third row indicates the X coordinate position in the two-dimensional field grid. The fourth row indicates the Y coordinate position. The locations in the grid are represented in hexadecimal (dollar sign followed by a two element representation with the size indicated by 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, and F).

144. *See id.*

Figure 2: Illustrative Apple II Madden Assembly Code Data

;	NICKEL											
;	0	1	2	3	4	5	6	7	8	9	10	
FX42	DB	\$8D,	\$75,	\$99,	\$69,	\$99,	\$69	\$5D,	\$39,	\$D5,	\$81,	\$B1 ;X COORDINATE
FY43	DB	\$7F,	\$7F,	\$7F,	\$7F,	\$7C,	\$7C,	\$73	\$79	\$79	\$70	\$76 ;Y COORDINATE
FP42	DB	01,	02,	05,	06,	08,	10,	13,	15,	14,	18,	17 ;POSITION

Figure 3 (demonstrative Exhibit 646) is the data that the Apple II Madden play editor generated.<sup>145</sup> It provides the data for simulating the play called NIC reddog, which indicates a defensive rush or blitz,<sup>146</sup> from the Nickel defensive formation.

Figure 3: Apple II Madden Play Editor Data

	0001	0203	0405	0607	0809	0A0B	0C0D	0E0F	0123456789ABCDEF
00	0102	8D7F	8783	0000	0000	0000	0000	0000	. #f.....
10	0202	757F	7D84	0000	0000	0000	0000	0000	.u] },,.....
20	0502	997F	9984	0000	0000	0000	0000	0000	.™™™,,.....
30	0602	697F	6D84	0000	0000	0000	0000	0000	.i] m,,.....
40	0803	997C	A785	0000	0000	0000	0000	0000	.™  \$.....
50	0A03	697C	5F85	0000	0000	0000	0000	0000	.i _.....
60	0D74	5D73	6D8F	0000	0000	0000	0000	0000	.t] sm .....
70	0F94	3979	3D86	0000	0000	0000	0000	0000	."9y=t.....
80	0EA4	D579	D989	0000	0000	0000	0000	0000	.xÖyÛ%.....
90	1264	8170	9D8F	0000	0000	0000	0000	0000	.d p .....
A0	1184	B176	A986	0000	0000	0000	0000	0000	.,iv@t.....
B0	0000	0000	0000	0000	0000	0000	0000	0000	.....
C0	4E49	4320	5245	4444	4F47	0000	0000	0000	NIC REDDOG.....
D0	0000	0000	0000	0000	0000	0000	0000	0000	.....
E0	0000	0000	0000	0000	0000	0000	0000	0000	.....
F0	0000	0000	0000	0000	0000	0000	0000	0000	.....

Figure 4 (demonstrative Exhibit 647) depicts source code from 1990 Sega Madden for a formation and play.<sup>147</sup> Barr explained that the play data is in binary code.

145. *See id.* at 1373–75.

146. *See* *Blitz* (*gridiron football*), WIKIPEDIA, [https://en.wikipedia.org/wiki/Blitz\\_\(gridiron\\_football\)](https://en.wikipedia.org/wiki/Blitz_(gridiron_football)) (last visited Aug. 30, 2020) (explaining the origin of the term “reddog” in football).

147. *See* Trial Transcript, *supra* note 85, at 1375–77.

Figure 4: Illustrative 1990 Sega Madden Formation and Play Source Code

```

off63 ;hb off tackle
      dc   proset1      ;formation pro-set
      dc.b -1,-1,-1    ;pass players

      dc.b oasm,-1,4,7
      dc.b oapt,3,0,0
      dc.b oaorb,0,0,0,-1 ;
      dc.b oara,16,1,0
      dc.b oara,80,0,0
      dc.b oaorb,0,0,0,-1 ;
      dc.b oara,20,7,0
      dc.b oaorb,0,0,0,-1 ;
      dc.b oara,10,2,0
      dc.b oara,20,1,0
      dc.b oaorb,0,0,0,-1 ;
      dc.b oarb,16,0,0
      dc.b oaorb,0,0,0,-1 ;
      dc.b oarb,6,7,0
      dc.b oaorb,0,0,0,-1 ;
      dc.b oarb,6,1,0
      dc.b oaorb,0,0,0,-1 ;
      dc.b apaz,2,0,0
      dc.b oarb,16,2,0
      dc.b oaorb,0,0,0,-1 ;
      dc.b oarb,6,0,0
      dc.b oaorb,0,0,0,-1 ;
      dc.b oarb,6,0,0
      dc.b oaorb,0,0,0,-1 ;
      dc.b oarb,6,0,0
      dc.b oaorb,0,0,0,-1 ;

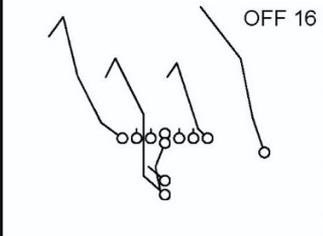
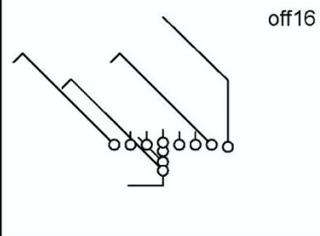
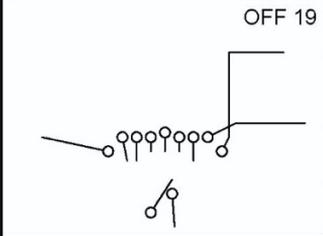
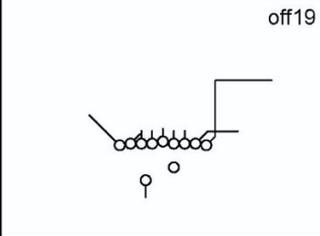
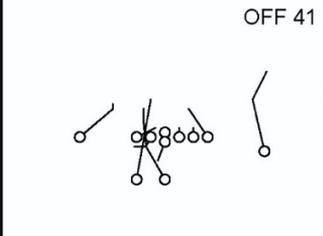
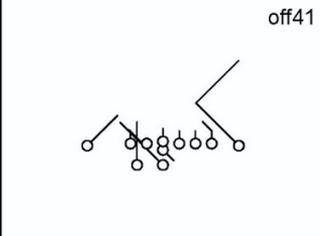
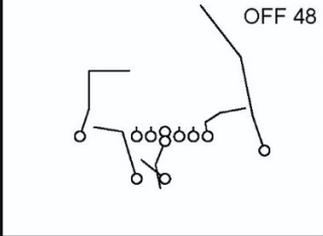
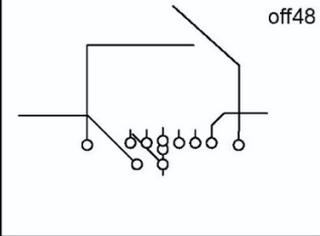
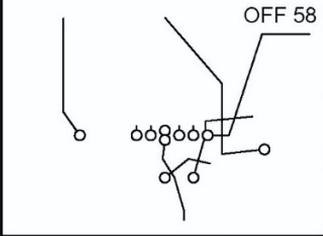
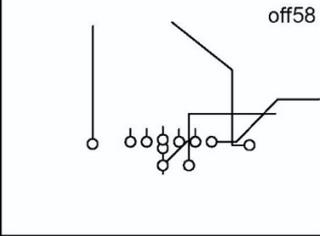
```

