

Berkeley

[technology law Journal]  
ANNUAL REVIEW OF LAW AND TECHNOLOGY

*The Public Paid for the Invention: Who Owns It?*

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VOLUME 27  
AR ONLINE  
20  
12

UNIVERSITY OF CALIFORNIA, BERKELEY  
SCHOOL OF LAW  
BOALT HALL

# THE PUBLIC PAID FOR THE INVENTION: WHO OWNS IT?

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The federal government funds a large portion of university research today.<sup>1</sup> Some argue that fairness considerations require default ownership of inventions to go to the tax-paying public who, after all, fills the federal coffers.<sup>2</sup> Besides public ownership, inventions that arise out of federal funding could conceivably go to four other parties: (1) the government; (2) the contractor-universities; (3) the inventors; and (4) the private entrepreneurs interested in commercializing inventions. The reality today is that contractor-universities own many of the inventions that arise out of federal research funding.<sup>3</sup>

University ownership became the norm after Congress enacted the Bayh-Dole Act (“BD Act” or “BD”), which laid down a uniform set of ownership rules for federally funded inventions.<sup>4</sup> The BD Act presumes that universities

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1. For example, in 2009, U.S. universities and colleges spent \$54.9 billion on science and engineering research and development (R&D). Of that amount, about 60%, or \$32.6 billion, came from the federal government. See Ronda Britt, Nat’l Sci. Found., *Universities Report \$55 Billion in Science and Engineering R&D Spending for FY 2009; Redesigned Survey to Launch in 2010*, INFO BRIEF NAT. CTR. FOR SCI. AND ENG’G STATISTICS, Sept. 2010, at 2 tbl. 2, available at <http://www.nsf.gov/statistics/infbrief/nsf10329/nsf10329.pdf>.

2. See, e.g., Partha Dasgupta & Paul A. David, *Towards a New Economics of Science*, 23 RES. POL’Y 487 (1994); Rebecca S. Eisenberg, *Symposium On Regulating Medical Innovation: Public Research and Private Development: Patents and Technology Transfer in Government-Sponsored Research*, 82 VA. L. REV. 1663, 1725–26 (1996); Diana Rhoten & Walter W. Powell, *The Frontiers of Intellectual Property: Expanded Protection vs. New Models of Open Science*, ANN. REV. L. & SOC. SCI. 3, 345–73 (2007).

3. Universities generally require that academic staff, graduate students, and visiting scholars execute invention assignment agreements as a condition for employment or use of university resources. See, e.g., *infra* note 6.

4. 35 U.S.C. §§ 200–212 (2006). The BD Act gives academic institutions and small businesses (and later by executive order no. 12591, large businesses) ability to retain title to inventions arising from federally sponsored research. This Note focuses on federal funding at academic institutions such as universities and research institutes; although the Court’s

own inventions that are developed under their watch.<sup>5</sup> Universities typically fulfill this ownership presumption by requesting mandatory invention assignment from their employee-inventors.<sup>6</sup> But when an employee-inventor intentionally or inadvertently assigns an invention to someone else, complications can ensue. This is what transpired in the recent *Stanford v. Roche* case.<sup>7</sup>

While much scholarship in law, sociology, business, and economics explore which entity or entities *should* and *could* optimally own inventions that arise out of federal funding,<sup>8</sup> this Note addresses two simpler and narrower questions: first, did the Supreme Court reach the right social and economic policy decision in *Stanford* by leaving default legal ownership of inventions to the inventors, and second, what are the practical consequences of the ownership regime laid out in *Stanford*?

To answer these questions, this Note takes the position that federally funded research has the goal of improving social welfare by enabling scientific and technological advances and training the next generation of

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holding in *Stanford* on the issue of BD would apply to non-academic and for-profit federal contractors.

5. See, e.g., Edward C. Walterscheid, *The Need for a Uniform Government Patent Policy: The D.O.E. Example*, 3 HARV. J.L. & TECH. 103, 130 (1990).

6. See, e.g., *The Patent Amendment*, UNIV. OF CAL. HUMAN RES. AND BENEFITS, [http://atyourservice.ucop.edu/employees/policies\\_employee\\_labor\\_relations/patent-acknowledgment/patent-amendment.html](http://atyourservice.ucop.edu/employees/policies_employee_labor_relations/patent-acknowledgment/patent-amendment.html) (last modified Feb. 16, 2012) (University of California's mandatory employee invention assignment agreement); Memorandum from the Stanford University Office of the Vice Provost and Dean of Research to Faculty, Staff, Graduate Students, and Postdocs Regarding Updated Patent and Copyright Agreement in the Research Policy Handbook (July 2011), available at <http://rph.stanford.edu/su18.html> (Stanford University's Employee Research Policy Handbook, requiring that "inventions shall be assigned to the University, regardless of the source of funding").

7. Bd. of Trs. of the Leland Stanford Junior Univ. v. Roche Molecular Sys., Inc., 131 S. Ct. 2188 (2011).

8. See, e.g., Martin Kenney & Donald Patton, *Reconsidering the Bayh-Dole Act and the Current University Invention Ownership Model*, 38 RES. POL'Y 1407, 1408 (2009) (noting "the contributions of three different theoretical research traditions" to the study of BD and university-industry relationships: (1) "evolutionary institutional economics pioneered by Sidney Winter and Richard Nelson and includes Wesley Cohen, David Mowery, Nathan Rosenberg, and their students;" (2) "sociological network analysts roughly grouped around Walter W. Powell;" and (3) "legal tradition examining the current university invention licensing model"). Representative publications in the three different traditions include: DAVID C. MOWERY, RICHARD R. NELSON, BHAVEN N. SAMPAT, & ARVIDS A. ZIEDONIS, *IVORY TOWER AND INDUSTRIAL INNOVATION: UNIVERSITY-INDUSTRY TECHNOLOGY TRANSFER BEFORE AND AFTER THE BAYH-DOLE ACT* (2004) (evolutionary institutional economics tradition); Eisenberg, *supra* note 2 (legal tradition); Rhoten & Powell, *supra* note 2 (sociological network analysis tradition).

scientists and engineers.<sup>9</sup> The end goal is decidedly not about giving university-contractors the right to profit from patent monopolies. That is a mere side effect that Congress finds necessary for achieving the end goal, but it should not be viewed as immutable if the end goals could be achieved another way.

Given this view of federally funded research, this Note argues that the Supreme Court reached the correct economic and social policy decision in *Stanford*. The decision is good for the innovation community because it appears consistent with current practices by various actors and leaves settled expectations largely undisturbed. The lone exception to the maintenance of the status quo is that some universities, such as Stanford, claim that they can no longer rely on the BD Act to automatically take legal ownership of federally funded inventions from their employees.<sup>10</sup> Leaving aside for the moment the argument that few, if any, universities ever actually relied solely on BD to take ownership of inventions from their employees,<sup>11</sup> practically speaking, the inability to rely on BD as a vesting statute can largely be remedied by private contracts. Indeed, several universities including Stanford recently revised their employee invention assignment contracts in response to the *Stanford* decision.<sup>12</sup> Moreover, the universities' resort to private ordering with invention assignment contracts highlights another reason why the Court reached a good policy outcome; this decision leaves open the possibility for alternative arrangements and experimentation on the periphery of the law that would be foreclosed if the Court had held BD to be an automatic vesting statute.

Part I of this Note introduces two key issues raised in *Stanford*. Part II provides some legal context relevant to understanding *Stanford* by briefly reviewing invention ownership, the goals of federal research funding, and the university innovation microcosm. Part III provides additional legal context

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9. *Infra* Section II.B.

10. *See* Brief of Petitioner at \*46, *Bd. of Trs. of the Leland Stanford Junior Univ. v. Roche Molecular Sys., Inc.*, 131 S. Ct. 2188 (2011) (No. 09-1159), 2010 WL 5385333; Brief of Amici Curiae Assoc. of American Univs. et al. in Support of Petitioner at \*33, *Stanford*, 131 S. Ct. 2188 (No. 09-1159), 2010 WL 5385333.

11. Universities, like other employers, invariably ask employees to execute invention assignment agreements after each invention has been reported to the employer. As the Supreme Court pointed out in *Stanford*, this standard practice cuts against the argument that universities have always relied on BD as a vesting statute because the ex post assignment would be redundant and unnecessary if BD were actually a vesting statute. *Stanford*, 131 S. Ct. 2188, 2199 (“[I]t is worth noting that our construction of the Bayh-Dole Act is reflected in the common practice among parties operating under the Act.”).

12. *See infra* Section II.C.

necessary to understanding *Stanford* by introducing the BD Act, its policy objectives of facilitating translation of federally funded invention to privately funded innovation,<sup>13</sup> and its effects over the last thirty years. Part IV details the *Stanford* litigation, with particular focus on policy arguments made by both parties and amici curiae. Part V discusses implications of the Court's decision and how the decision comports with settled expectations in patent law and contract law. It also uses hypothetical examples to illustrate the practical consequences of *Stanford* versus the likely consequences of a contrary holding. Part VI concludes that the Supreme Court reached the correct economic and policy decision in *Stanford*, despite narrowly focusing the decision on statutory interpretation. Indeed, BD-mandated university ownership would have created new problems as it would have upended various parties' reliance interests in existing contracts.

## I. ISSUES RAISED IN *STANFORD V. ROCHE*

In the recent case *Stanford v. Roche*, a Stanford University ("Stanford") researcher, Dr. Mark Holodniy, visited Roche Molecular Systems ("Roche")<sup>14</sup> to learn about a then-novel technique called polymerase chain reaction ("PCR").<sup>15</sup> When he returned to Stanford nine months later, Holodniy combined what he learned at Roche about PCR with Stanford's expertise in human immunodeficiency virus ("HIV") to develop a PCR test for quantifying viral load in HIV positive patients.<sup>16</sup> The key events that gave rise to the entire litigation were that before he ever set foot at Roche, Holodniy executed a Stanford employment contract agreeing to assign all his future inventions to Stanford, but when he later arrived at Roche, Holodniy executed a Visitor Confidentiality Agreement ("VCA") in which he "hereby assign[ed]" to Roche all of his inventions that related to his activities there.<sup>17</sup> As a result of these conflicting assignment contracts, both Roche and Stanford thought they were rightful owners of Holodniy's invention. In due course, Roche's own scientists successfully commercialized the PCR-HIV test invention while Stanford, with Holodniy as one of the named inventors, obtained a patent that purportedly covered the same invention, without

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13. In this Note, the term "innovation" refers to the process of taking an invention through various developmental stages to commercialization.

14. Dr. Holodniy actually visited Cetus Corporation ("Cetus"). *Bd. of Trs. of the Leland Stanford Junior Univ. v. Roche Molecular Sys., Inc.*, 131 S. Ct. 2188, 2192 (2011). Roche acquired Cetus' PCR assets after Holodniy's Cetus visits. *Id.*

15. *Id.*

16. *Id.*

17. *Id.*

naming any Roche scientists as co-inventors.<sup>18</sup> When Stanford tried to enforce its patent, Roche declined to pay royalties or acquire a license, and so a lawsuit ensued.<sup>19</sup>

When the dispute reached the Supreme Court, Stanford argued that because Holodniy's invention was funded in part by the federal government, BD should trump all private contracts that would otherwise determine invention ownership; that is, it argued that BD should automatically vest ownership in Stanford even if Roche had received a valid assignment from Holodniy.<sup>20</sup> The Court disagreed with Stanford's arguments, holding that an inventor remains the *ab initio* owner of his federally funded invention regardless of BD, and that BD only comes into the picture after the contractor, in this case Stanford, receives the invention via assignment under ordinary contract law.<sup>21</sup> Moreover, the Court refused to disturb the Federal Circuit's holding that Stanford's earlier-in-time contract with Holodniy was a mere promise to assign future inventions whereas Roche's later-in-time contract (VCA) with Holodniy effected immediate assignment of all future inchoate inventions.<sup>22</sup> Accordingly, under settled contract law, Roche gained ownership of the invention despite its later-in-time contract.<sup>23</sup>

The *Stanford* case raises two key issues. The first issue relates to whether BD trumps private contracts. The Supreme Court directly addressed that point by holding that BD does not trump private contracts.<sup>24</sup> The second issue concerns what contractual language is necessary to effect a present assignment of a future inchoate invention. While the majority, concurrence, and dissent all noted the existence of this contract interpretation issue, the Court ultimately chose not to disturb the Federal Circuit's *Filmtec* line of cases which hold that specific phrasing with "hereby do assign" or "hereby assign" language is necessary to effect transfer of future, inchoate inventions.<sup>25</sup>

Consequently, the *Stanford* decision puts universities on notice that if they want to avoid the legal quagmire in *Stanford*, they need to ensure that they

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18. *Id.*

19. *Id.*

20. Brief of Petitioner at \*25–30, *Stanford*, 131 S. Ct. 2188 (No. 09-1159), 2010 WL 5385333.

21. *Stanford*, 131 S. Ct. at 2192, 2194 n.2.

22. *Id.* at 2194 (citing *Stanford*, 583 F.3d 832, 841–42 (Fed. Cir. 2009)).

23. *Id.*

24. *Id.* at 2192.

25. *Id.* at 2194 n.2; *id.* at 2199 (Sotomayor, J., concurring); *id.* at 2202–03 (Breyer, J., dissenting); see *Filmtec Corp. v. Allied-Signal Inc.*, 939 F.2d 1568, 1572 (Fed. Cir. 1991).

effectively receive ownership via assignment from their employee-inventors. One way to ensure ownership transfer while barring the possibility of unauthorized third party assignment is to have employee-inventors execute contracts guaranteeing present assignment of future inventions using the “hereby do assign” phrasing, instead of mere promises to assign future inventions.<sup>26</sup>

So if all universities make use of present assignment contracts with the magic “hereby do assign” language, would the effect not be the same as if the Supreme Court simply held that BD gives universities default ownership outright? After all, contractual conveyance using present assignment of future invention language seems functionally equivalent to the statutorily mandated conveyance that Stanford espoused.