As a way of enabling the jury to visually compare the plays and formations of the two games, Barr developed software to read in the data from both games and generate side-by-side depictions of formations and player movements in relationship to the line of scrimmage.<sup>148</sup> Figure 5 (first page of demonstrative Exhibit 476) shows that comparison. The left side depicts offensive plays 16, 19, 41, 48, and 58 from Apple II Madden. The right side depicts offensive plays 16, 19, 41, 48, and 58 from Sega Madden. The other plays represented in demonstrative Exhibit 476 showed similar patterns.

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148. *See id.* at 1377–82.

Figure 5: Comparison of Offensive Plays—Apple II Madden and Sega Madden

Antonick Computer Data	Sega Computer Data
 <p>OFF 16</p> <p>I P61 PASS</p>	 <p>off16</p> <p>flood left</p>
 <p>OFF 19</p> <p>FAKE FG</p>	 <p>off19</p> <p>fake field goal</p>
 <p>OFF 41</p> <p>F F63 HOE</p>	 <p>off41</p> <p>fb trap left</p>
 <p>OFF 48</p> <p>F P63 PASS</p>	 <p>off48</p> <p>cross right</p>
 <p>OFF 58</p> <p>N P68 PASS</p>	 <p>off58</p> <p>play action</p>

Barr also testified to the presence of various misspellings and distinctive character strings from the source code for Apple II Madden that show up in Sega Madden source code.<sup>149</sup>

Regarding later versions of Sega Madden, Barr testified that the plays in 1990 Sega, derived from Apple II Madden, were also found in subsequent Sega versions.<sup>150</sup> Barr illustrated this point by walking through an example of a play from 1995 Sega Madden, demonstrating how plays persisted from Apple II Madden to 1995 Sega Madden.<sup>151</sup> Barr also testified that he found no evidence that subsequent versions of Sega Madden ever eliminated plays used in both Apple II Madden and 1990 Sega Madden.<sup>152</sup> He further noted that additional plays from Apple II Madden were added to later Sega versions.<sup>153</sup>

EA's defense centered on the theme that Park Place independently developed Sega Madden and the only reason for the similarity of the plays and formations was that Simmons used a selection of plays from playbooks that Judge Breyer ruled unprotectable. EA's lead counsel used the following analogy to illustrate the point:

Let's suppose two people have decided to do a painting of the Golden Gate Bridge. Their paintings likely would look similar. And if you look at these two paintings they look similar. There are differences, but they don't look similar . . . because one copied the other's painting. They look similar because they are both painting the same thing, the Golden Gate bridge.

In the same way, Jim Simmons and Robin Antonick used the plays that Trip Hawkins wrote and implemented them into their game by writing source code. Jim Simmons had as much right as Robin Antonick to use the plays in the Apple II playbook, just as one painter has as much right as another to paint the Golden Gate bridge.<sup>154</sup>

In his closing argument, Antonick's lead counsel contended that the only plausible explanation for Park Place's rapid successful implementation of Sega Madden, its avoidance of inevitable software bugs, the nearly identical play formations and player movement, the selection and arrangement of plays and play names, and the telltale misspellings and other similarities with Apple II

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149. *See id.* at 1384–93.

150. *See id.* at 1397–98.

151. *See id.* at 1398–99.

152. *See id.* at 1397–98.

153. *See id.* at 1399–1401.

154. *See id.* at 656 ll. 13–25.

Madden source code was that Simmons received and emulated Antonick's code, play data, and other granular details of Apple II Madden.<sup>155</sup>

EA responded by reminding the jury of its Golden Gate bridge painting analogy to contend that Simmons independently developed Sega Madden.<sup>156</sup> She emphasized that “[e]very single EA witness who testified told you they did not see Mr. Antonick’s source code in connection with the making of the Sega Madden game or any other game.”<sup>157</sup> She admonished the jury that “[i]n order to find in favor of Mr. Antonick, you would have to find that each and every one of these witnesses came in here, swore to tell the jury under penalty of perjury, and deliberately lied to you.”<sup>158</sup>

Antonick’s counsel responded by paraphrasing an insight commonly attributed to C.S. Lewis—“[i]ntegrity is what you do when no one is looking”<sup>159</sup>—as the key to solving the puzzle.<sup>160</sup>

The jury unanimously found for Antonick on the plays and formations element, finding that there were substantial similarities in the source code for Apple II Madden and Sega Madden, and that Antonick had proven that all seven editions of Sega Madden under consideration (from 1990 to 1996), considered as a whole, were virtually identical to Apple II Madden.<sup>161</sup> The jury’s verdict set the stage for a third phase focused on EA games released after 1996. Before undertaking that process, the court turned its attention to post-trial motions.

#### F. POST-TRIAL PROCEEDINGS: JUDGMENT FOR EA AS A MATTER OF LAW

EA filed a motion pursuant to Rule 50 to overturn both of the jury’s verdicts—statute of limitations and breach of contract—as a matter of law.<sup>162</sup>

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155. *See id.* at 2057–85.

156. *See id.* at 2107–08.

157. *See id.* at 2087 ll. 8–10.

158. *See id.* at 2087 ll. 13–16.

159. C.S. Lewis Found., *Quotes Misattributed to C.S. Lewis*, LIVING THE LEGACY OF C.S. LEWIS, <http://www.cslewis.org/aboutus/faq/quotes-misattributed/> (last visited Aug. 30, 2020).

160. *See* Trial Transcript, *supra* note 85, at 2129 ll. 19–20.

161. *See* Special Verdict Form, *Antonick*, No. CV 11-01543 CRB (Document 516), 2013 WL 9768250; Beth Winegarner, *EA Owes ‘Madden NFL’ Coder \$3.6M in Royalties, Jury Finds*, LAW360 (July 23, 2013, 8:03 PM), <https://www.law360.com/articles/459582>.

162. *See* EA’s Amended Renewed Phase II Motion for Judgment as A Matter of Law Under Fed. R. Civ. P. 50(B), or, Alternatively, Motion for New Trial Under Fed. R. Civ. P. 59, *Antonick*, No. 3:11-cv-01543-CRB (Document 540); Electronic Arts Inc.’s Notice of Motion and Motion for Judgment as a Matter of Law that Antonick’s Claims Are Barred by the Statute of Limitations, *Antonick*, No. 3:11-cv-01543-CRB (Document 443); FED. R. CIV. P. 50(b).