The short answer is no. Private ordering under contract law allows certain flexibility that a strict statutory mandate cannot accommodate.<sup>27</sup> By leaving assignment up to contract law, this perhaps leaves room for experimentation with various contractual arrangements on the periphery of the law, or even allows efficient breach of contracts where desirable. Furthermore, if the Supreme Court had held for the primacy of BD as a vesting statute, universities would hold a trump card for claiming ownership in any and all inventions that are derived, even in small part, from federal funding.<sup>28</sup> Besides, the way inventors, universities, the government, and entrepreneurs/investors currently interact with each other simply does not reflect the view that BD unequivocally trumps private ordering.<sup>29</sup> A contrary holding would probably have led to significant uncertainty in pre-existing and future contracts, in particular for inventions funded by multiple sources and collaborations between private and public entities.

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26. See *Filmtec*, 939 F.2d at 1570; see also *Stanford*, 583 F.3d at 841–42, *DDB Technologies, L.L.C., v. MLB Advanced Media, L.P.*, 517 F.3d 1284, 1290 (Fed. Cir. 2008); *Speedplay, Inc. v. Bebop, Inc.*, 211 F.3d 1245, 1253 (Fed. Cir. 2000).

27. See generally Sean O'Connor, *Controlling the means of innovation: the centrality of private ordering arrangements for innovators and entrepreneurs*, in *HANDBOOK ON LAW, INNOVATION, AND GROWTH* 274, 274–99 (Robert E. Litan ed., 2011) (“[s]et[ing] out an overview of some of the standard private ordering arrangements in innovation and entrepreneurship” and arguing that the legal system “can jeopardize this critical private ordering ecosystem when they fail to understand the nature of the deal and specific industry standard arrangements”).

28. See S. REP. NO. 96-480, at 21–22 (1979) (reporting that companies “are reluctant to use university research facilities because they fear that any resulting patent rights will be ‘tainted’ if the university is also receiving Federal support in related research”).

29. *Stanford*, 131 S.Ct. at 2199 (noting that “[t]hrough unnecessary to our conclusion, it is worth noting that our construction of the Bayh-Dole Act is reflected in the common practice among parties operating under the Act”).

## II. INVENTION OWNERSHIP, FEDERAL RESEARCH FUNDING, AND THE UNIVERSITY INNOVATION MICROCOSM

At its most basic level, *Stanford* concerns an ownership dispute over a highly valuable invention, where parties argued over whether a certain provision of patent law relating to federally funded inventions should take precedence over private contracts.<sup>30</sup> This Part provides a legal backdrop to understanding the parties' relative legal positions. It begins with an overview of the default invention ownership regime and emphasizes ownership in the employment setting because this is the scenario most relevant to university inventions that arise from federally funded research. Next, this Part highlights the goals of federally funded research and the significance of federal funding to university innovation. Finally, this Part describes the microcosm of university innovation—specifically, how universities actually interact with their employees, the government funding agencies, and private entrepreneurs throughout the innovation process.

### A. THE LAW ON INVENTION OWNERSHIP

One view of publicly funded research looks something like this: federal research grants pay for the inventors' salaries, supplies and equipment; therefore, the tax-paying public ought to own inventions that come out of the inventors' laboratories without having to pay twice—that is, paying a second time in the form of higher monopoly prices charged by patent owners for access to inventions.<sup>31</sup> The natural reaction under this view would therefore be to give invention ownership to the public so that everyone gets access.<sup>32</sup> Some scholars have suggested just such a solution, at least for certain classes of inventions that theoretically would tend to run into the anti-commons problem.<sup>33</sup> Of course, free access for all runs contrary to the basic premise of patent law that sanctions limited monopolies for the promotion of innovation.<sup>34</sup>

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30. *See id.* at 2188–99.

31. *See, e.g.*, S. REP. NO. 96-11, at 44 (1979); Eisenberg, *supra* note 2, at 1666.

32. Eisenberg, *supra* note 2, at 1668–69.

33. *Id.*; *see, e.g.*, Arti K. Rai & Rebecca S. Eisenberg, *The Public Domain: Bayh-Dole Reform and the Progress of Biomedicine*, 66 LAW & CONTEMP. PROBS 289, 314 (2003) (arguing for “restrict[ing] patenting of publicly-funded research when such patenting is more likely to retard than promote subsequent R&D”).

34. U.S. CONST. art. I, § 8, cl. 8 (“To promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.”).



As a matter of prudent financial policy, universities generally do not want to give commercially viable inventions freely to the public.<sup>35</sup> Rather, universities often take ownership of commercially viable inventions from employee-inventors, patent them, and market them as valuable seeds of innovation to private entities.<sup>36</sup> Without the exclusivity granted by patents, entrepreneurs and other private entities would have little incentive to further develop and commercialize university inventions, particularly in areas such as chemical, pharmaceutical, and biotechnology sciences where patent exclusivity is highly valued.<sup>37</sup> For this technology transfer process to work efficiently, ownership rights have to be defined. A logical starting place for analyzing the legal ownership framework of publically funded inventions is the laws governing ownership rights to inventions in general.

### 1. *Interface Between Patent Law and Contract Law*

Patent law, contract law, and common law together determine who owns a patented invention.<sup>38</sup> Analysis of invention ownership, no matter the funding source for the invention, requires analysis within this legal framework defined by all three bodies of law. Patent law creates property rights.<sup>39</sup> It defines the limits of property rights in patented inventions, provides that initial ownership vests with the inventor, and describes a mechanism for transferring ownership in the form of a written assignment.<sup>40</sup> Contract law and common law fill in the gaps and allow parties to tailor their

35. Of course, much of the knowledge generated from academic research is not patentable or commercially viable, and therefore importantly, “[b]y far the most prevalent forms of transfer from universities involve knowledge dissemination through publication and teaching, training of a workforce to prepare new employees for today’s technical business sectors, and public service.” Carol Mimura, *Nuance Management of IP Rights: Shaping Industry-University Relationships to Promote Social Impact*, in *WORKING WITHIN THE BOUNDARIES OF INTELLECTUAL PROPERTY* 269, 272 (Rochelle C. Dreyfuss et al. eds., 2010).

36. See, e.g., *id.* at 269–71 (“Universities, however, perform early-stage research and serve to accelerate innovation; they are lead-off runners in a multi-party relay race to commercial endpoints. . . . Cutting edge academic research laboratories typically create early stage, ‘embryonic’ technologies that are far from being actual commercial products.”).

37. See generally Jonathan M. Barnett, *Do Patents Matter? Empirical Evidence on the Incentive Thesis*, in *HANDBOOK ON LAW, INNOVATION, AND GROWTH* 178 (Robert E. Litan ed., 2011) (discussing incentive and dis-incentive thesis for patents’ role in innovation).

38. See Robert P. Merges, *A Transactional View of Property Rights*, 20 *BERKELEY TECH. L.J.* 1477, 1479–1504 (2005).

39. See Guido Calabresi & Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 *HARV. L. REV.* 1089 (1972); Robert P. Merges, *Intellectual Property and the Cost of Commercial Exchange*, 93 *MICH. L. REV.* 1570, 1583 (1996).

40. See Merges, *supra* note 39.

transactions to best fit their respective bargaining positions and efficiently allocate ownership rights.

Patent law grants an inventor initial legal title in his or her invention regardless of who actually paid the inventor to do the inventing.<sup>41</sup> The entity who paid for the inventor to invent can have an equitable ownership claim on the invention under contract law, but does not by default have legal ownership in the first instance under patent law.<sup>42</sup> Notably, this norm in patent law is not pervasive in all areas of intellectual property (“IP”) law. For example, the work-for-hire doctrine in copyright law gives the employer original legal authorship and ownership in the works that the employees create.<sup>43</sup> In contrast, by always giving the inventor immutable inventorship recognition and initial ownership of the invention, patent law emphasizes the inventor’s genius over an employer’s and funder’s tangible contributions, integral to the inventive enterprise as they may be.

Patent law does not stand alone. Parties invariably enter into transactions where contract law provides a mechanism for enforcing personalized rules tailored to particular needs.<sup>44</sup> Contracting parties create legally cognizable rights and obligations for each other under contract law, such as the right to produce patented widgets and the obligation to pay royalties to the patentee for the widgets produced. Because many inventions today arise in the employment context, researchers typically execute employment contracts that contain clauses requiring present or future assignment of rights to inventions as a precondition for employment.<sup>45</sup>

## 2. *The Employed Inventor and Assignment of Inventions to the Employer*

Many inventions today are made during the course of employment, where the employer provides the physical and financial resources needed for inventing.<sup>46</sup> In the vast majority of cases, valid enforceable contracts govern

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41. *Bd. of Trs. of the Leland Stanford Junior Univ. v. Roche Molecular Sys., Inc.*, 131 S. Ct. 2188, 2192 (2011) (noting that “[s]ince 1790, the patent law has operated on the premise that rights in an invention belong to the inventor”).

42. *Id.* at 2203 (quoting *Comment, Contract Rights as Commercial Security: Present and Future Intangibles*, 67 YALE L.J. 847, 854, n.27 (1958) (“[t]he rule generally applicable grants equitable enforcement to an assignment of an expectancy but demands a further act, either reduction to possession or further assignment of the right when it comes into existence”).

43. Steven Cherensky, *A Penny for Their Thoughts: Employee-Inventors, Preinvention Assignment Agreements, Property, and Personhood*, 81 CALIF. L. REV. 595, 656 (1993).

44. See O’Connor, *supra* note 27.

45. Robert P. Merges, *The Law and Economics of Employee Inventions*, 13 HARV. J.L. & TECH. 1, 2 (1999).

46. *Id.*

the employer-employee invention ownership regime.<sup>47</sup> Employment contracts typically require that the employee assign all of his/her inventions to the employer as part of the consideration.<sup>48</sup> Invention ownership rights could be a bargaining chip for the inventor when he negotiates his employment contract. For example, a prominent professor at a research university could conceivably demand a higher share of the licensing revenue from his inventions than a junior faculty member. And universities may compete for faculty talent based in part on how much of the licensing fees they share with their professors.<sup>49</sup>

Where contracts are absent or unenforceable, default ownership rules have developed under common law by way of the hired-to-invent doctrine.<sup>50</sup> To date, *United States v. Dubilier Condenser Corp.* remains the seminal case on ownership of inventions arising from employment situations.<sup>51</sup> According to the Supreme Court in *Dubilier*, a hired inventor can keep possession of his invention unless he has been hired to invent the very thing that he invented, in which case he is obligated to assign the invention to his employer.<sup>52</sup> In effect, to trigger mandatory assignment of an employee's invention under common law, *Dubilier* requires that the employer not merely hire the inventor to do research or to invent generally, but hire him specifically to invent a particular invention.<sup>53</sup> Although *Dubilier* itself relates to federal government employees, many courts have applied its holding to employment contexts in the private and academic sectors.<sup>54</sup>

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47. *Id.*

48. *Id.*

49. See Sean M. O'Connor, *The Aftermath of Stanford v. Roche: Which Law of Assignments Governs?*, INTELLECTUAL PROP. JOURNAL (forthcoming 2011), available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1950804](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1950804) ("Stanford and a few other schools actively promoted their reputations for being the most faculty friendly in this regard and put in place IP policies that backed this reputation up. Such policies and their promotion paid dividends for these schools in terms of star faculty recruitment and retention.").

50. *Merges*, *supra* note 45, at 5.

51. *United States v. Dubilier Condenser Corp.*, 289 U.S. 178, *amended by* 289 U.S. 706 (1933); see *Bd. of Trs. of the Leland Stanford Junior Univ. v. Roche Molecular Sys., Inc.*, 131 S. Ct. 2188, 2195 (2011) (noting that "[o]ur precedents confirm the general rule that rights in an invention belong to the inventor" while citing, among other cases, *Dubilier*, 289 U.S. at 188 (an inventor owns "the product of [his] original thought")); see also Pat K. Chew, *Faculty Generated Inventions: Who Owns the Golden Egg*, 1992 WIS. L. REV. 259, 264 (1992) ("*United States v. Dubilier Condenser Corporation*, decided in 1933, is the seminal case for determining who owns employee-generated inventions. Its principles have been consistently applied to a broad range of employment settings." (internal references omitted)).

52. *Dubilier*, 289 U.S. at 187.

53. Chew, *supra* note 51, at 264.

54. *Id.* at 265.

Both private employment contracts and the common law hired-to-invent doctrine can give equitable ownership to the employer, but in both situations legal ownership remains with the employee-inventor until he executes a written assignment.<sup>55</sup> Because the law allows an inventor to assign to his employer an invention that has yet to exist, the inventor's ab initio ownership duration could be infinitesimally brief.<sup>56</sup> That is, by operation of the present assignment contract, an invention passes from the inventor to the employer even before the inventor has conceived the invention.<sup>57</sup> In practice, the employer would have no idea that the inventor had conceived of an invention unless and until the inventor reported the invention to the employer.

Indeed, the validity of present assignment of inchoate property right has dogged scholars for over a millennium.<sup>58</sup> In *Stanford*, the majority took notice of this question in a footnote, and both the concurrence and dissent seemed particularly concerned that validity of present assignment of future inventions could hinge on the presence of the short phrase "hereby assign."<sup>59</sup> But the opinion left this question for another day.<sup>60</sup> For now, the law on invention ownership seems clear: ownership vests initially with the inventor, regardless of who actually paid for the invention.<sup>61</sup>

### 3. *Status of the University Inventor: Not Hired To Invent*

Under the principles articulated in *Dubilier*, university researchers generally do not qualify as persons "hired to invent."<sup>62</sup> Academic autonomy demands that universities give their researchers relatively free reign.<sup>63</sup> Universities organize their research programs into departments and specialized institutes and centers to encourage research in certain areas, but rarely do they mandate a researcher, professor, or student to create a

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55. *See* *Filmtec Corp. v. Allied-Signal Inc.*, 939 F.2d 1568, 1572 (Fed. Cir. 1991).

56. *Id.* ("An assignment of an expectant interest can be a valid assignment.")

57. *Merges*, *supra* note 45, at 3, 7.

58. *See* BABYLONIAN TALMUD, Yevamot 93a (Heb.) (Central text of mainstream Judaism discussing a dispute on whether one can sell fruit that have not yet grown on a tree).

59. *Bd. of Trs. of the Leland Stanford Junior Univ. v. Roche Molecular Sys., Inc. et al.*, 131 S. Ct. 2188, 2194 n.2 (2011); *id.* at 2199 (Sotomayor, J., concurring); *id.* at 2202–03 (Breyer, J., dissenting).

60. *See id.*

61. *Stanford*, 131 S.Ct. at 2192. There are a few narrow exceptions, mostly related to federally funded research in areas of national security and defense. *Id.* at 2195.