Under Ninth Circuit law, “Judgment as a matter of law is appropriate when the evidence, construed in the light most favorable to the nonmoving party, permits only one reasonable conclusion, which is contrary to the jury’s verdict.”<sup>163</sup> The court may grant a motion for judgment as a matter of law only if “ ‘there is no legally sufficient basis for a reasonable jury to find for [the non-moving] party on that issue.’ ”<sup>164</sup> If, however, “there is ‘such relevant evidence as reasonable minds might accept as adequate to support the jury’s conclusion,’ ” the motion should be denied.<sup>165</sup> When considering a motion for judgment as a matter of law, the court may not make credibility determinations, weigh the evidence, or substitute its own view of the evidence for the jury’s.<sup>166</sup>

Notwithstanding the high threshold for overturning a jury verdict, Judge Breyer granted EA’s motion with respect to the jury’s breach of contract determination.<sup>167</sup> The court drew heavily on its pretrial ruling that Apple II Madden was only entitled to thin protection, and hence Sega Madden would only constitute a derivative work “if an ordinary reasonable observer comparing Apple II Madden as a whole to Sega Madden as a whole would consider the works virtually identical.”<sup>168</sup> While acknowledging that Antonick identified a broad range of similarities, Judge Breyer concluded that “Antonick does not point to any evidence of the works ‘as a whole.’ ”<sup>169</sup> The court noted that “Barr’s opinion that all seven Sega Madden games are ‘essentially the same’ as a whole cannot substitute for the jury’s subjective comparison of each of the seven Sega Madden games as a whole to Apple II Madden as a whole.”<sup>170</sup>

The court based this conclusory statement on the limitation on expert opinion first announced in *Krofft*:

Because the intrinsic test requires the perspective of an ordinary, reasonable observer, *Funky Films, Inc. v. Time Warner Entertainment Co., L.P.*, 462 F.3d 1072, 1077 [(9th Cir. 2006)], expert testimony is not admissible evidence of similarity for purposes of the intrinsic

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163. *Hagen v. City of Eugene*, 736 F.3d 1251, 1256 (9th Cir. 2013) (quoting *Omega Envtl., Inc. v. Gilbarco, Inc.*, 127 F.3d 1157, 1161 (9th Cir. 1997)).

164. *Jorgensen v. Cassidy*, 320 F.3d 906, 917 (9th Cir. 2003) (quoting *Reeves v. Sanderson Plumbing Prods., Inc.*, 530 U.S. 133, 149 (2000)).

165. *Hagen*, 736 F.3d at 1256 (quoting *Gilbrook v. City of Westminster*, 177 F.3d 839, 856 (9th Cir. 1999) (quoting *Landes Constr. Co. v. Royal Bank of Can.*, 833 F.2d 1365, 1371 (9th Cir. 1987))).

166. *See EEOC v. Go Daddy Software, Inc.*, 581 F.3d 951, 961 (9th Cir. 2009) (citing *Reeves*, 530 U.S. at 150).

167. *See Antonick*, No. C 11–1543 CRB, 2014 WL 245018 (order granting EA’s Amended Renewed Phase II Motion).

168. *Id.* at \*6 (citing Third MSJ Order in n.6).

169. *Id.* at \*7.

170. *Id.* at \*9.

test. *See, e.g., Olson v. Nat'l Broad. Co., Inc.*, 855 F.2d 1446, 1448–49 (9th Cir.1988) (stating that expert testimony is appropriate under the extrinsic test, but not under the intrinsic test); *Express, LLC v. Fetish Grp., Inc.*, 424 F.Supp.2d 1211, 1228 (C.D. Cal.2006) (“While expert testimony is generally appropriate in conducting the extrinsic test, expert testimony may not be considered in conducting the intrinsic test.”) (internal citation omitted); *Trust Co. Bank v. Putman Publ’g Grp., Inc.*, No. CV 87 07393 AHS(JRX), 1988 WL 62755, at \*6 (C.D. Cal. Jan. 4, 1988) (“Expert testimony is inadmissible on this intrinsic test.”). *See also Computer Associates Int’l, Inc. v. Altai, Inc.*, 982 F.2d 693, 713 (2d Cir.1992) (“[E]xpert testimony may be used to assist the fact finder in ascertaining whether the defendant had copied any part of the plaintiff’s work. . . . However, once some amount of copying has been established, it remains solely for the trier of fact to determine whether the copying was ‘illicit’. . . . Since the test for illicit copying is based upon the response of ordinary lay observers, expert testimony is thus ‘irrelevant’ and not permitted.”) (citations omitted).<sup>171</sup>

*Funky Films, Olson v. National Broadcasting Co., Inc.*, and *Trust Co. Bank v. Putman Publishing Group, Inc.* rely on *Kroff*’s questionable standard.<sup>172</sup> These decisions don’t address whether experts should be permitted to translate technical computer design and coding into a form that a jury can comprehend for the purposes of comparing works written in different computer languages.

It is particularly unnerving to see the court’s reliance on footnote 10 in *Altai*, which expressly *permitted* the use of expert witnesses in software copyright cases for the very purpose of enabling lay judges and juries to surmount the task of making the illicit copying determination.<sup>173</sup> Had Judge Breyer continued reading the *Altai* decision following the excerpt he quoted in footnote 10, he would have seen that the Second Circuit carefully explained why it was *departing* from traditional expert witness rule for computer software cases. The Second Circuit explains:

Historically, *Arnstein*’s ordinary observer standard had its roots in “an attempt to apply the ‘reasonable person’ doctrine as found in other areas of the law to copyright.” 3 NIMMER § 13.03[E][2], at 13–62.10–11. That approach may well have served its purpose when the material under scrutiny was limited to art forms readily comprehensible and generally familiar to the average lay person.

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171. *Id.* at \*9, \*9 n.9.

172. *See Funky Films, Inc. v. Time Warner Entm’t Co., L.P.*, 462 F.3d 1072, 1076–77 (9th Cir. 2006) (citing *Kroff*); *Olson v. Nat’l Broad. Co., Inc.*, 855 F.2d 1446, 1448–49 (9th Cir. 1988) (citing *Kroff*); *Trust Co. Bank v. Putman Publ’g Grp., Inc.*, No. CV 87 07393 AHS(JRX), 1988 WL 62755, at \*5–\*6 (C.D. Cal. Jan. 4, 1988).

173. *See supra* text accompanying notes 44–47.

However, in considering the extension of the rule to the present case, we are reminded of Holmes' admonition that, "[t]he life of the law has not been logic: it has been experience." O.W. Holmes, Jr., *THE COMMON LAW* 1 (1881).