62. 8 DONALD S. CHISUM, CHISUM ON PATENTS § 22.03 (2010); Chew, *supra* note 51, at 266.

63. Chew, *supra* note 51, at 305 (discussing conflicts between university ownership of faculty inventions and university academic mission).

specified invention as a condition of employment.<sup>64</sup> Therefore, absent contractual obligations to assign their inventions, university researchers are the equitable and legal owners of their inventions. As the Court made clear in *Stanford*, absent a valid pre-invention assignment agreement that transferred ownership of inchoate inventions, and regardless of whether an invention falls under the BD Act's purview, an inventor retains ab initio legal ownership rights.<sup>65</sup>

B. THE GOAL OF FEDERALLY FUNDED RESEARCH: INCREASING  
OVERALL SOCIAL WELFARE, NOT MONETIZING SPECIFIC  
INVENTIONS

Since 2003, the United States government has spent over \$100 billion annually on research and development.<sup>66</sup> In 2008, for example, overall federal research funding was \$129 billion.<sup>67</sup> Of that amount, universities and colleges received approximately \$30.2 billion,<sup>68</sup> National laboratories,<sup>69</sup> intramural research programs at federal agencies and FFRDCs (Federally Funded Research and Development Centers) received about \$42 billion, while businesses received much of the rest at about \$26 billion.<sup>70</sup> Importantly, most of university funding, \$23.6 billion out of \$30.2 billion, is earmarked for basic research whereas the bulk of the funding for other sectors is either in applied research or development.<sup>71</sup> Basic research funding is a critical component of innovation because it supports foundational research that is necessary or desirable as a matter of public policy but that the private sector does not

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64. *Id.* at 302 (“While research is an important factor in hiring, tenure, and promotion decisions, university faculty are not required to research a specific subject or to produce any particular work product.”).

65. *Stanford*, 131 S. Ct. at 2196 (noting that “[n]owhere in the [BD] Act is title expressly vested in contractors or anyone else; nowhere in the Act are inventors expressly deprived of their interest in federally funded inventions?”).

66. Michael Yamaner, Nat'l Sci. Found., *Federal Funding of Basic and Applied Research Increases in FY 2009*, INFO BRIEF NAT. CTR. FOR SCI. AND ENG'G STATISTICS, Jul. 2011, at 2 tbl. 1, available at <http://www.nsf.gov/statistics/infbrief/nsf11324/nsf11324.pdf>.

67. *Id.*

68. Mark Boroush, Nat'l Sci. Found., *New NSF Estimates Indicate that U.S. R&D Spending Continued to Grow in 2008*, INFO BRIEF NAT. CTR. FOR SCI. AND ENG'G STATISTICS, Jan. 2010, at 6 tbl. 3, available at <http://www.nsf.gov/statistics/infbrief/nsf10312/nsf10312.pdf>.

69. For example, laboratories such as Los Alamos National Laboratory, Argonne National Laboratory, Sandia National Laboratory, Lawrence Berkeley National Laboratory, Lawrence Livermore National Laboratory, Brookhaven National Laboratory.

70. Boroush, *supra* note 68.

71. *Id.*

adequately support.<sup>72</sup> While few investors are able or willing to invest in high risk original research, many more investors are willing to take the fruits of federally funded basic research to the next level, after the government has borne the cost of taking the initial uncertain steps.<sup>73</sup>

Advancing scientific knowledge and training new generations of scientists and engineers are two important goals of federal basic research funding.<sup>74</sup> Though basic research grants generally are not conditioned on successful discovery or invention of specific items, any patentable invention that arises, fortuitously or not, can be viewed as a bonus. Therefore so long as patenting and commercialization do not interfere with the main goals of basic research funding, these activities are tolerated and even encouraged.<sup>75</sup>

Additionally, university research tends to focus on areas too often ignored by the private sector either because the profit horizon is far away or the risk of failure is high.<sup>76</sup> Some scholars have argued that a strong focus on research topics that are likely to generate patentable inventions is antithetical to the mission of academics to conduct basic research that lays the groundwork for future applied research.<sup>77</sup> Also, university patenting of

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72. See Mimura, *supra* note 35, at 269–73.

73. See *id.*

74. See, e.g., Congress's stated various purposes for the National Science Foundation ("NSF") in the National Science Foundation Act of 1950, 42 U.S.C. § 1862 & §§ 1862a–1862o (2006). For example in one section, Congress stated that

the Foundation, as part of its responsibility for maintaining the vitality of the Nation's academic research, . . . must assist in enhancing the historic linkages between Federal investment in academic research and training and investment in the research capital base by reinvesting in the capital facilities which modern research and education programs require.

§ 1862a(a)(5).

75. See, e.g., Aldo Jeuna & Lionel J.J. Nesta, *University Patenting and Its Effects on Academic Research: The Emerging European Evidence*, 35 RES. POL'Y 790 (2006); Gustavo Crespi, Pablo D'Este, Roberto Fontana, Aldo Geuna, *The Impact of Academic Patenting and Its Impact on University Research and Its Transfer* (International Center For Economic Research, Working Paper No. 1, 2009).

76. See Sean O'Connor, *Navigating The Issues Of Multi-Disciplinary Student Teams Serving University Spin-Offs*, in CROSSING CULTURES & DISCIPLINES, ADVANCES IN THE STUDY OF ENTREPRENEURSHIP, INNOVATION AND ECONOMIC GROWTH SERIES (Gary D. Libecap & Marie C. Thursby eds.) (forthcoming), available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1684812](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1684812) ("In the university context, many science and technology innovations are very early stage, and not yet ready to be produced for the market in the form of products or services."). The article implies that for-profit companies would be unwilling to conduct such research themselves or even license those early stage, risky innovations from universities.

77. Chew, *supra* note 51, at 305 (discussing conflict between academic research and commercialization of academic innovations).

upstream discoveries may impede downstream research and applications.<sup>78</sup> And once a university researcher makes a basic discovery, that discovery must still proceed down a difficult road towards commercialization before it can be of societal benefit.<sup>79</sup>

What this means is that the goal of basic research is not necessarily to endow the public with a new patent on a specific invention, or for the government to generate some nominal royalties from out-licensing a specific invention and offset the burden of supporting basic research in the first place. Nor is it the goal of publicly funded research to give contractors a new lucrative revenue stream with the licensing of blockbuster patents.<sup>80</sup> The main purpose of publicly funded research, using a research grant on cancer as an example, would not be to patent a new anti-cancer compound. Rather, the goal of such a research grant would be to increase overall social welfare by prolonging life expectancy and quality of care through better cancer treatment, which the government grant enables in cases where private investors find the investment too risky or too much of a long shot. Those long-term benefits arise not from individually patented cancer compounds but rather from a collective pushing of medical boundaries. Viewed this way,

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78. See Rai, *supra* note 33, at 297–98. An argument against such skepticism is that the patent system already has a built-in filter (35 U.S.C. § 101 (2006) on patentable subject matter) for preventing patenting of truly upstream discoveries and inventions; whether this filter functions sufficiently to minimize upstream blocking patents is debatable. See *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S.Ct. 1289 (2012) (holding that a patent claiming nothing more than a law of nature is invalid under 35 U.S.C. § 101). For further discussion of this debate, see Allen K. Yu, *Within Subject Matter Eligibility—A Disease and A Cure*, 84 S. CALIF. L. REV. 387 (2011).

79. See generally L.M. MURPHY & P.L. EDWARDS, BRIDGING THE VALLEY OF DEATH: TRANSITIONING FROM PUBLIC TO PRIVATE SECTOR FINANCING 9 (2003), available at <http://www.nrel.gov/docs/gen/fy03/34036.pdf> (“Public sector financiers make significant R&D investments in technology and the associated early stage ventures while hoping to entice private sector investors to exercise their option to build on, and to further invest in, the early technology based businesses, thus leading to successful commercialization. The purpose of this paper is to help the two sectors better foster the transition of the entrepreneurial ventures and thereby accelerate the commercialization of clean energy, technology-based products, while improving the yield of these public sector investments.”).

80. See Jeannette Colyvas, Michael Crow, Annetine Gelijns, Roberto Mazzoleni, Richard R. Nelson, Nathan Rothenberg & Bhaven N. Sampat, *How Do University Inventions Get into Practice?*, 48 MGMT. SCI. 61, 68 (2002) (“[I]t is important to note that enhancing university revenues, which was not a central argument for the policies articulated in Bayh-Dole, now clearly is an important objective of universities in their patenting and licensing policies. There is no reason why this objective should mostly be at odds with achieving rapid and widespread technology transfer, which was the articulated purpose of Bayh-Dole. But there is no reason to believe, either, that policies that maximize a university’s revenues are always aligned with those that maximize technology transfer.”).

an invention or a patent on an invention is just the first of several uncertain and costly steps necessary for any scientific breakthrough to reach and truly benefit the public. To say that the public is paying specifically for an invention therefore stops short of appreciating the true scope of federal research funding.

### C. THE UNIVERSITY INNOVATION MICROCOSM

For an invention to fulfill its potential and become useful to society, it needs to be developed far beyond the initial conceptual stages.<sup>81</sup> There are at least four parties who must interact in order to commercialize a university invention: the university, inventor-employee, government funding agency, and private investor or entrepreneur. Each brings know-how and resources essential to the innovation enterprise, and the relationships between them are largely governed by contracts.<sup>82</sup>

Universities take ownership of these inventions for at least two reasons. First, they are often required, as a condition for receiving federal research funding, to put in place a contractual mechanism for gaining ownership of inventions made by their employees.<sup>83</sup> Second, universities increasingly depend on licensing fees and royalties to boost income, particularly when their endowments falter in times of recession or when politicians cut school funding for budgetary reasons.<sup>84</sup>

The federal government requires contractor-universities to comply with the terms of its research grants. For example, the National Institutes of Health Grants Policy Statement (“NIHGPS”) stipulates that “[g]rant recipient employees working under the funding award (e.g., PD/PI) must sign an

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81. See generally Colyvas, *supra* note 80 at 68–72 (2002) (deciphering eleven case studies on commercialization of inventions at Columbia and Stanford Universities, the complications of various intellectual property rights arrangements, and the roles of technology licensing offices in success and failure of technology transfer).

82. See generally O'Connor, *supra* note 27 (discussing the central role of private ordering arrangements in enabling innovation).

83. See, e.g., U.S. DEPT. OF HEALTH AND HUMAN SERVS., NAT'L INSTS. OF HEALTH, NIH GRANTS POLICY STATEMENT IIA-89-93 (Oct. 2011), available at [http://grants.nih.gov/grants/policy/nihgps\\_2011/nihgps\\_2011.pdf](http://grants.nih.gov/grants/policy/nihgps_2011/nihgps_2011.pdf).

84. See, e.g., Richard Jensen & Marie Thursby, *Proofs and Prototypes for Sale: The Tale of University Licensing*, 91 AMER. ECON. REV. 240, 245 (2001) (“Technology managers and university administrators (as perceived by TTO managers) consider license revenue more important than any other outcome [among various objectives for out-licensing university inventions].”); Recent Development, *Columbia, Co-transformation, Commercialization & Controversy the Axel Patent Litigation*, 17 HARV. J.L. & TECH. 583 (2004) (noting Columbia University’s profit motive in seeking to extend patent monopoly by repeatedly filing continuation patent applications).



agreement to abide by the terms of the Bayh-Dole Act and the NIHGPS as they relate to intellectual property rights.”<sup>85</sup> Accordingly, the “[g]rant organizations and consortium participants must have policies in place regarding ownership of intellectual property,” as required by 37 C.F.R. § 401.14(f)(2) (2010).<sup>86</sup> “Failure of the grantee to comply with any of these or other regulations cited in 37 CFR Part 401 may result in the loss of patent rights or a withholding of additional grant funds.”<sup>87</sup> The National Science Foundation has similar rules for grantees.<sup>88</sup> Moreover, the government safeguards the public’s interest by reserving march-in rights, which allow the government to practice or license to a third party any federally funded invention owned by the contractor.<sup>89</sup>

Research institutions typically comply with these grant rules through their employment contracts. University of California’s (“UC”) mandatory oath on patent policy is typical.<sup>90</sup> It states that in consideration of employment, the inventor acknowledges his “obligation to assign,” and further does “hereby assign, inventions and patents.”<sup>91</sup> Similarly, Stanford’s research policy handbook states that “[a]ll potentially patentable inventions . . . shall be assigned to the University, regardless of the source of funding, if any,” and that the employee shall “hereby assign to Stanford . . . all my right, title and interest in such patentable inventions.”<sup>92</sup> Notably both UC and Stanford inserted the “hereby assign” phrase into their agreements in response to *Stanford*.<sup>93</sup>

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85. NIH GRANTS POLICY STATEMENT, *supra* note 83, at IIA-90 Exhibit 8.

86. *Id.*

87. *Id.* at IIA-93.

88. NAT’L SCI. FOUND., GRANT POLICY MANUAL § 730 (Jul. 2005), *available at* [http://www.nsf.gov/pubs/manuals/gpm05\\_131/gpm05\\_131.pdf](http://www.nsf.gov/pubs/manuals/gpm05_131/gpm05_131.pdf).

89. 35 U.S.C. § 203 (2006). The government has never exercised its march-in-right. *See infra* note 213.

90. UNIV. OF CAL. HUMAN RES. AND BENEFITS, *The Patent Amendment* (2011), [http://atyourservice.ucop.edu/employees/policies\\_employee\\_labor\\_relations/patent-acknowledgment/patent-amendment.html](http://atyourservice.ucop.edu/employees/policies_employee_labor_relations/patent-acknowledgment/patent-amendment.html) (last visited Mar. 29, 2012).

91. *Id.*

92. Memorandum from the Stanford University Office of the Vice Provost and Dean of Research to faculty, staff, graduate students, and postdocs regarding updated patent and copyright agreement in the Research Policy Handbook (July 2011), *available at* <http://rph.stanford.edu/su18.html>.

93. For University of California, see Letter from Lawrence H. Pitts, Provost and Executive VP of Academic Affairs & Nathan Brostrom, Executive VP of Business Operations, to Members of the University of California Community, Re: Amendment to Patent Acknowledgement or Agreement (Nov. 10, 2011), *available at* [http://atyourservice.ucop.edu/employees/policies\\_employee\\_labor\\_relations/patent-acknowledgment/patent\\_amendment\\_letter\\_nov.\\_10.pdf](http://atyourservice.ucop.edu/employees/policies_employee_labor_relations/patent-acknowledgment/patent_amendment_letter_nov._10.pdf) (requiring all employees and

By contrast, other schools such as the Massachusetts Institute of Technology (“M.I.T.”) already used the “hereby assign” language in their assignment contracts before the *Stanford* decision.<sup>94</sup> M.I.T.’s Invention and Proprietary Information Agreement requires that “[a]ll members of the M.I.T. community . . . who participate in either sponsored research or Institute-funded research . . . agree[] to assign to M.I.T. or its designate his or her title to Intellectual Property.”<sup>95</sup> The Agreement further states “I will disclose promptly to and assign to, and I hereby assign to, M.I.T. all rights to all inventions . . . which: (i) are developed in the course of or pursuant to a sponsored research.”<sup>96</sup>

To be clear, the latest versions of Stanford, UC, and M.I.T.’s invention assignment agreements (or amendments to such agreements) all contain the “hereby assign” or “hereby do assign” language, and so Stanford, UC, and M.I.T. employees by that contractual language grant their respective universities legal ownership of inchoate inventions at the very moment that they sign those agreements.<sup>97</sup> But before Stanford and UC revised their assignment agreements in the aftermath of *Stanford*, their assignment agreements did not contain the key “hereby assign” phrasing. Instead, their old agreements contained the “agree to assign” phrasing, which the Federal Circuit held—and the Supreme Court in *Stanford* confirmed—conveyed to the universities only equitable interest in the inventions.<sup>98</sup> What that means is that under such an arrangement, the inventor has only created an obligation

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personnel to sign an amendment to their patent agreement because “[a]s a result of court decisions culminating in the United States Supreme Court decision earlier this year in the case *Stanford v. Roche*, UC’s rights to inventions and patents are at risk because of the Court’s interpretation of the language used in our current Patent Acknowledgment”). And for Stanford University, compare Stanford’s updated research policy handbook that was revised within one month of *Stanford* (*supra* note 92), with Stanford’s pre-*Stanford* research policy handbook that was current as of July 15, 1999 (Stanford University Office of the Vice Provost and Dean of Research, *Inventions, Patents and Licensing (RPH 5.1)*, RESEARCH POLICY HANDBOOK, <http://rph.stanford.edu/5-1.html> (last visited Feb. 5, 2012)).

94. Current version of M.I.T.’s Agreement was last revised on April 14, 2010. *Infra* note 95.

95. M.I.T. TECHNOLOGY LICENSING OFFICE, MASSACHUSETTS INSTITUTE OF TECHNOLOGY INVENTIONS AND PROPRIETARY INFORMATION AGREEMENT (Apr. 2010), available at <http://web.mit.edu/tlo/www/downloads/doc/IPIA.doc>.

96. *Id.*

97. *See* Bd. of Trs. of the Leland Stanford Junior Univ. v. Roche Molecular Sys., Inc., 131 S. Ct. 2188, 2194 (2011).

98. *See infra* Sections IV.C & IV.D.

to assign to the university, but retains legal right in the invention until he or she executes a post-invention assignment agreement.<sup>99</sup>

Once universities secure legal ownership rights to inventions, including those that are federally funded, entities ranging from startups to mature companies license those inventions. Subsequently, the companies may provide additional funding for collaborative research where IP rights are allocated between the universities and private collaborators according to contractual agreements.<sup>100</sup> The terms of in- and out-licensing agreements are governed by private contracts and invariably contain complex arrangements.<sup>101</sup>

In short, universities frequently sit at the center of the innovation microcosm where contract law governs inter-entity interactions based on rights created by patent and property laws. Disturbing the parties' understanding of the default ownership rules would inevitably complicate this complex web of contractual relationships. Notably within this microcosm, the inventor is often by far the least legally sophisticated party, and the BD Act further complicates what is already a difficult to comprehend set of legal relationships.

### III. THE BAYH-DOLE ACT

Much of the dispute in *Stanford* centers on the proper interpretation of the BD Act<sup>102</sup> because Stanford chose to forgo other legal issues and focus its final appeal entirely on the BD issue. This Part describes the history and policy objectives of the BD Act and how the Act operates to maximize the social impact of federal research funding. BD provides a framework for answering the basic question of who owns what invention and when. In effect, BD provides a consistent, predictable ownership framework that gives contractors the role of promoting government funded inventions to the private sector.

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99. The university can sue to enforce that equitable right. But legal right remains with the inventor until a court grants an equitable remedy such as injunction or specific performance. *Stanford*, 131 S. Ct. at 2194.

100. Mimura, *supra* note 35, at 273–84 (discussing industry-university collaborations and partnerships).

101. See O'Connor, *supra* note 27.

102. *Stanford*, 131 S. Ct. at 2192.

## A. BEFORE THE BAYH-DOLE ACT

The BD Act did not spring out of ether. It is the product of negotiated compromises based on years of experience on knowledge of what policies worked well and what did not.<sup>103</sup> Prior to enactment of BD in 1980, the federal government lacked a uniform policy for IP ownership.<sup>104</sup> In many instances, the government retained ownership of patents developed using federal funding but failed to commercialize the inventions that it owned.<sup>105</sup> Proponents of BD often cite the debatable statistic that in 1980, about ninety-five percent of federally owned patents were languishing in a vast bureaucracy, not generating licensing fees or royalties.<sup>106</sup> Also, while promises of monopoly in the form of exclusive licenses are often necessary to attract private investors, the federal government granted mostly non-exclusive licenses.<sup>107</sup>

What eventually became BD started as agency-specific procedures for contractor institutions to obtain patent rights if the federal government chose not to retain patent ownership.<sup>108</sup> The National Institutes of Health (“NIH”) were one such funding agency that followed case-by-case procedures that worked much like the eventual provisions of BD.<sup>109</sup> So BD’s general mechanism of encouraging technology transfer by giving ownership of

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103. Mowery, *supra* note 8, at 85–98 (discussing the political history of BD).

104. Hutt & Mays, *supra* note 109, at 5; Mowery, *infra* note 8, at 35–98 (discussing pre-BD university patenting and licensing and the political history of BD).

105. Dov Greenbaum, *National technology transfer mechanism*, in HANDBOOK ON LAW, INNOVATION, AND GROWTH 245, 248–52 (Robert E. Litan ed., 2011); Mowery, *supra* note 8, at 35–98.

106. While arguing that there was little technology transfer of government funded inventions before BD, the BD proponents noted that “[t]he General Accounting Office (GAO) reported in 1978 that fewer than 5% of approximately 28,000 government-held patents were licensed for commercial use.” BayDole25, Inc., *The Bayh-Dole Act at 25*, at 13. (Apr. 2006) (whitepaper). “Mowery et al. have criticized this widely-cited figure, rightfully pointing out that it may overstate the problem in that it includes defense contracts, and national security considerations would preclude technological innovations that result from such contracts from being licensed.” *Id.* (citing Mowery, *supra* note 8, at 90–91).

107. *Id.* at 2.

108. Mowery, *supra* note 8, at 89.

109. *Id.* at 87–88 (The NIH is part of Department of Health and Human Services (DHHS), which was formerly known as HEW (Department of Health, Education, and Welfare); Greenbaum, *supra* note 105, at 247; Peter B. Hutt & Thomas Mays, *Historical Perspectives on Government Technology Transfer Policy and Pharmaceutical Industry*, in GOVERNMENT AND INDUSTRY COLLABORATION IN AIDS DRUG DEVELOPMENT 3, 3–7 (Leslie M. Hardy ed., 1994), available at [http://www.nap.edu/catalog.php?record\\_id=9196](http://www.nap.edu/catalog.php?record_id=9196).

inventions to universities was not novel in 1980. What was novel was the unification of disparate agency policies on technology transfer.<sup>110</sup>

#### B. LEGISLATIVE HISTORY

At the time Congress introduced the bill that became BD, nearly everyone agreed that default government ownership of inventions failed to maximize the potential social benefits that could be extracted from federally funded research.<sup>111</sup> Debates on an early draft of the Act indicate that Congress simply “presumed” that universities have legal ownership of their researcher’s inventions.<sup>112</sup> Hence, much of the debate revolved around why a uniform policy would be important and why universities are in a better position to manage patents than the federal government. The final version of the Act does not explicitly require that an inventor assign his invention to the university.<sup>113</sup>

#### C. ENACTMENT AND POLICY OBJECTIVES

Congress conveniently lays out the many objectives of BD in the Act itself:

to use the patent system to promote the utilization of inventions arising from federally supported research or development; to encourage maximum participation of small business firms in federally supported research and development efforts; to promote collaboration between commercial concerns and nonprofit organizations, including universities; to ensure that inventions made by nonprofit organizations and small business firms are used in a manner to promote free competition and enterprise without unduly encumbering future research and discovery; to promote the commercialization and public availability of inventions made in the United States by United States industry and labor; to ensure that

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110. Greenbaum, *supra* note 105, at 248 (stating that BD was introduced to “harmonize the government’s policies towards patenting of federally funded research”); Hutt & Mays, *supra* note 109 at 4–6 (noting that prior to BD, “[b]y the late 1970s, there were approximately 22 different administrative policies regarding patent rights to government-sponsored inventions”).

111. Edward C. Walterscheid, *The Need for a Uniform Government Patent Policy: The D.O.E. Example*, 3 HARV. J.L. & TECH. 103, 130 (1990).

112. H.R. Rep. No. 96-1307, pt. 1, at 5 (1980) (“The legislation [BD] establishes a presumption that ownership of all patent rights in government sponsored research will vest in any contractor who is a non-profit research institution or a small business.”).

113. *Bd. of Trs. of the Leland Stanford Junior Univ. v. Roche Molecular Sys., Inc. et al.*, 131 S. Ct. 2188, 2196 (2011) (noting that “[n]owhere in the [BD] Act is title expressly vested in contractors or anyone else; nowhere in the Act are inventors expressly deprived of their interest in federally funded inventions”).

the Government obtains sufficient rights in federally supported inventions to meet the needs of the Government and protect the public against nonuse or unreasonable use of inventions; and to minimize the costs of administering policies in this area.<sup>114</sup>

As a policy matter, Congress essentially declared with BD that federal contractors such as universities are in a better position than the government to advance the social policy goals of public research. Empirical evidence over the last thirty years shows that the BD Act has probably played some role, (though perhaps a more limited role than proponents of BD have argued) in encouraging a surge of commercialization in federal funded inventions.<sup>115</sup> Thus Congress may have been correct, at least partially, in its view that contractors are effective owners of federally funded inventions.

#### D. PROLIFERATION OF TECHNOLOGY LICENSING OFFICES

Following the enactment of the BD Act, many universities established technology transfer or licensing offices (“TLOs”) or expanded their existing offices.<sup>116</sup> These offices act as central clearinghouses for university generated inventions and provide an administrative mechanism for ensuring compliance with BD.<sup>117</sup> The possibility of generating “unencumbered” payout from inventions provides strong impetus for most universities and their TLOs to diligently monetize the inventions that they own.<sup>118</sup>

So the question becomes this: if the potential payout incentive to the universities were removed, giving that payout instead to the inventors, would innovation suffer as a result? Part of the answer may be found in BD itself. The Act requires that federal contractors share with their employee-inventors proceeds derived from the contractor’s ownership of the inventor’s work product,<sup>119</sup> though BD does not specify how much of a share ought to be given to inventors.<sup>120</sup> The reason Congress explicitly provides that inventors share in the licensing fees is possibly the recognition that the inventor is at the root of the invention, so the most direct way to stimulate innovation is to

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114. 35 U.S.C. § 200 (2006).

115. *See, e.g.*, Kenney, *supra* note 8; Mowery, *supra* note 8 and references therein.

116. For a detailed discussion of TLO’s and their relationships with inventors, see Kenney, *supra* note 8, at 1409–13.

117. *Id.*; Mowery, *supra* note 8, at 146–47.

118. Kenney, *supra* note 8, at 1410 (“TLO income is attractive to administrators because the funds are, in fact, largely unencumbered, thereby providing wide discretion on how they are spent.”).

119. 35 U.S.C. § 202(c)(7)(B) (2006) (stating the “requirement that the non-profit contractors share royalties with their inventors”).

120. *Id.*

reward the source of inventive genius. But by that logic, the inventor ought to receive all of the licensing revenue to maximize the incentive to invent. That is simply not the scheme under BD, which merely requires that the contractors share some revenue with the inventors.<sup>121</sup> Indeed, the most plausible reason for revenue sharing with the inventors is likely that increased sharing is the “best way to encourage disclosure.”<sup>122</sup> And without disclosure of inventions by their employee-inventors, the university TLOs would be irrelevant.<sup>123</sup>

For university inventors who have little entrepreneurial bent or interest in the business world, TLOs are critical to helping them commercialize valuable inventions by taking a proactive approach to marketing and managing inventions, thus preventing inventions from languishing in academic anonymity. On the other hand, some inventors who are eager to commercialize their inventions do not necessarily want or need TLOs to get in their way. There are examples of professors who are serial entrepreneurs with a track record of translating their academic research into commercialized products.<sup>124</sup> For some of these individuals, success in the business world seemingly would occur without the cooperation of TLOs at their respective universities.<sup>125</sup>

*Stanford* represents one scenario where the TLO was not needed for or helpful to innovation. There, Roche took ownership of the PCR invention in 1989 by virtue of the VCA assignment from the visiting Stanford

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121. *Id.* Perhaps university inventors already have plenty of other incentives to invent, such as promise of a reasonable salary, so any additional income from BD’s mandatory payout sharing is simply a nice bonus without much motivating effect.

122. Kenney, *supra* note 8, at 1413.

123. Absent voluntary disclosure, a TLO would likely have trouble finding out about employee inventions. It would be impractical for TLOs to audit laboratory notebooks to find potentially valuable inventions.

124. For example, Peter G. Schultz of The Scripps Research Institute founded several biotechnology companies including Symyx, Syrrx, Kalypsys, Phenomix, Ilypsa, and Ambrx. Peter G. Schultz, THE PETER G. SCHULTZ LABORATORY, <http://schultz.scripps.edu/schultz.php> (last visited Feb. 5, 2012). Likewise Robert S. Langer of Massachusetts Institute of Technology has been involved in numerous companies including Acusphere, AIR, Arsenal, Bind Biosciences, Blend Therapeutics, Kala, Living Proof, Microchips, Moderna, Momenta, Pervasis, Pulmatrix, Selecta Biosciences, Seventh Sense, Taris, Transform, and T2. Gregory T. Huang, *The Bob Langer and Polaris Family Tree: From Acusphere to Momenta to Visterra*, XCONOMY (Apr. 19, 2011), <http://www.xconomy.com/boston/2011/04/19/the-bob-langer-and-polaris-company-tree-from-acusphere-to-momenta-to-visterra/>.