Thus, in deciding the limits to which expert opinion may be employed in ascertaining the substantial similarity of computer programs, we cannot disregard the highly complicated and technical subject matter at the heart of these claims. Rather, we recognize the reality that computer programs are likely to be somewhat impenetrable by lay observers—whether they be judges or juries—and, thus, seem to fall outside the category of works contemplated by those who engineered the *Arnstein* test. *Cf. Dawson v. Hinshaw Music Inc.*, 905 F.2d 731, 737 (4th Cir.) (“departure from the lay characterization is warranted only where the intended audience possesses ‘specialized expertise’”), *cert. denied*, 498 U.S. 981 (1990). As Judge Pratt correctly observed:

In the context of computer programs, many of the familiar tests of similarity prove to be inadequate, for they were developed historically in the context of artistic and literary, rather than utilitarian, works.

*Computer Assocs.*, 775 F.Supp. at 558.

In making its finding on substantial similarity with respect to computer programs, we believe that the trier of fact need not be limited by the strictures of its own lay perspective. *See Dawson*, 905 F.2d at 735; *Whelan*, 797 F.2d at 1233; *Broderbund*, 648 F.Supp. at 1136 (stating in dictum: “an integrated test involving expert testimony and analytic dissection may well be the wave of the future in this area. . . .”); *Brown Bag Software*, 960 F.2d at 1478–79 (Sneed, J., concurring); *see also* 3 NIMMER § 13.03[E][4]; *but see Brown Bag Software*, 960 F.2d at 1475 (applying the “ordinary reasonable person” standard in substantial similarity test for computer programs). Rather, we leave it to the discretion of the district court to decide to what extent, if any, expert opinion, regarding the highly technical nature of computer programs, is warranted in a given case.

In so holding, we do not intend to disturb the traditional role of lay observers in judging substantial similarity in copyright cases that involve the aesthetic arts, such as music, visual works or literature.

In this case, [MIT Computer Science Professor] Dr. Davis' opinion was instrumental in dismantling the intricacies of computer science so that the court could formulate and apply an appropriate rule of law. While Dr. Davis' report and testimony undoubtedly shed valuable light on the subject matter of the litigation, Judge Pratt remained, in the final analysis, the trier of fact. The district court's

use of the expert's assistance, in the context of this case, was entirely appropriate.<sup>174</sup>

Similarly, in the *Antonick* trial, Barr's testimony and demonstrative exhibits were "instrumental in dismantling the intricacies of computer science so that the court could formulate and apply an appropriate rule of law."<sup>175</sup> Since *Altai* was a bench trial, Judge Pratt stood in the jury's shoes.

To make matters worse, faithful application of Rule 50(b) dictates affirmance of the jury's liability determination. Judge Breyer should have credited the jury's assessment of both circumstantial and direct evidence, just as he instructed.<sup>176</sup> In conjunction with the extensive circumstantial evidence that Simmons used Antonick's code to complete *Sega Madden*, Barr's testimony enabled the jury to understand the binary play data and many other technical aspects of video game programming necessary for lay jurors to evaluate the questions before it. Viewing the evidence in the light most favorable to Antonick, including credibility determinations, should have led Judge Breyer to reject EA's Phase II Judgment as a Matter of Law (JMOL) motion and uphold the jury's verdict. The jury was fully entitled to conclude, as Antonick argued, that Simmons faithfully emulated the Apple II *Madden* play data in writing *Sega Madden* source code and that subsequent editions of *Sega Madden* reproduced the derived code.<sup>177</sup> Thus, it is difficult to see how Judge Breyer did not usurp the jury's role.

#### G. NINTH CIRCUIT APPEAL: RECOGNITION, AFFIRMANCE, AND EXPANSION OF THE "NUTTY" RULE

While it was astounding to see the district court so badly misinterpret copyright jurisprudence in its pretrial rulings, misapply the Rule 50(b) standard in its post-trial ruling, and misread *Altai* in overturning the jury's verdict, surely the Ninth Circuit would correct these errors. It seemed inconceivable that the Ninth Circuit would not distinguish software code cases from cases involving works that are readily perceptible to lay fact-finders as regards the admissibility of expert testimony, as all of the circuits to consider the issue had,<sup>178</sup> or, at a

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174. *Comput. Assocs. Int'l, Inc. v. Altai, Inc.*, 982 F.2d 693, 713–14 (2d Cir. 1992) (citations omitted).

175. *Id.* at 714.

176. *See supra* note 130.

177. It is also worthwhile noting that the definition "derivate works" in the EA-Antonick contract expressly included "significant enhancements of the Work to add additional features or improve performance and adaptations of the Work to operate on computers or operating systems other than those described in the Specifications." 1986 Contract, *supra* note 78, at Exhibit A § 1.03 (defining "Derivative Work").

178. *See supra* Part III.

minimum, call for en banc reconsideration of *Krofft*, at least with regard to computer software copyright cases, as Judge Sneed had intimated.<sup>179</sup>

Antonick's opening appellate brief squarely presented the errors,<sup>180</sup> including the argument that EA waived its Rule 50(b) argument regarding insufficiency of the evidence of virtual identity of the works as a whole by failing to preserve the issue.<sup>181</sup> EA's opposition echoed the "thin" copyright arguments that it used to mislead the district court in its pretrial rulings—namely that competitors are free to independently develop competing video games—even though this case involved alleged sequels developed with full access to the underlying source code and design documents.<sup>182</sup> The jury ruled that Simmons did not independently develop Sega Madden based on ample evidence.

EA also argued that Antonick's complaint must fail because "[a] copyright plaintiff cannot establish that one work infringes another without proving the content of the two works so that they can be compared."<sup>183</sup> Although EA failed to produce the final source for Apple II Madden, Antonick located and produced original drafts of source code, data files, and design documents for Apple II Madden that enabled Michael Barr to provide the jury with comparisons of the Apple II Madden and Sega Madden design and code bases that laypeople could understand. Barr explained similarities in, among other things, selection and expression of plays and formations, ordering and numbering of plays, player ratings, nonstandard and disproportionate field width, names of plays and variables, and misspellings that were unlikely to occur absent copying of Antonick's code by Park Place.<sup>184</sup> EA also sought to revive its statute of limitations defense, which the jury rejected in the phase I trial<sup>185</sup> and Judge Breyer upheld in his post-trial ruling.<sup>186</sup>

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179. *See supra* note 71.

180. *See* Appellant's Brief, *Antonick v. Elec. Arts, Inc.*, 841 F.3d 1062 (9th Cir. 2016) (No. 14-15298), 2014 WL 3909266.

181. *See* *Murphy v. City of Long Beach*, 914 F.2d 183, 186 (9th Cir. 1990) (holding that a party may not seek a judgment notwithstanding the verdict on grounds not alleged in their motion for directed verdict).