125. This sentence by no means implies that entrepreneurial professors find TLOs cumbersome and unhelpful. To the contrary, many of these professors probably find the legal, business, and organizational skills and experience of TLOs helpful to their commercial ventures.

researcher.<sup>126</sup> Meanwhile, Roche independently developed the invention into a commercial product and received FDA approval in March 1999, six years before the *Stanford* lawsuit began.<sup>127</sup> Involvement of Stanford's TLO before 1999 probably would not have made much, if any, difference to whether Roche commercialized the PCR test product. In hindsight, it seems like the only role that Stanford's TLO would have played with its involvement was to extract licensing fees from Roche before the product came to market and royalties thereafter.<sup>128</sup>

E. OPERATION OF BAYH-DOLE AND PRESUMPTIONS UNDERLYING BAYH-DOLE

BD applies to “any invention of the contractor conceived or first actually reduced to practice in the performance of work under a [federal] funding agreement . . . .”<sup>129</sup> Once BD applies, it sets into motion an ownership hierarchy that first gives the contractor power to “elect to retain title” of the invention. As the Supreme Court explained, this first step presumes that the contractor already has title in hand and therefore something to “retain.”<sup>130</sup> Next on the hierarchy is the government, which has the option of taking title from the contractor in a variety of circumstances, such as when the contractor elects to not retain title, or if a foreign government controls the contractor.<sup>131</sup> Finally, the inventor may obtain title if the contractor “does not elect to retain title” and the government likewise declines to take title and approves of the title transfer to the inventor.<sup>132</sup>

Importantly, BD does not consider the government taking title directly from the inventor, nor does BD discuss the inventor retaining title himself. BD is structured with the contractor as the initial title holder in mind.<sup>133</sup> And that is the trouble with the BD Act: it presumes that the contractor has legal ownership of its employee's inventions.<sup>134</sup> This is a good assumption most of the time because contractors usually do properly gain legal ownership of their

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126. *Bd. of Trs. of the Leland Stanford Junior Univ. v. Roche Molecular Sys., Inc.*, 131 S. Ct. 2188, 2192 (2011).

127. *Id.*

128. *See infra* note 145 on transaction cost of TLOs.

129. 35 U.S.C. § 201(e) (2006).

130. *Stanford*, 131 S. Ct. at 2197.

131. 35 U.S.C. § 202 (2006); *Stanford*, 131 S. Ct. at 2193.

132. 35 U.S.C. § 202; *Stanford*, 131 S. Ct. at 2193.

133. H.R. REP. NO. 96-1307, pt. 1, at 5 (“The legislation [BD] establishes a presumption that ownership of all patent rights in government sponsored research will vest in any contractor who is a non-profit research institution or a small business.”).

134. *Id.*



employees' inventions. But as the Supreme Court pointed out in *Stanford*, the BD statute itself does not give contractors ab initio legal title to their employees' inventions.<sup>135</sup> Instead, patent law, ancillary contract law, and common law, dictate legal title.<sup>136</sup> A contractor therefore has to somehow obtain legal title in the invention. Otherwise BD's legal framework is simply irrelevant because legal title is a prerequisite to the operation of BD.<sup>137</sup> Most of all, BD's proper operation does not require that the contractor has initial ownership, but merely that the contractor has legal ownership at some point after invention has occurred.<sup>138</sup>

#### F. THE IMPACT OF BAYH-DOLE

Commercialization of university inventions has increased significantly and steadily since the 1980s.<sup>139</sup> Empirical studies of BD in practice over the past thirty years disagree on BD's contribution to the surge of university innovation.<sup>140</sup> While some proponents of the Act argue that dramatic increases in patent filings and licensing by universities are a direct result of the BD Act, other scholarly research show that the BD Act is merely one contributor among myriad factors that led to an innovation surge starting in the 1980s.<sup>141</sup> What is clear though is that BD created a predictable framework of IP ownership that provides private parties with a reliable basis on which to form contracts.<sup>142</sup> Legal disputes centered around interpretation of BD have been few and far between.<sup>143</sup>

The heaviest criticism of BD is that the Act assumes TLOs are intrinsically better than inventors at attracting and dealing with licensees, collaborators, and venture capitalists. Various commentators have questioned this assumption on the basis of comparative studies that show that inventor

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135. *Stanford*, 131 S. Ct. at 2194.

136. *Id.*

137. *Id.* at 2197.

138. *See id.*

139. Mowery, *supra* note 8, at 1–2.

140. *See generally* Jensen & Thursby, *supra* note 84 and references therein (discussing case studies of university technology transfer in the post-BD era); Kenney, *supra* note 8 and references therein (discussing current and alternative invention ownership models under the BD Act while citing various empirical studies on the BD Act's impacts); Mowery, *supra* note 8 (discussing university-industry technology transfer before and after the BD Act).

141. *See* Kenney, *supra* note 8.

142. Greenbaum, *supra* note 105.

143. *Infra* note 147.

ownership of inventions can be quite effective at advancing innovation.<sup>144</sup> Perhaps BD adds a layer of unnecessary transaction cost by requiring TLOs as middlemen.<sup>145</sup> Some have argued that the public policy goals of commercializing the fruits of federally funded research could instead be better achieved by streamlining the transfer of patent rights away from the federal government, without requiring that the rights always go to the contractors.<sup>146</sup>

#### IV. THE *STANFORD V. ROCHE* LITIGATION

While the effectiveness of BD might be hotly debated as to how it might encourage innovation, rarely has the Act been a focus in legal disputes.<sup>147</sup> But the Act managed to take center stage in the *Stanford* litigation, where the Supreme Court took its first look at the invention ownership structure under the BD Act. Though the Supreme Court confined its holding in *Stanford* to the question of whether BD trumps the default rule in patent law that inventors own their inventions, the decision could have broader implications for innovation.<sup>148</sup>

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144. See Kenney, *supra* note 8, at 1416 n.33. University of Waterloo in Canada has an inventor as initial owner system that seems to work well. Research in Motion (RIM), the maker of Blackberry®, is a technology company that came out of University of Waterloo.

145. See, e.g., Lorelei Ritchie de Larena, *The Price of Progress: Are Universities Adding to the Cost?*, 43 HOUS. L. REV. 1373, 1402–25 (discussing mismanagement and misuse of federal research funds, and “questionable licensing practices” that enrich the university’s general funds at the public’s expense).

146. See, e.g., Kenney, *supra* note 8 and references therein, at 1414–18 (discussing the “inventor ownership model” and “weaker ownership rights model[s]”); de Larena, *supra* note 145, at 1439–44 (proposing a “unified, national technology-transfer center”).

147. A search of the ALLFEDS database on Westlaw® (all federal courts including the Supreme Court, Circuit Courts of Appeals, and district courts in all states and territories) reveals that over 30 years of the BD Act’s existence, only 51 judicial opinions, encompassing 26 separate lawsuits, contain the term “Bayh-Dole” more than once in the opinion. Indeed, BD wasn’t the central issue in *Stanford* until the case reached the Supreme Court. The BD argument was one of several legal theories (bona fide purchaser, statute of limitations, standing, etc.) disputed at the Federal Circuit. *Bd. of Trs. of the Leland Stanford Junior Univ. v. Roche Molecular Sys., Inc.*, 583 F.3d 832, 842–44, 846–49 (2009), *aff’d*, 131 S. Ct. 2188 (2011) (affirming solely on the issue of whether BD trumps private ordering arrangements and gives ownership automatically to the contractor).

148. See *Bd. of Trs. of the Leland Stanford Junior Univ. v. Roche Molecular Sys., Inc.*, 131 S. Ct. 2188, 2196–98 (2011) (most of the discussion relates to statutory interpretation). The *Stanford* decision’s importance to the university innovation community is reflected in the participation of dozens of *amici curiae*, representing the academic community, technology transfer professionals, venture capitalists, private industries, the federal government, among others, representing the full spectrum of participants in the innovation process. See, e.g., *infra* Section IV.E, IV.F.

The Court held that consistent with over 300 years of patent law, the BD Act does not displace the norm that “rights in an invention belong to the inventor.”<sup>149</sup> That is, initial title in an invention vests in the inventor, and not the federal contractor. At first glance, this decision seems to upend the basic premise on which BD is built—that a contractor has title to inventions and uses that ownership to advance innovation.<sup>150</sup> On closer examination however, the decision still allows BD to fully do its job of promoting innovation, so long as assignment contracts are properly drafted. But it leaves open the possibility of bypassing BD in those rare circumstances where doing so might be efficient in terms of maximizing the social welfare objective of federally funded research through private ordering arrangements.<sup>151</sup>

#### A. THE PARTIES

The petitioner-plaintiff Stanford University is a research university that receives considerable research funding from the federal government. As a federal contractor, Stanford is required to comply with the BD Act, in addition to any obligations imposed by individual federal funding agencies. For example, the NIH require that Stanford has in place a mechanism to take title in inventions from its employees.<sup>152</sup> Stanford employees, including professors, students, research staff and fellows, are the inventors. They are not the parties contracting with the federal government; Stanford is the contractor. Interestingly, failure of a contractor to comply with NIH’s grants policy is supposed to result in penalties such as forfeiture of the grant.<sup>153</sup> But here, despite Stanford’s apparent violation of NIH policy, it is unclear if NIH levied sanctions against Stanford.<sup>154</sup>

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149. *Id.* at 2192.

150. The legislative history shows a presumption of initial contractor ownership. *See supra* note 133.

151. The Court’s interpretation of BD also leaves open the possibility of bypassing BD to the pecuniary detriment of the contractor. Such is what happened in *Stanford*.

152. NIH GRANTS POLICY STATEMENT, *supra* note 83, at IIA-89-93.

153. *Id.* at IIA-93.

154. Here, violation of the Grants Policy only became apparent to Stanford and NIH several years after any grant that could have resulted in the invention had already been used up and expired. Moreover, it was unclear if Holodniy’s research was covered by any NIH grant at all. Brief of Respondents (Roche) at \*6–7, *Stanford*, 131 S. Ct. 2188 (No. 09-1159), 2010 WL 288882 (“Stanford failed to produce the two NIH grant agreements on which it relies, and it is undisputed that Holodniy’s salary at Cetus was paid not by either grant, but by a National Research Service Award of the kind expressly exempted from the Bayh-Dole Act.”).

The respondent-defendant Roche Molecular Systems, Inc. is a medical diagnostics company that produces, among other products, a PCR tool for quantifying HIV viral load in patients.<sup>155</sup> Roche acquired Cetus Corporation's PCR assets in 1991.<sup>156</sup> Cetus Corporation ("Cetus") was a California biotechnology company that pioneered PCR techniques for medical diagnostics.<sup>157</sup> One of its scientists, Kary Mullis, received a Nobel Prize in chemistry for the invention of the PCR method while at Cetus.<sup>158</sup> Around the late 1980s, Cetus was at the pinnacle of PCR research and many research institutions, including Stanford, sought PCR know-how from Cetus on what was then a groundbreaking technology.<sup>159</sup>

#### B. BACKGROUND OF THE DISPUTE

The ownership of three patents was in dispute. All three patents shared a common parent application and claimed a method for quantifying HIV in human blood samples using PCR.<sup>160</sup> In 1988, Mark Holodniy, one of the listed inventors on the patents, began developing the disputed inventions at Stanford University as a Research Fellow.<sup>161</sup> Upon joining Stanford, Holodniy executed an agreement where he "agreed to assign" his future inventions to Stanford.<sup>162</sup>

In early 1989, Holodniy visited Cetus daily to learn about the PCR technology.<sup>163</sup> Before beginning his visits at Cetus, Holodniy executed a visitor confidentiality agreement ("VCA") that immediately assigned all of Holodniy's inchoate PCR inventions to Cetus.<sup>164</sup> In due course, Holodniy returned to Stanford and produced a PCR assay that could quantify HIV in humans.<sup>165</sup> He and his Stanford supervisors were listed as co-inventors when Stanford filed the patent applications that would become the focus of the *Stanford* lawsuit.<sup>166</sup> Because NIH funded at least part of the HIV research at

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155. *Stanford*, 131 S.Ct. at 2192.

156. *Id.*

157. *Id.*

158. *The Nobel Prize in Chemistry 1993*, NOBELPRIZE.ORG, [http://www.nobelprize.org/nobel\\_prizes/chemistry/laureates/1993/](http://www.nobelprize.org/nobel_prizes/chemistry/laureates/1993/) (last visited Feb. 6, 2012).

159. *The History of PCR (RU9577)*, SMITHSONIAN INSTITUTION ARCHIVES, [http://siarchives.si.edu/research/videohistory\\_catalog9577.html](http://siarchives.si.edu/research/videohistory_catalog9577.html) (last visited Feb. 6, 2012).

160. *Stanford*, 131 S. Ct. at 2192.

161. *Id.*

162. *Id.*

163. *Id.*

164. *Id.*

165. *Id.*

166. *Id.* ("Over the next few years [after Holodniy's Cetus visit], Stanford obtained written assignments of rights from the Stanford employees involved in refinement of the

Stanford, Stanford “formally notified the Government that it elected to retain title to the inventions under the Bayh-Dole Act” during prosecution of the patents-in-suit.<sup>167</sup>

Meanwhile, Roche acquired Cetus’ PCR business, developed a PCR assay for HIV and commercialized it.<sup>168</sup> When the commercial success of Roche’s PCR assay became evident, Stanford, armed with the issued patents-in-suit, demanded royalty payments.<sup>169</sup> Having failed to reach an amicable licensing agreement, Stanford filed suit in 2005 against Roche for patent infringement.<sup>170</sup> Roche answered and counterclaimed that Stanford lacked standing to bring suit because Roche “possesses ownership, licenses, and/or shop rights to the patents through Roche’s acquisition of Cetus’s PCR assets.”<sup>171</sup> Roche also answered that the asserted patent claims were invalid for obviousness.<sup>172</sup>

### C. LOWER COURT DECISIONS

Before the district court, Stanford argued *inter alia* that BD “negated” Holodniy’s assignment to Cetus, thus giving the government and Stanford “the right to take complete title to the inventions as a ‘right of second refusal.’”<sup>173</sup> The district court granted Stanford’s motion in part, holding that Roche’s ownership claims on the patents were barred by the BD Act. Interestingly, the district court held for Roche in finding the asserted patent claims invalid for obviousness.<sup>174</sup>

The Federal Circuit reversed the district court on the BD issue.<sup>175</sup> It held that BD did not “automatically void . . . prior contractual transfer of rights” to a third party by the Stanford inventor.<sup>176</sup> The Federal Circuit found that Holodniy’s initial assignment contract with Stanford was only an agreement

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technique, including Holodniy, and filed several patent applications related to the procedure. Stanford secured three patents to the HIV measurement process.”).