182. *See* Appellant's Brief, *supra* note 180, at 60–68.

183. *Id.* at 29.

184. *See* Trial Transcript, *supra* note 85, at 1295–1325, 1342–1456, 1475–90.

185. *See* Appellant's Brief, *supra* note 180, at 80–89.

186. *See* *Antonick v. Electronic Arts Inc.*, No. C 11–1543 CRB, 2014 WL 245018, at \*3–\*6 (N.D. Cal. Jan. 22, 2014).

At oral argument on March 16, 2016,<sup>187</sup> Judges Andrew Kleinfeld, Johnnie Rawlinson, and Andrew Hurwitz launched into the statute of limitations defense. Drawing on his experience programming computers decades earlier,<sup>188</sup> Judge Kleinfeld suggested—contrary to the stipulation at trial, the significant differences between the Apple II and Sega Genesis platforms, and the testimony of software experts from both sides—that “it’s inconceivable that a game developer would not notice that his game had been copied until many years later when there was an anniversary special. You would think that he’d been playing football games.”<sup>189</sup> Judge Kleinfeld then opined:

[W]hen you have written a computer program, you can usually tell something about the technique of how it was created even though you can’t tell the details just as if you know some other craft, traditional dark room photography, you can make a pretty good judgment about how a particular effect was produced. Now you can’t do it for sure until you have disassembled the code, but if you have a big economic interest, one would think that you would.<sup>190</sup>

The parties’ stipulation<sup>191</sup> and trial record contradicted Judge Kleinfeld’s assertion.<sup>192</sup>

Shortly thereafter, Judge Kleinfeld pursued his hunch that Antonick could have easily disassembled the Sega Madden code to determine whether it was copied from Apple II. Madden offered his opinion that the 68000 microprocessor used in the Sega Genesis is a descendent of the 6502 microprocessor used in the Apple II.<sup>193</sup> As Antonick’s counsel pointed out,

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187. Video Recording of Oral Argument, *Antonick*, 841 F.3d 1062 (No. 14-15298) [hereinafter 9th Circuit Oral Argument], [https://www.ca9.uscourts.gov/media/view\\_video.php?pk\\_vid=0000009278](https://www.ca9.uscourts.gov/media/view_video.php?pk_vid=0000009278).

188. *See id.* at 13:48–14:32 (showing Judge Kleinfeld explaining that he had programmed code for the Zilog Z80 microprocessor chip and that it was easy to disassemble code for that chip).

189. *Id.* at 0:59–1:16. Antonick had expressly denied playing the video football games after he completed his work with EA. *See* Trial Transcript, *supra* note 83, at 251.

190. 9th Circuit Oral Argument, *supra* note 187, at 1:33–2:06.

191. *See* Trial Transcript, *supra* note 85, at 1953 (“Playing or viewing a John Madden Football game for the Sega Genesis or Super Nintendo would not have allowed the person looking at the screen or playing the game to determine how a particular game element was expressed in the source code.”).

192. *See id.* at 1277–78 (Michael Barr), 1821–22, 1856, 1860, 1896, 1911–14 (Robert Zeidman) (discussing the challenges of detecting copying of source code in different language). Later in the argument, EA’s counsel contradicted Judge Kleinfeld’s assertion that disassembly of the object code to obtain the source code could have been done. *See* 9th Circuit Oral Argument, *supra* note 187, at 3:49–4:30.

193. *See id.*

EA had not pursued that issue.<sup>194</sup> More to the point, disassembling the video games at issue from the object code was very difficult, as software experts for both sides testified.<sup>195</sup> As a result of this digression—in which a Ninth Circuit judge who had programed some code for a more primitive microprocessor in the early 1980s offered his own opinions about microprocessors and disassembly—nearly half of Antonick's oral argument time was gone.<sup>196</sup>

When the argument turned to the role of expert witnesses in software copyright cases, Judge Hurwitz stated:

The brief from [Antonick's] side says that in the 9th Circuit expert testimony is allowed on the extrinsic, on the intrinsic test. I find I don't know eight, nine, ten cases, some involving computer code, in our circuit saying no it's not. Who's right? And let me preface this by saying that I think that's a nutty rule if it is our rule. But my question is: Is that our rule?<sup>197</sup>

After Antonick's counsel responded that there was room for doubt as to the Ninth Circuit's rule, Judge Hurwitz responded: "You don't have to convince me that [the *Krofft* rule] is wrong in terms of policy, but you'll have to convince eleven judges on the court to call it en banc."<sup>198</sup>

Since the Ninth Circuit clearly permits expert testimony of the extrinsic aspect of the copyright infringement test, the court then delved into how the role of experts works in practice:

**Judge Hurwitz:** [The Ninth Circuit has] cases in which we have specifically said that you cannot use expert testimony on the intrinsic side of the test. And I understand that we have generally said we think that the Second Circuit is smarter than us and does a better job. I'll take that. My question is: Is there any case in which we have said, and because we've been so dumb in the past that we do allow testimony on the intrinsic standard.

**David Nimmer  
(Antonick's  
Copyright  
Appellate  
Counsel):** Your Honor, I don't have a citation to a case that says "we have been dumb in the past," however

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194. *See id.* at 15:00–15:06.

195. *See supra* note 192.

196. Judge Kleinfeld returned to this digression later in the argument, further cutting into Antonick's argument time. *See* 9th Circuit Oral Argument, *supra* note 187, at 51:11–51:29.

197. *Id.* at 25:00–25:28.

198. *Id.* at 28:00–28:07.

**Judge Hurwitz:** [chuckling] Try the second part, OK [laughter]

**David Nimmer:** I do have the past experience of Ninth Circuit cases and there is no case in which the jury has been asked unaided by expert testimony to simply code for non-literal copying.

**Judge Rawlinson:** But the expert testimony is on the extrinsic test, isn't it? Not the intrinsic.

**David Nimmer:** Nominally it is on the extrinsic test.

**Judge Kleinfeld:** Can Ninth Circuit law be read to mean that you don't need, and therefore cannot use, an expert to say that the two expressions look alike, but you may well need and can use an expert to say whether the source code is alike?

**David Nimmer:** I think that is one possibility your Honor.

**Judge Rawlinson:** When you're comparing the source code, would that be the intrinsic test or the extrinsic test?

**David Nimmer:** Well, your Honor has identified exactly the problem, and then the dilemma in the context of software. There has been no case in which juries have been asked to compare different source codes to find non-literal identity.

I think that the answer to the court's collective question can be as follows: How should the intrinsic test be applied? First of all, it's obvious that expert testimony needs to be admitted, and all cases in all circuits, including the Ninth Circuit, have admitted expert testimony.