167. *Id.* at 2193.

168. *Id.*

169. *Bd. of Trs. of the Leland Stanford Junior Univ. v. Roche Molecular Sys., Inc.*, 583 F.3d 832, 838 (Fed. Cir. 2009).

170. *Id.*

171. *Id.*

172. *Id.* at 836.

173. *Id.* at 844 (discussing the district court’s ruling at 563 F. Supp. 2d 1016 (N.D. Cal. 2008)).

174. *Stanford*, 563 F. Supp. 2d 1016, 1037–48 (N.D. Cal. 2008), *aff’d-in-part, vacated-in-part*, 583 F.3d 832, 838 (Fed. Cir. 2009) (vacating lower court’s finding of Stanford patent’s invalidity for obviousness).

175. *Stanford*, 583 F.3d at 844–45.

176. *Id.* at 844.

to assign, whereas his assignment contract with Cetus was a valid present assignment of future inventions.<sup>177</sup> Therefore when Holodniy executed a second assignment agreement with Stanford to transfer to Stanford his invention *after* his visits to Cetus, he was left with nothing to assign because by that time Cetus had gained legal title to the invention.<sup>178</sup>

Furthermore, the Federal Circuit stated that “the primary purpose of BD is to regulate relationships of small businesses and nonprofit grantees with the Government, not between contractors and the inventors who work for them.”<sup>179</sup> In other words, the court held that a patent ownership assignment controversy between a third party assignee (Roche) and the contractor (Stanford) falls outside of BD’s purview.<sup>180</sup> The Federal Circuit emphasized the consistency between its reading of BD and its own precedent *Central Admixture*, as well as with several recent district court opinions.<sup>181</sup> Finally, because the Federal Circuit held that Stanford lacked ownership in the patents, and thus standing to sue, it vacated the invalidity judgment.<sup>182</sup>

#### D. THE SUPREME COURT OPINION

Stanford petitioned the Supreme Court for certiorari in March 2010.<sup>183</sup> M.I.T., the Wisconsin Alumni Research Foundation (“WARF”), and various other universities and research organizations filed amicus briefs in support of Stanford’s petition, arguing that the Federal Circuit’s decision renders BD virtually irrelevant.<sup>184</sup> At the Supreme Court’s invitation, the Solicitor General (“SG”) filed an amicus brief ostensibly in support of neither party, but

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177. *Id.*

178. *Id.*

179. *Id.* at 845 (quoting *Fenn v. Yale Univ.*, 393 F. Supp. 2d 133, 141–42 (D. Conn. 2004)).

180. *Id.*

181. *Id.* at 844–45 (citing *Cent. Admixture Pharm. Servs., Inc. v. Advanced Cardiac Solutions, P.C.*, 482 F.3d 1347, 1352–53 (Fed. Cir. 2007); *Univ. of Pittsburgh v. Townsend*, 2007 U.S. Dist. LEXIS 56860 (E.D. TN. 2008), *aff’d* 2008 FED App. 342P (6th Cir. 2008); *Fenn v. Yale Univ.*, 393 F. Supp. 2d 133, 141–42 (D. Conn. 2004)).

182. *Stanford*, 583 F.3d at 848–49 (“[t]he case is remanded with instructions to dismiss Stanford’s claim for lack of standing”).

183. *See* Petition for a Writ of Certiorari, *Stanford*, 131 S. Ct. 2188 (2011) (No. 09-1159) (filed Mar. 22, 2010).

184. *See, e.g.*, Brief of Amici Curiae Association of American Universities et al., *Stanford*, 131 S. Ct. 2188 (2011) (No. 09-1159) (filed Apr. 26, 2010); Brief of Amicus Massachusetts Institute of Technology, *Stanford*, 131 S. Ct. 2188 (2011) (No. 09-1159) (filed Apr. 26, 2010); Brief of Wisconsin Alumni Research Foundation et al. in Support of Stanford’s Petition for Certiorari, *Stanford*, 131 S. Ct. 2188 (2011) (No. 09-1159) (filed Apr. 23, 2010).

actually strongly in favor of Stanford's position in urging the Supreme Court to grant the petition.<sup>185</sup> The Court granted certiorari soon after.<sup>186</sup>

At the Supreme Court, Stanford argued that BD “automatically vests title to federally funded inventions in federal contractors”—i.e., the universities themselves.<sup>187</sup> The Court, in an opinion delivered by Chief Justice Roberts, held that consistent with over 300 years of patent law, the Bayh-Dole Act does not displace the norm that “rights in an invention belong to the inventor.”<sup>188</sup> Thus, BD does not change the legal recognition that initial ownership of an invention under patent law belongs to the inventor.<sup>189</sup> The majority opinion focused on statutory interpretation and discussed potential negative implications if the Court had reached the opposite decision.<sup>190</sup> The Court pointed out that such a sea change in invention ownership regime, by taking away inventor ownership, should not occur over a huge swath of inventive enterprise unless Congress explicitly said so in the statute.<sup>191</sup>

Justice Breyer, joined by Justice Ginsburg, dissented.<sup>192</sup> The dissenting Justices focused on the validity of present assignments of future inchoate inventions and what language such an assignment requires, a matter that they found neither parties fully briefed before the Court.<sup>193</sup> They would have remanded the case for further argument on this contract interpretation issue.<sup>194</sup> They also questioned the arbitrary restrictiveness of the Federal Circuit's *FilmTec* line of cases, which specifically require “hereby assign” or “hereby do assign” phrasing to effect immediate transfer of inchoate inventions.<sup>195</sup> Justice Sotomayor concurred with the majority despite her

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185. Brief for the United States as Amicus Curiae, *Stanford*, 131 S. Ct. 2188 (2011) (No.09-1159) (filed Sep. 28, 2010).

186. *Stanford*, 131 S. Ct. 502 (2010) (granting Stanford's Writ of Certiorari).

187. *Id.* at 2198.

188. *Id.* at 2192.

189. *See id.*

190. *Id.* at 2198–99 (noting that BD lacks protection for third party ownership rights, thus bolstering the Court's conclusion that BD is only intended to govern the rights between contractors and the government).

191. *Id.*

192. *Id.* at 2199.

193. *Id.* at 2204 (stating that the dissenting opinion's views on contractual language interpretation matters are tentative “because the parties have not fully argued these matters”).

194. *Id.* at 2200.

195. *Id.* at 2202–03 (quoting *FilmTec Corp. v. Allied-Signal, Inc.*, 939 F.2d 1568 (Fed. Cir. 1991)).

agreement with the dissent's concerns with *FilmTec*, pointing out that "Stanford failed to challenge the decision below on these grounds."<sup>196</sup>

In hindsight, it would appear that to prevail on the argument that BD ought to be a vesting statute, an attorney would want to find a set of facts involving an invention that had failed to become commercialized because it languished in the hands of an inventor who did not assign it to his highly competent university TLO. The ideal set of facts would unambiguously show that university-contractor ownership is the best way to move an invention forward in the innovation process, and that inventor ownership caused a failure to commercialize. Here, the unusual circumstances in *Stanford* do not come close to this ideal scenario, precisely because Roche successfully commercialized the PCR-HIV test invention without the Stanford TLO's involvement.

#### E. VIEWS OF AMICI IN SUPPORT OF STANFORD UNIVERSITY

After the Supreme Court granted certiorari, academic and industry groups filed a flood of amicus briefs.<sup>197</sup> The arguments of the amici merit attention and analysis because they represent various interests of the innovation community and highlight practical concerns over the outcome of this case. Notable amici in support of Stanford University include the U.S. Solicitor General, former Senator Bayh who had co-sponsored BD, the Association of University Technology Managers, the American Association for the Advancement of Science, the Association of American Universities, and somewhat surprisingly, the National Venture Capital Association ("NVCA").<sup>198</sup> Their policy arguments fall into the following three categories.

##### 1. *Simplicity, Predictability, and Certainty in Ownership*

The amici in support of Stanford University argued that BD should automatically vest invention ownership in the universities because doing so would be procedurally efficient and would encourage investment.<sup>199</sup> They argued that statutory conveyance of title would make title determination simple and predictable without the uncertainty of unauthorized assignment,

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196. *Id.* at 2199.

197. In all, the Supreme Court received thirteen *amicus* briefs on the merits of this case, and four *amicus* briefs in support of the Petition for Certiorari. See docket, *Stanford*, 131 S. Ct. 2188 (2011) (No. 09-1159).

198. *Id.*

199. See, e.g., Brief of Amicus Curiae BayhDole25, Inc. in Support of Petitioner at 7–10, *Stanford*, 131 S. Ct. 2188 (2011) (No. 09-1159); Brief of National Venture Capital Association as Amicus Curiae in Support of Petitioner at 2–17, *Stanford*, 131 S. Ct. 2188 (2011) (No. 09-1159).



conflicting contracts, or botched assignment documents.<sup>200</sup> Basically, the universities would no longer have to ensure that they had assignment agreements in place with their employees.<sup>201</sup> And in the absence of an airtight assignment agreement, an inventor would not be able to bypass the TLO, notwithstanding that failure by an inventor to assign inventions to the university violates most federal funding policies.<sup>202</sup> Likewise, the NVCA emphasized that certainty in invention ownership is crucial to investment decisions.<sup>203</sup> Uncertainty would lead to higher due diligence costs and a lower willingness to invest in promising inventions.<sup>204</sup> Of course, it would be hard to imagine a venture capital firm doing away with due diligence searches and title assurances on intellectual property even if BD were to become a vesting statute.

Although efficiency and certainty are policy arguments in favor of automatic title vesting, the fact of the matter is that BD's plain language simply does not support such a reading of the statute. The Supreme Court reached its decision largely via straightforward statutory interpretation; the Court did not speculate on whether BD ought to be an automatic vesting statute as a matter of policy.<sup>205</sup> While automatic vesting might be reasonable as a policy, what is clear from the Court's opinion is that BD is not an automatic vesting statute.<sup>206</sup>

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200. Brief of Amici Curiae Association of American Universities et al. in Support of Petitioner at 27–30, *Stanford*, 131 S. Ct. 2188 (2011) (No. 09-1159) (This is Association of American Universities' second amicus brief. Its first amicus brief was filed in support of Stanford's Writ for Certiorari. *Supra* note 184); Brief of Amicus Curiae BayhDole25, *supra* note 199, at 7–10; Brief of National Venture Capital Association as Amicus Curiae in Support of Petitioner, *supra* note 199, at 2–17.

201. *See, e.g.*, Brief of Amici Curiae Association of American Universities et al. in Support of Petitioner at 27–30, *Stanford*, 131 S. Ct. 2188 (2011) (No. 09-1159) (arguing that “Congress enacted Bayh-Dole with the specific purpose of providing universities and other nonprofits with certainty that they would own their federally funded inventions”).

202. Brief of Amici Curiae Association of American Universities et al. in Support of Petitioner, *supra* note 200, at 9. *See also supra* note 87 and accompanying text.

203. Brief of the National Venture Capital Association as Amicus Curiae in Support of Petitioner, *supra* note 199, at 3 (“[U]ncertainty [in ownership] would discourage the commitment of the risk capital.”).

204. Brief Amicus Curiae of Birch Bayh in Support of Petitioner at 21, 24, *Stanford*, 131 S. Ct. 2188 (2011) (No. 09-1159).

205. *See Bd. of Trs. of the Leland Stanford Junior Univ. v. Roche Molecular Sys., Inc.*, 131 S. Ct. 2188, 2192 (2011).

206. *Id.*

## 2. *Protection of the Government's Interests*

The United States argued as amicus curiae in Stanford University's favor to protect the government's interest in federally funded inventions.<sup>207</sup> The Solicitor General suggested that if universities were not granted title automatically, the government would lose control over valuable products of federal research funding because the government would not be able to make use of its BD prescribed rights.<sup>208</sup> But as the Court noted, the Solicitor General's arguments were unavailing. First, BD puts the government second in line after the university-contractors for ownership of inventions; only if a university declines to retain ownership in the invention can the government choose to take ownership.<sup>209</sup> Second, BD gives the government march-in rights.<sup>210</sup> The government can exercise this right to take possession of a license (either exclusive or non-exclusive) in the invention for a variety of reasons, such as if it deems that the owner of the invention is not making reasonable efforts to commercialize or develop the invention, or if there is a public health and safety reason for government action.<sup>211</sup> The Solicitor General stressed in his brief that the government's march-in rights would evaporate if the university-contractor loses ownership of the invention to either the inventor or a third party.<sup>212</sup> While the Solicitor General is technically correct, in the thirty years since BD was enacted, the government has never once exercised its march-in rights on its own initiative, and legal challenges petitioning for court orders to force the government to exercise its march-in-rights have uniformly failed.<sup>213</sup>

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207. See Brief for the United States as Amicus Curiae Supporting Petitioner, *Stanford*, 131 S. Ct. 2188 (2011) (No. 09-1159). This is the United States' second amicus brief in this case. The first amicus brief was filed in support of grant of Write for Certiorari. *Supra* note 185.

208. *Id.* at 31 ("The decision below also impairs the government's ability to protect taxpayers' substantial investment in scientific research and development.").

209. *Stanford*, 131 S. Ct. 2195–96.

210. 35 U.S.C. § 203 (2006).

211. *Id.*

212. See Brief for the United States as Amicus Curiae Supporting Petitioner, *supra* note 207, at 32–33.

213. See NAT'L RESEARCH COUNCIL OF THE NAT'L ACADEMIES, MANAGING UNIVERSITY INTELLECTUAL PROPERTY IN THE PUBLIC INTEREST 54–55 (Stephen A. Merrill & Anne-Marie Mazza, eds., The National Academy Press 2010), available at [http://www.nap.edu/catalog.php?record\\_id=13001](http://www.nap.edu/catalog.php?record_id=13001); John Conley, *Government Refuses to March-In Under Bayh-Dole—Again*, GENOMICS LAW REPORT (Jan. 11, 2011), <http://www.genomiclawreport.com/index.php/2011/01/18/government-refuses-to-march-in-under-bayh-dole-again/>.

### 3. *Threat of Reversion to the Pre-Bayh-Dole Ways*

Some amici in support of Stanford argued that a ruling against automatic vesting under BD would undermine the statute's function and purpose. But as the Supreme Court pointed out, university ownership of inventions is merely a presumption, not a certainty.<sup>214</sup> Over the past thirty years, universities, inventors, funding agencies, and private industry have generally interacted with each other on the premise that university ownership is not an absolute certainty: doubts about ownership explain why licensing agreements tend to include warranties on title and why parties to the agreements conduct due diligence searches.<sup>215</sup> Moreover, the assignment agreements that universities require their employees to execute would be completely superfluous, at least with respect to government funded inventions, unless there was some doubt over whether BD automatically gave ownership to the contractor.

The group BayhDole25<sup>216</sup> went so far as to say that the university innovation microcosm would revert back to pre-BD ways.<sup>217</sup> But this argument fails because the vast majority of university inventors faithfully assign their inventions to their employer-universities, and BD governs every one of those inventions.<sup>218</sup> So at most only a small handful of inventions

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214. *See* Bd. of Trs. of the Leland Stanford Junior Univ. v. Roche Molecular Sys., Inc., 131 S.Ct. 2188, 2195–96 (2011).

215. *See, e.g.*, Brief of Amicus Curiae Intellectual Property Owners Association in Support of Respondents, *infra* note 220, at 17 (noting that “in the commercial world, private companies that engage in research routinely obtain assignment agreements from their employees, and prospective licensees routinely take measures to ensure that the licensor has clean title to the invention.” (citing MARK S. HOLMES, PATENT LICENSING: STRATEGY, NEGOTIATIONS, AND FORMS § 11:3.5, at 11-6 (Practicing L. Inst. 2010)).

216. A group dedicated to promoting BD on the 25th anniversary of the Bayh-Dole Act. The group has a website. *See About*, BAYHDOLE25.ORG, <http://www.bayhdole25.org> (last visited Feb. 9, 2012).

217. Brief of Amicus Curiae BayhDole25, Inc. in Support of Petitioner, *supra* note 199, at 6.

218. *See* Long, *infra* note 227. Also, *see supra* note 147 for support of the proposition that since very few lawsuits involve BD, and even fewer still involve failure of inventors to assign to contractors inventions that would be covered by BD, failure to assign and circumvention of BD must not be a common problem. Indeed, Roche argued in its brief that “Stanford attempts to read the Act against an ‘established practice of taking Government title to most federally funded inventions’, but in fact such practices were decidedly the *exception*.” Brief of Respondents (Roche) at \*31, *Stanford*, 131 S. Ct. 2188 (No. 09-1159). Moreover, government granting agencies typically require that contractors have in place a mechanism for getting assignment for employee-inventors as a condition of receiving grant money. *E.g.*, NIH GRANTS POLICY STATEMENT, *supra* note 83. Hence failure to assign inventions would violate both granting agency regulations and the BD Act itself.

would fall outside of BD's purview because the university-contractor fails to gain ownership because of invalid or conflicting assignment agreements, or an inventor's refusal to assign.<sup>219</sup>

F. VIEWS OF AMICI IN SUPPORT OF ROCHE MOLECULAR SYSTEMS

Industry players, ranging from major corporations (such as Intel, Pfizer, and Lilly) to small biotechnology companies, suggested that if Stanford prevailed, an innovation drought would ensue as private businesses would avoid collaborating with universities lest BD gives universities full ownership in any collaboration that is touched, however briefly, by federal funding.<sup>220</sup> Many of the amici in support of Roche made statutory interpretation arguments mirroring those made by Roche, saying that industry has always assumed that patent law gives the inventor *ab initio* legal ownership.<sup>221</sup>

In their joint brief, the Institute of Electrical and Electronics Engineers ("IEEE") and the American Association of University Professors wrote of the worry that inventors' control over the fruits of their own ingenuity would be diminished if ownership automatically defaulted to the contractor-universities.<sup>222</sup> Their concern highlights the tension in the symbiotic relationship between contractors and their employees. On one hand, the researchers rely on their employers' infrastructure and resources to do the inventing; on the other, the employers rely on the professors' ingenuity and skills to come up with inventions. These groups argued that BD ought not

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219. *Id.*

220. *See, e.g.*, Brief of American Association of University Professors et al. as Amici Curiae in Support of Affirmance at 8–9, *Stanford*, 131 S. Ct. 2188 (2011) (No. 09-1159); Brief of Amici Curiae Biotechnology Industry Organization in Support of Respondent at 9–19, *Stanford*, 131 S. Ct. 2188 (2011) (No. 09-1159); Brief of Intel Corporation et al. as Amici Curiae in Support of Respondents at 12–18, *Stanford*, 131 S. Ct. 2188 (2011) (No. 09-1159); Brief of Amicus Curiae Intellectual Property Owners Association in Support of Respondents at 6–10, *Stanford*, 131 S. Ct. 2188 (2011) (No. 09-1159); Brief for the Pharmaceutical Research And Manufacturers of America as Amicus Curiae Supporting Respondent at 6–9, *Stanford*, 131 S. Ct. 2188 (2011) (No. 09-1159).

221. *See, e.g.*, Brief of American Association of University Professors et al. as Amici Curiae in Support of Affirmance, *supra* note 220, at 19–21; Brief of Biotechnology Industry Organization in Support of Respondent, *supra* note 220, at 20–28; Brief of Intel Corporation et al. as Amici Curiae in Support of Respondents, *supra* note 220, at 18–22; Brief for the Pharmaceutical Research And Manufacturers of America as Amicus Curiae Supporting Respondent, *supra* note 220, at 22–26; Brief of Amicus Curiae Intellectual Property Owners Association in Support of Respondents, *supra* note 220, at 11–18.

222. Brief of American Association of University Professors et al. as Amici Curiae in Support of Affirmance, *supra* note 220, at 11–19.

hand all rights to inventions to the employers without consideration for the inventors' interests.<sup>223</sup>

Meanwhile, the American Intellectual Property Law Association ("AIPLA") filed a brief officially supporting neither party.<sup>224</sup> Nevertheless it argued, relying in part on observations of current practices and reliance expectations, that the innovation community operates on the premise that BD does not automatically vest ownership in the contractor.<sup>225</sup> Indeed, over the past three decades, academic and industry players have filled in BD's silence on this issue using contract law.<sup>226</sup> Hence AIPLA's brief largely favored Roche.

## V. IMPLICATIONS OF THE *STANFORD* DECISION

The vigorous argument in *Stanford* about who has initial invention ownership rights underscores that those rights can have important downstream consequences.<sup>227</sup> If the Supreme Court had held that BD trumps private contracts, the Court would have, in effect, endorsed a policy favoring special treatment for universities by giving statutorily conveyed ownership to contractors. Instead, the Court's holding reveals that what might be considered "faulty" assignment provisions, either by accident or through deliberate negotiation, are in fact one way that inventors can bypass the BD framework and avoid setting the BD ownership chain in motion.

*Stanford* may prompt lawmakers to amend the Act by giving universities ab initio ownership to ensure that BD automatically applies to publicly funded contractor research. Notably in 2007, Congress held a hearing on the

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223. *Id.* at 4 (stating that inventors "must have the ability to contract, assign for consideration, or license their inventions." (emphasis added)).

224. Brief of Amicus Curiae, American Intellectual Property Law Association in Support of Neither Party, *Stanford*, 131 S. Ct. 2188 (2011) (No. 09-1159).

225. *Id.* at 11–12 (noting that "reliance on contractors' existing practice to secure invention assignments from inventors, and the corollary that Federal policy need only then concern itself with the allocation of title as between Federal agencies and the contractor entity, became a fundamental assumption of Government contracting and procurement policy that continues to this day").

226. *Id.*; Brief for the Pharmaceutical Research And Manufacturers of America as Amicus Curiae Supporting Respondent, *supra* note 220, at 10–17 (arguing that "federal agencies recognize that contractors cannot retain title under the Bayh-Dole act without assignments from inventors," that "universities do not assume that The Bayh-Dole Act automatically confers title on Contractors," and that "universities entering into technology transfer agreements frequently provide warranties that they have secured assignments from inventors"); see Sean O'Connor, *supra* note 27, at 281–84.

227. Clarisa Long, *Proprietary Rights and Why Initial Allocations Matter*, 49 EMORY L.J. 823, 823 (2000).

twenty fifth anniversary of BD with the purpose of “assess[ing] the current implementation of Bayh-Dole . . . and to hear recommendations that may be appropriate to improve the current implementation.”<sup>228</sup> The main thrust of the congressional hearing was definitely not whether BD is an automatic vesting statute, and Congress did not make substantive amendments following that hearing.<sup>229</sup>

Under one view, one could say that the underlying situation in *Stanford* is indeed a success story for innovation. It is a story of a useful invention that has been commercialized and is accessible to the public—which arguably is the ultimate objective of the BD Act, and not the ownership by a university contractor of a new patent.<sup>230</sup> There may have been a breach of employment contract between Holodniy and Stanford. There may have been a breach of a collaboration agreement between Stanford and Cetus. There may have been a breach of the VCA between Holodniy and Cetus. There may have even been a breach of the funding contract between the government and Stanford. But under any of these legal angles—contract law, property law, common law, and patent law—the end human result is that millions of HIV patients have access to HIV viral load test kits.<sup>231</sup> So somehow, despite bungled invention ownership assignments and a legal quagmire over initial ownership, the end result seems pretty good for society as a whole.

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228. *The Bayh-Dole Act (P.L. 96-517, Amendments to the Patent And Trademark Act of 1980)—The Next 25 Years: Hearing Before the Subcommittee on Tech. And Innovation Committee on Science and Tech., H. Of Representatives, 110th Cong. 3, 6–7 (2007)* (statement of Chairman David Wu) (describing the purpose of the hearing).

229. *Id.*; see 35 U.S.C. §§ 200–212 (2006) and amendments since 2006.

230. See Letter from Jay S. Epstein, Director, Office of Blood Research and Review, Center for Biologics Evaluation and Research, to Alex Wesolowski, Roche Molecular Systems, Inc. (Mar. 2, 1999) (informing Roche that the U.S. Food and Drug Administration has approved Roche’s AMPLICOR® HIV-1 MONITOR Test kit for commercial distribution); *Timeline of PCR and Roche*, ROCHE, <http://molecular.roche.com/About/pcr/Pages/PCRTimeline.aspx> (last visited Feb. 20, 2012) (stating that the world’s first quantitative PCR test kit for HIV (Roche’s AMPLICOR® HIV-1 MONITOR Test) was launched outside the U.S. in 1995).

231. As of 2010, there are approximately 34 million people living with HIV. *HIV/AIDS*, WORLD HEALTH ORG., <http://www.who.int/mediacentre/factsheets/fs360/en/index.html> (last visited Feb. 20, 2012). Access to HIV viral load test is important for monitoring disease progression. *Id.* In 2010, a single contract in South Africa enabled Roche to supply over half a million HIV viral load test kits per year. F. Hoffmann-La Roche Ltd, *Roche Annual Report*, ROCHE 67 (2010), <http://www.roche.com/gb10e.pdf>. Roche also supplies HIV viral load tests at reduced price to many sub-Saharan African countries as well as many others countries in South America and Asia. F. Hoffmann-La Roche Ltd, *Roche Annual Report*, ROCHE 69 (2011), <http://www.roche.com/gb11e.pdf>.

Importantly, this Note is not advocating that bypassing BD is necessary or helpful to innovation, nor is it saying that the set of facts in the *Stanford* case is commonplace and ought to be encouraged. Rather, this Note is merely pointing out that the ultimate goals of publicly funded research can in some circumstances be realized even when parties bypass BD. And BD as it currently stands allows those perhaps rare success stories. The truth is, dueling contracts that cloud title ownership deter potential licensees and collaborators from participating in the innovation process, so contractors have strong incentive to ensure they have clear title to their employees' inventions. Stanford only resorted to arguing at the Supreme Court that BD is an automatic vesting statute because it failed to secure ownership using clear contractual devices.<sup>232</sup> Logically post-*Stanford*, university-contractors are more aware than ever of the importance of properly securing unambiguous invention ownership rights from their employees.

#### A. SHORT-TERM CONSEQUENCES

Two obvious measures that universities could take to ensure that legal ownership disputes such as *Stanford* would not occur in the future are: (1) require university employees to make present assignment of all future inventions using the "hereby assign" or "hereby do assign" language; and (2) require as university policy that university employees obtain prior TLO approval before entering into any contract or agreement with any outside party.

Within a few months of the *Stanford* decision, many universities modified their employee invention assignment agreements to make sure that they contained the "hereby assign" or "hereby do assign" language that was held essential for immediate assignment of future inchoate inventions by the Federal Circuit.<sup>233</sup> One concern could be that, post *Stanford*, universities will always get legal ownership from the get-go via iron-clad present assignment contracts, thus forever preventing university researchers from signing away ownership rights to third parties as happened in *Stanford*. But this concern does not take into account the possibility that researchers may choose universities based on their innovation policies, and that some enterprising researchers have sufficient clout to negotiate the terms of their employment, including invention ownership rights. A university may also want to seem

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232. *Bd. of Trs. of the Leland Stanford Junior Univ. v. Roche Molecular Sys., Inc.*, 131 S. Ct. 2188, 2198 (noting that whether BD trumped private contracts was the only issue Stanford raised on appeal).