But then when the question comes to the jury, "jury make the intrinsic test," I could understand not allowing the expert to give his or her ultimate opinion—"I believe that these are, that these express, the same idea, and that's my personal opinion." The jury can be asked exactly the question that EA poses in its own brief when it characterizes the intrinsic test on page 33 [of its brief]. It says in effect that the intrinsic asks whether the defendant took from plaintiff's work so much of what is pleasing to the work's intended audience that the defendant wrongfully appropriated something which belongs to the

plaintiff, quoting *Cavalier v. Random House*, a case involving children's books.

That's a question that after expert testimony has been admitted, the jury can make in its determination, in its subjective consideration as the voice of the community. And that is not precisely what happened here because Judge Breyer framed the jury instruction.

**Judge Hurwitz:** If we disagree with you and find that Mr. Barr's testimony is not admissible on the intrinsic side of the equation, is there any other evidence that shows, that would satisfy the intrinsic part of the test?

**David Nimmer:** OK, let's take that step-by-step here you Honor. Mr. Barr's testimony, we're going to imagine, is admissible because it illuminates the extrinsic test.

**Judge Hurwitz:** Right.

**David Nimmer:** Now the jury in its sole discretion has to apply the intrinsic test. The jury has to determine, OK now that we've heard the testimony and we've heard the defense and we've heard the cross-examination, did EA take so much of what is pleasing to the work's intended audience that it wrongfully appropriated something which belongs to the plaintiff? That is a test the jury can make in its subjective determination based on all of the evidence that it has heard in the case.

**Judge Hurwitz:** Even in the absence of the code being in evidence?

**David Nimmer:** Absolutely. In the presence of the code being in evidence, nothing is added except confusion to the jury. Let's imagine that the code was added.

**Judge Kleinfeld:** I can't see that. I mean, even a layman can compare what may be meaningless instruction in the code. It would be like reading two texts that are in a foreign language and having no idea what the text means but being able to see that its the same characters.

**David Nimmer:** Your Honor, this court has said in the case of *Swirsky* that when music is copied not identically, we need expert testimony. And to quote the

*Swirsky* Ninth Circuit opinion, “Any person untrained in music could conclude that 2-2-2-2-2-1-2-1-3 did not match 2-2-4-3-2-3.” It’s the same in this case. Any person could conclude that the 0-0-0-1-0-0 does not match 1-0-0-1-1-0. If that was the standard, no expert testimony would be needed and the case would end immediately. There would be no such thing as non-literal copying in the Ninth Circuit if that were the standard. *Swirsky* assures us that that is not the standard. That extrinsic testimony from an expert, a musicologist in that case, is needed.

In this case, expert testimony is needed from someone who is expert in the field of computer software. And that is the testimony that was given. At the end of the day, the jury can make its own intrinsic determination: Did the defendant cross the line? Did the defendant appropriate so much from the work that is pleasing to its intended evidence that it crossed over the line?<sup>199</sup>

During its argument, EA pressed the importance of the jury directly comparing the works at issue.<sup>200</sup> In response, Judge Kleinfeld remarked, “If I were a juror, I would really want an expert, because it is too boring to go across each line and compare. My eyes glaze over . . . .”<sup>201</sup> Judge Hurwitz then concluded:

[O]ur rule baffles me on this topic for the same reason that Judge Kleinfeld just said which is that the case law seems to say that the ordering and sequence of coding is also part of the copyrightable protectable material and certainly having somebody say they not only read the same number but the sequence makes some difference I think makes some sense to me, but, you know, I don’t make the rules here, I just follow them.<sup>202</sup>

Despite that bafflement, on November 22, 2016, the Ninth Circuit affirmed the district court’s ruling that Antonick’s claim failed as a matter of law.<sup>203</sup> Without addressing the district court’s flawed pretrial rulings—severely narrowing Antonick’s derivative work claim and improperly requiring “virtual

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199. *Id.* at 28:40-34:13.

200. *See id.* at 51:50–52:20, 59:16–1:00:11.

201. *Id.* at 1:01:25–1:01:33.

202. *Id.* at 1:02:40–1:03:09.

203. *Antonick*, 841 F.3d 1062.

identity” of the works as a whole—the appellate court concluded that the plaintiff’s failure to place the full source code of both games into evidence made it impossible for the jury to compare the works as a whole.<sup>204</sup>

The court placed primary reliance on *Seiler v. Lucasfilm, Ltd.*,<sup>205</sup> which held based on the best evidence rule<sup>206</sup> that “[t]here can be no proof of ‘substantial similarity’ and thus of copyright infringement unless Seiler’s works are juxtaposed with Lucas’ and their contents compared.”<sup>207</sup> In *Seiler*, the district judge “found that Seiler had lost or destroyed the originals in bad faith under Fed.R.Evid. 1004(1) and denied admissibility of any secondary evidence.”<sup>208</sup>

The circumstances could not have been more different in *Antonick*, yet the Ninth Circuit does not make any effort to apply the clear exceptions to the best evidence rule. Rule 1003 provides that “[a] duplicate is admissible to the same extent as the original unless a genuine question is raised about the original’s authenticity or the circumstances make it unfair to admit the duplicate.” Rule 1004 provides that

An original is not required and other evidence of the content of a writing, recording, or photograph is admissible if:

- (a) all the originals are lost or destroyed, and not by the proponent acting in bad faith;
- (b) an original cannot be obtained by any available judicial process;
- (c) the party against whom the original would be offered had control of the original; was at that time put on notice, by pleadings or otherwise, that the original would be a subject of proof at the trial or hearing; and fails to produce it at the trial or hearing; or
- (d) the writing, recording, or photograph is not closely related to a controlling issue.

The defendant EA was the copyright owner and remarkably failed to locate original copies of the Madden games, a product that earned EA billions of dollars. Furthermore, Antonick assembled a near complete copy of the Apple II Madden source code and design documents, and the parties were able to provide the jury with a rich understanding of how Apple II Madden and Sega

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204. *See id.* at 1066–67.

205. *Seiler v. Lucasfilm, Ltd.*, 808 F.2d 1316 (9th Cir. 1987).

206. *See* FED. R. EVID. 1001–08.

207. *Seiler*, 808 F.2d at 1319.

208. *Id.* at 1317.

Madden compared.<sup>209</sup> As the First Circuit recognized, “if the Best Evidence Rule is satisfied, evidence other than the original may be sufficient to establish the content of a copyrighted work.”<sup>210</sup>

The Ninth Circuit cited other cases that focus on the insufficiency of the evidence to prove copyright infringement.<sup>211</sup> Yet Antonick brought a breach of contract case which turned in part on the Copyright Act’s definition of “derivative work.” The pertinent question was whether it was more likely than not that EA breached its obligation to pay royalties on derivative works as defined by the contract. Antonick provided a wealth of direct and circumstantial evidence to prove that Sega Madden constituted a “derivative work”—as defined by the contract—of Apple II Madden.

The Ninth Circuit’s rejection of Antonick’s appeal turned on the infamous “nutty” rule<sup>212</sup> and two conclusory assertions. First, that the evidence presented at trial “at most demonstrates access and a possible motive to copy” overlooks the extensive trial record. That record, as explored above<sup>213</sup> and to which the court is required to view in the light most favorable to Antonick, provided the jury ample grounds for finding that EA did not merely copy unprotectable ideas. The jury was entitled to believe substantial evidence showing that under impossibly tight time-to-market pressure, EA and its inexperienced programmer took shortcuts—copying substantial amounts of protectable design and coding elements—to complete in three months what Antonick’s experienced team had taken four years to do. EA was caught with

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209. See Barr Report, *supra* note 102, at Exhibit B (noting that he considered: Mr. Antonick’s source code files, as produced on a set of floppy disks labeled as A0001, A0004-06, A0023-24, A0035, A0037-38, A0045-47, A0049, A0054-55, and A0058-66; Source code and technical files recovered from floppy disks (RA0003937); twenty-two optical disks produced by EA on which he identified source code for eight distinct versions of Madden football games for Sega Genesis and Super Nintendo; and four floppy disks from Park Place).

210. *Airframe Sys., Inc. v. L-3 Commc’s. Corp.*, 658 F.3d 100, 107 n.9 (1st Cir. 2011).

211. See *Antonick v. Elec. Arts Inc.*, 841 F.3d 1062, 1066 (9th Cir. 2016) (citing *Airframe Sys., Inc.*, 658 F.3d at 107 (“Having presented no evidence sufficient to prove the content of its registered source code versions, Airframe cannot show that any of its registered works is substantially similar to the allegedly infringing M3 program.”)); *Gen. Universal Sys., Inc. v. Lee*, 379 F.3d 131, 146 (5th Cir. 2004) (*per curiam*) (“Without providing its own source code for comparison, GUS did not satisfy the requirement that the infringed and infringing work be compared side-by-side.”); *Olson v. Nat’l Broad. Co.*, 855 F.2d 1446, 1448, 1451 (9th Cir. 1988) (granting JMOL to copyright defendant because no reasonable jury could have found substantial similarity).

212. “[O]ur law is clear that expert testimony cannot satisfy a plaintiff’s burden of proof under the intrinsic test, which ‘depend[s] on the response of the ordinary reasonable person.’” *Antonick*, 841 F.3d at 1067 (footnote omitted) (citing *Brown Bag Software v. Symantec Corp.*, 960 F.2d 1465, 1475 (9th Cir. 1992) (quoting *Sid & Marty Krofft Television Prods., Inc. v. McDonald’s Corp.*, 562 F.2d 1157, 1164 (9th Cir. 1977))).

213. See *supra* text accompanying notes 130–153.

its hands in the protectable expression cookie jar. They did not merely take unprotectable ideas—they raided the jar.

Second, the Ninth Circuit commented that “the lay testimony was about how the games appeared, not how they were coded—and Antonick does not assert a copyright interest in Apple II Madden’s audiovisual appearance, only in its coding.” Yet the jury was presented with significant evidence about that coding.<sup>214</sup> The fact that a software expert presented the evidence—of play data and other source code elements—in no way negated the fact that the jury saw actual code. The Ninth Circuit in effect expanded the nuttiness of the “nutty” rule. The colloquy with David Nimmer about how to interpret the “nutty” rule sensibly was for naught.<sup>215</sup>

#### H. EN BANC AND CERTIORARI PETITIONS: DENIED

The Ninth Circuit’s *Antonick* decision offered a glimmer of hope for rectifying the “nutty” rule:

Antonick is not alone in contending that experts should be allowed to help juries assess the holistic similarity of technical works such as computer programs. See *Brown Bag*, 960 F.2d at 1478 (Sneed, J., concurring); *Comput. Assocs. Int’l, Inc. v. Altai, Inc.*, 982 F.2d 693, 713 (2d Cir. 1992). But, given our precedents, that argument must be addressed to an en banc court.<sup>216</sup>

Antonick decided to take a shot at rectifying the “nutty” rule.<sup>217</sup> Although en banc review is difficult to obtain,<sup>218</sup> several factors weighed in Antonick’s favor.<sup>219</sup> The Ninth Circuit panel acknowledged that the applicability of the *Krofft* rule to software code cases was controversial and in conflict with the law in another circuit. In fact, it conflicts with the law of multiple circuits—all that have confronted the issue.<sup>220</sup> Moreover, the computer software industry is of

214. See *supra* text accompanying notes 138–153.

215. See 9th Circuit Oral Argument, *supra* note 187, at 29:30–34:13.

216. *Antonick*, 841 F.3d at 1067 n.4.

217. See Appellant’s Petition for Rehearing En Banc, *Antonick*, 841 F.3d 1062 (No 14-15298) (9th Cir. 2017).

218. See Peter S. Menell & Ryan Vacca, *Revisiting and Confronting the Federal Judiciary Capacity “Crisis”: Charting a Path for Federal Judiciary Reform*, 108 CALIF. L. REV. 789, 861 (2020) (reporting that the Ninth Circuit granted between 1.26% and 2.17% of en banc petitions in 2013–17).

219. See 9TH CIR. R. 35(b)(1)(B) (noting that en banc petitions must begin with a statement that “the proceeding involves one or more questions of exceptional importance, each of which must be concisely stated; for example, a petition may assert that a proceeding presents a question of exceptional importance if it involves an issue on which the panel decision conflicts with the authoritative decisions of other United States Courts of Appeals that have addressed the issue”).

220. See *supra* Part III.

tremendous economic significance to the U.S. economy in general and states within the Ninth Circuit. The Ninth Circuit sees a large portion of software copyright cases.

However, the Ninth Circuit unfortunately declined the petition. All of the panel members, despite having written that the “argument must be addressed to an en banc court,” voted against review.<sup>221</sup> They might have considered the expert witness issue unnecessary for resolving the *Antonick* case because of the best evidence ruling—which was also wrong,<sup>222</sup> although perhaps not nutty.

With time running down in the fourth quarter, Antonick opted to take a final Hail Mary<sup>223</sup> at the U.S. Supreme Court.<sup>224</sup> The circuit split could not have been clearer and more significant. Alas, the Supreme Court also declined review,<sup>225</sup> bringing this saga to a disconcerting end.

## VI. RECTIFYING THE NINTH CIRCUIT’S NUTTY RULE

The *Antonick* case reads like a tragedy of errors, a Dickensian tale for the digital age.<sup>226</sup> Robin Antonick entered into a contract with EA to produce the first realistic football video game, a product that would revolutionize the sports video game industry. His contracts with EA shared the risks. Antonick was paid modestly to produce the game with the prospect of a share of future proceeds from his game and derivative works as defined in the contract if the game succeeded. Antonick saw some of that return from Apple II Madden, but he was allegedly misled into believing that the follow-on Madden games were not derived from his design and source code. When he discovered that he might have been defrauded, he brought suit and painstakingly gathered extensive evidence that enabled him to get to trial. Notwithstanding flawed pretrial rulings that severely restricted his allegations, the jury found in his favor, only to have the district judge overturn the verdict based on

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221. Order, *Antonick*, 841 F.3d 1062 (No. 14-15298) (“Judges Rawlinson and Hurwitz voted to deny the petition for rehearing en banc, and Judge Kleinfeld so recommended. The full court was advised of the petition for rehearing en banc and no judge has requested a vote on whether to rehear the matter en banc. Fed. R. App. P. 35. The petition for rehearing en banc is denied.”).

222. See *supra* text accompanying notes 205–210.

223. This is drawn from offensive play 99 in Apple II Madden. See *supra* Figure 1 Comparison of Football Play Names and Order in Apple Madden and Sega Madden.

224. See Petition for Writ of Certiorari, *Antonick v. Elec. Arts Inc.*, 138 S. Ct. 422 (2017) (No. 17-168); Reply Brief for Petitioner, *Antonick*, 138 S. Ct. 422 (No. 17-168).

225. *Antonick*, 138 S. Ct. 422.

226. See CHARLES DICKENS, BLEAK HOUSE 3 (1853). Sadly, Antonick is not the only digital age BLEAK HOUSE. See Peter S. Menell, *API Copyrightability Bleak House: Unraveling and Repairing the Oracle v. Google Jurisdictional Mess*, 31 BERKELEY TECH. L.J. 1515 (2016).

questionable application of the Rule 50(b) standard and wooden application of a truly “nutty” rule: that expert witnesses cannot be used to aid lay judges and juries in deciphering and analyzing computer source code. On appeal, the Ninth Circuit panel overlooked the serious flaws in the district court’s handling of the case, misapplied the best evidence rule, and exacerbated the nuttiness of the “nutty” rule. The larger Ninth Circuit declined to take up the clear circuit split, and the Supreme Court left the national law on the use of expert witnesses in software copyright cases fragmented. Notwithstanding the massive resources devoted to this matter, the judicial system failed to render a coherent or just resolution.

More than four decades ago, and before Congress extended copyright law to protect computer software,<sup>227</sup> the Ninth Circuit ruled that expert testimony was inadmissible to determine whether Mayor McCheese and the merry band of McDonaldland characters infringed copyright protection for Wilhelmina W. Witchiepoo and the other imaginative H.R. Pufnstuf costumed characters.<sup>228</sup> While this judge-made rule made sense in dealing with works that lay judges and jurors can directly perceive, it clearly makes no sense when applied to hexadecimal assembly code for different processors. Although the injustice to Robin Antonick cannot unfortunately be rectified, there remains an urgent need to correct the “nutty” rule that derailed his case and threatens to wreak havoc in future software copyright litigation in the Ninth Circuit.

It is perplexing that Ninth Circuit judges could not see, as judges in other circuits have, the simple path of distinguishing software cases based on the obvious limitations of lay judges and jurors in comprehending the foreign languages of source code. Since the emergence of software copyright infringement cases in the 1980s, substantially all software copyright cases have employed expert witnesses to aid juries in understanding software code. As the Second Circuit wisely recognized in *Computer Associates International, Inc. v. Altai, Inc.*,<sup>229</sup> the ordinary observer standard “may well have served its purpose when the material under scrutiny was limited to art forms readily comprehensible and generally familiar to the average lay person,” but as to computer programs, district courts must have “discretion . . . to decide to what extent, if any, expert

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227. The Copyright Act of 1976, which went in effect on January 1, 1978, included computer software in the class of “literary works.” See 17 U.S.C. § 102(a)(1); Menell, *supra* note 40, at 315–18 (discussing Congress’s vexed compromise to include computer software, written work that serves functional purposes, within the copyright system).

228. See *Sid & Marty Krofft Television Prods., Inc. v. McDonald’s Corp.*, 562 F.2d 1157 (9th Cir. 1977).

229. *Comput. Assocs. Int’l, Inc. v. Altai, Inc.*, 982 F.2d 693 (2d Cir. 1992).

opinion, regarding the highly technical nature of computer programs, is warranted in a given case.<sup>230</sup>

The Ninth Circuit's peculiar approach to the role of experts continues to produce head-scratching results. On June 22, 2020, the court reversed a district court's dismissal of a copyright suit filed by the family of screenplay author Paul Zindel alleging that Fox Searchlight Pictures' *The Shape of Water* infringed Zindel's play *Let Me Hear You Whisper*.<sup>231</sup> The court ruled that Zindel was improperly denied the opportunity to present expert testimony regarding the similarities of the works in question as part of the extrinsic test. The Ninth Circuit apparently continues to believe that courts need help in assessing the objective similarities between a play and a film, both of which are expressed in English, but that courts do not need help from experts in understanding the subjective differences in hexadecimal assembly language codes.

The time is long past due for the Ninth Circuit, home to many of the most important software companies and the most significant software copyright cases,<sup>232</sup> to take the *Krofft* expert testimony rule en banc and rectify this "nutty" rule to accord with the other circuits. Short of that, the Supreme Court should either grant certiorari in a case raising this issue or simply remand such a case to the Ninth Circuit for en banc review. Although this issue should not require legislation, that remains an option to rectify and harmonize the national law on this important issue.

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230. *Id.* at 713.

231. *See* Zindel v. Fox Searchlight Pictures, Inc., 815 F. App'x. 158 (9th Cir. 2020).

232. *See, e.g.*, Cisco Sys. Inc. v. Arista Networks, Inc., No. 14-cv-05344-BLF, 2016 WL 4440239 (N.D. Cal. Aug. 23, 2016); Oracle Am., Inc. v. Google Inc., 847 F. Supp. 2d 1178 (N.D. Cal. 2012), *aff'd in part, rev'd in part, and remanded*, 750 F.3d 1339 (Fed. Cir. 2014), *cert. denied*, 135 S. Ct. 2887 (2015), *rev'd*, 886 F.3d 1179 (Fed. Cir. 2018), *cert. granted*, 140 S. Ct. 520 (2019); Sega Enters. v. Accolade, Inc., 977 F.2d 1510 (9th Cir. 1992); Apple Comput., Inc. v. Microsoft Corp., 799 F. Supp. 1006 (N.D. Cal. 1992), *aff'd in part, rev'd in part*, 35 F.2d 1435 (9th Cir. 1994).