233. *See, e.g., supra* note 93.

inventor friendly and leave ownership to the inventor as a recruiting tool.<sup>234</sup> A university may also leave ownership to inventors to generate goodwill, which could someday pay off in the form of generous alumni donations.<sup>235</sup>

Moreover, we can assume that in the short term, all universities that wish to use the “hereby assign” or “hereby do assign” language are able to do so, and most employees will sign the modified agreements without first consulting their attorneys.<sup>236</sup> However, for existing professors and graduate students, a new assignment contract would require new consideration from the university under basic contract law principles. Even supposing that a nominal amount of salary increase is sufficient consideration for a new assignment contract to be deemed valid, some professors, particularly those with sophistication in patents and startup company experience, may refuse to execute present assignments of future inventions, so universities may not completely succeed in having all of their employees sign onto the modified, post-*Stanford* agreements.<sup>237</sup>

## B. SECONDARY EFFECTS

### 1. *Inventor Ownership of Inventions Can Be Conducive to Innovation*<sup>238</sup>

There are at least five reasons why an inventor would retain ownership of his or her inventions: (1) the inventor does not recognize the commercial potential or cannot be bothered to disclose the invention; (2) the inventor

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234. See Sean M. O’Connor, *supra* note 49, at 4.

235. See Mimura, *supra* note 35, at 274 (“We encourage gift relationships whenever an industry partner does not require contractual terms and conditions.”). Famous examples of gracious alumni donating to their alma mater include Jim Clark’s \$150 million donation to Stanford University in 1999. Kenney, *supra* note 8, at 1413. Clark was formerly a Stanford professor and started Silicon Graphics in the 1980s in part using technology that he and his students developed while at Stanford. James Robinson, *Entrepreneur Jim Clark to donate \$150 million to Stanford to fund biomedical engineering initiative*, STANFORD NEWS SERVICE (Oct. 27, 1999), <http://news.stanford.edu/pr/99/991027Clark.html>. See JIM CLARK, NETSCAPE TIME: THE MAKING OF THE BILLION-DOLLAR START-UP THAT TOOK ON MICROSOFT (1999) for a story on University of Illinois at Urbana Champaign’s (UIUC) less than amicable treatment of former student Marc Andreessen and his IP on the original web browser Mosaic. Andreessen went on to cofound Netscape with Jim Clark. Needless to say, UIUC did not receive generous donations from Andreessen. This story was also mentioned in Kenney, *supra* note 8, at 1413.

236. Both Stanford and UC did so soon after the Court handed down the *Stanford* decision. See *supra* Section II.C.

237. This sentence is consistent with the statement in Section II.C that says inventors are often the least legally sophisticated party within the innovation microcosm. Some employee-inventors may have sufficient legal sophistication and negotiating leverage to ask for more favorable assignment and revenue sharing terms. But most do not.

238. See Kenney, *supra* note 144 and accompanying text.



wants to give the community free access; (3) the inventor thinks that he can do a better job of commercializing his invention than the TLO; (4) the inventor deliberately attempts to profit from the invention without sharing the proceeds with his employer; or (5) the inventor inadvertently assigns the invention to a third party without the inventor realizing what he is signing.

For reasons one and two, statutorily mandated ownership by the university-contractor could conceivably lead to commercialization of inventions that otherwise would never enter the public domain as commercial products. But for reasons three and four, the inventor is already motivated to commercialize his inventions, and given that the strongest proponents of inventions are often the inventors themselves,<sup>239</sup> perhaps statutorily mandated contractor ownership would not make much difference as to whether innovation happens. Likewise for reason five, a third party who would coerce an inventor into divesting his ownership rights likely has a pecuniary interest in commercializing the invention. So if the ultimate goal of the statute is to encourage innovation and fulfill the broader policy goals of federally funded research, an ownership regime that allows occasional deviation from contractor ownership, be it intentional or inadvertent, does not appear to be detrimental.

## 2. *Statutorily-mandated Contractor Ownership May Not Be Efficient*

Studies on whether contractor ownership is the best way to promote innovation show mixed results.<sup>240</sup> A 2010 study by the National Research Council (“NRC”) concluded that there is insufficient evidence to support the notion that an inventor ownership scheme would be superior to a contractor ownership system.<sup>241</sup> Besides citing administrative and practical difficulties, the NRC study committee voiced “strong public policy reservations about any proposal to assign IP to inventors,” such policy reservations being difficulties with monitoring BD compliance, ensuring good licensing practices, and avoiding conflicts of interest between inventors and contractors.<sup>242</sup> So if government ownership has been tried and failed, and the benefits of contractor and inventor ownership seem unclear, perhaps a

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239. See Ajay Agrawal, *Engaging the Inventor: Exploring Licensing Strategies for University Inventions and the Role of Latent Knowledge*, 27 STRATEGIC MGMT. J. 63, 77 (2006) (studying how “engaging the inventor favorably influence the likelihood and degree of commercialization success”).

240. See *supra* Section III.F and references therein.

241. Merrill, *supra* note 213, at 61–66.

242. *Id.*

flexible approach that allows alternative contractual arrangements would be best.

Proponents of BD would argue that as it currently stands, BD does include a mechanism that allows an inventor to eventually regain ownership of his invention.<sup>243</sup> But that mechanism is by no means a guaranteed method for the inventor to gain ownership. It requires the inventor to enter into the rigmarole of (1) transferring ownership to the contractor; (2) convincing the contractor to forgo ownership; (3) standing by and hoping that the government also shows no interest in the invention; and then (4) finally getting back his invention as the third-in-line.<sup>244</sup> To be clear, this procedure may not be as arduous as it sounds, but could still take many months or years. Inventions, however, are often time sensitive, and potential licensees and collaborators could lose interest because of bureaucratic delay. The *Stanford* decision leaves open the possibility of direct inventor ownership without the BD rigmarole, but only through either faulty employment contracts which are now very unlikely, or deliberate negotiations between researchers and their prospective employers. And even if bypassing BD might violate terms of the government-contractor funding agreement, such contract breach may be economically efficient and inconsequential.<sup>245</sup> Again, this Note is not advocating contract breaches and violation of BD, but merely acknowledges that *Stanford* leaves that possibility, however remote, open.

### C. HYPOTHETICAL SCENARIOS

In this Section, four reasonable hypothetical scenarios demonstrate differing outcomes that might result under current law versus automatic

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243. See 35 U.S.C. § 202 (2006).

244. See *id.*

245. NIH requires contractors, as a condition to receiving grants, to acquire title to inventions from employees, and failing that, to suffer loss of grants and other penalties. U.S. DEPT. OF HEALTH AND HUMAN SERVS., NAT'L INSTS. OF HEALTH, NIH GRANTS POLICY STATEMENT IIA-89-93 (Oct. 2011), available at [http://grants.nih.gov/grants/policy/nihgps\\_2011/nihgps\\_2011.pdf](http://grants.nih.gov/grants/policy/nihgps_2011/nihgps_2011.pdf). In *Stanford*, Stanford University likely violated terms of its NIH funding agreements with respect to any grants that lead to the invention-in-suit, yet it is unclear from the parties' briefs if NIH terminated grants to Holodniy's supervisor or any Stanford researchers because of the possible violations that precipitated in *Stanford*. See, e.g., Brief of Respondents (Roche) at \*20, Bd. of Trs. of the Leland Stanford Junior Univ. v. Roche Molecular Sys., Inc, 131 S. Ct. 2188 (No. 09-1159), 2010 WL 288882 ("Despite numerous requests, Stanford has never produced the actual funding agreement with the federal government that allegedly bears upon the inventions at issue in this case. Nor has Stanford demonstrated how Dr. Holodniy's work at Cetus or the contributions of Cetus and its scientists are connected to research grants awarded to Stanford.").

statutorily mandated contractor ownership of inventions. In each of the four scenarios, statutorily mandated vesting would foreclose the possibility of certain efficient private ordering arrangements. Mandatory vesting in the contractor would not only lead to different ownership structures and paths forward for the inventors and the contractors, but also different legal liabilities and potential remedies. That is not to say that contracts cannot be formed that could undo some of the undesirable consequences of statutorily mandated vesting. And obviously, discussions of these hypothetical scenarios do not and cannot explore every possible action that the parties involved could take.

1. *An entrepreneurial professor wants to start her own company to commercialize an invention that she conceived using federal funding. She thinks that her invention is brilliant. The university TLO thinks that the invention is a dud.*

Under the holding in *Stanford*, this professor's conduct going forward would depend on the exact wording of the invention assignment agreement between the professor and her employer-university. If as in *Stanford*, this professor only has a contractual obligation to assign her invention instead of a present assignment of inchoate inventions, then she may choose to breach her assignment contract and retain legal ownership. The question then becomes whether the university pursues its equitable rights to the inventions.

One of two things might happen at that point. Knowing that the professor has an equitable obligation to assign the invention, the university might promptly sue the professor in a contract action. A court may order specific performance requiring assignment and the professor could end up losing ownership of the invention. But if the university sees little value in the invention while the professor sees immense potential as the hypothetical suggests, then such a suit would be unlikely and the university may contently allow the professor to retain ownership with a wait-and-see attitude.<sup>246</sup> In due course, the professor might go on to develop the invention further at her own startup company and reap profits from the invention. The university might then take notice of the professor's success and decide to file a lawsuit for contract breach and disgorgement of profits. The university might succeed, or it might be barred by statute of limitations. But the professor has at least a chance, albeit violative of funding agency regulations and her initial assignment contract with the university, of retaining ownership and thus

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246. Meanwhile, the university-contractor violates BD so long as it does not have ownership of the invention.

commercializing the invention on her own. Moreover, if her startup venture were successful, the public would gain access and benefit. Once that happens, the university's subsequent intervention might do more harm than good.

A contrary decision in *Stanford*, or its functional equivalent via the "hereby do assign" language in the pre-invention assignment contract, would totally foreclose the possibility that the professor retains ownership because the university would have legal ownership from moment the invention comes to life. It is true that if the university had ownership of the invention in this hypothetical scenario, it would likely agree to license the invention back to the professor for a nominal sum. And the professor could still practice the invention at her startup company. But as success of the invention becomes evident, the university might demand higher and higher licensing fees and royalties. The point is that this toll on the invention by the contractor-university may not be helpful to innovation in a scenario where the inventor is highly motivated, while the TLO is not interested until commercial viability becomes certain.

Alternatively, if the university had ownership of the invention, it could also transfer ownership back to the inventor via operation of BD's cumbersome mechanism described above for the inventor to obtain third-in-line ownership. This process requires the university to first give the government the option of owning the invention, and only if the government declines to take ownership would the inventor receive ownership.<sup>247</sup> Though the professor could potentially receive ownership of the invention by this route, she would have to endure the possibility that the university and the government might decide to keep the invention, and there would inevitably be bureaucratic delay. The uncertainty and delay therefore make this an unattractive scenario for innovation. Besides, this hypothetical assumes a highly motivated inventor and lackluster interest on the part of the TLO, so the benefit of requiring that title pass through the TLO before going back to the inventor is questionable.

Notably, some of the courses of action described above would likely violate terms of the university's federal research contracts, which in most cases mandates university ownership and compliance with BD as a precondition. But federal funding agencies have limited remedies against the universities in case of breach.<sup>248</sup> They could sue the universities for breach of

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247. See 35 U.S.C. § 202 (2006).

248. See NIH GRANTS POLICY STATEMENT, *supra* note 83, at IIA-93.

contract, void or take ownership of the disputed patents, and terminate ongoing grants to the nefarious professor.<sup>249</sup> Beyond those remedies however, the funding agencies are unlikely to cut off grants that cover other professors at the university. And for this particular professor who is leaving academia to work at her startup company, a ban on federal grants may not be a huge deterrence.

2. *A famous professor invents widget X at University A using federal funding. He later invents widget Y at University B also using federal funding. The two inventions are commercially useful only when practiced together. The professor is well connected to a company that is interested in producing widget X-Y.*

First, the famous professor could have significant leverage when negotiating his employment contract with the second university by virtue of his fame and inventive proclivity. To get him on their faculty, the second university may agree to give him a higher share of licensing income than his peers. Under *Stanford*, the famous professor and his employer-university could conceivably craft an employment contract that leaves ownership of the professor's inventions with him, despite possible negative consequences with federal funding agencies. Statutorily mandated vesting would foreclose the use of inventor friendly contracts as recruiting tools.

Second, greater transactional efficiency could be achieved if the two related inventions are owned by one entity rather than two separate entities. If BD mandates automatic university ownership, a famous professor who migrates from school to school would leave a trail of inventions owned by separate entities. The Court's holding in *Stanford* leaves open the possibility that a professor who moves from school to school could retain ownership and consolidate all of his inventions under one roof, without having to negotiate ex post with each university and go through the BD rigmarole to gain consolidated ownership at each school.

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249. *Id.*

3. *An engineer was hired to invent a widget at a corporation. He conceived of an invention and the corporation filed a patent application naming itself as the sole assignee. Three years later, the engineer became fed up with the corporation's office politics. He decided to become a professor at a local university. Using federal funding, he produced the first ever working prototype of the widget that he invented three years prior at the corporation.*

This hypothetical highlights inconsistencies between the definitions of a patentable invention and a subject invention. A patentable invention is an invention that accords with the patentability requirements of 35 U.S.C. §§ 101–103, 112, whereas a subject invention is an invention to which BD applies.<sup>250</sup> BD's two prong standard for what constitutes "subject invention" conflicts with patent law's reduction to practice standard for patentability.<sup>251</sup> An invention falls under BD's purview if it is either "conceived" or "actually reduced to practice" using federal funding.<sup>252</sup> Whereas for patentability purposes, conception alone is insufficient; the inventor has to reduce the invention to practice either actually by building a prototype, or constructively by filing a patent application.<sup>253</sup> Thus, the conception prong of BD's subject invention standard falls short of patentability requirements while BD's actual reduction to practice prong exceeds patentability requirement, where constructive rather than actual reduction to practice suffices.

Here, the professor's construction of the prototype at the university likely qualifies as an "actual reduction to practice" event that triggered BD. Meanwhile, earlier filing of the patent application by the corporation had no bearing on whether BD would be implicated because it was merely a constructive reduction to practice (even assuming for the moment that the

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250. 35 U.S.C. §§ 101–103, 112 (2006).

251. J. Jonas Anderson, *Secret Inventions*, 26 BERKELEY TECH. L.J. 917, 923 (2011) ("An invention is eligible for patenting at the moment it is 'reduced to practice' or when an inventor produces descriptions of the invention that enable a skilled artisan to practice the invention."). Compare 35 U.S.C. 201(e) (2006) (defining "subject invention" in the BD Act: "the term 'subject invention' means any invention of the contractor conceived or first actually reduced to practice in the performance of work under a funding agreement"), with U.S. PATENT & TRADEMARK OFFICE, U.S. DEPT' OF COMMERCE, MANUAL OF PATENT EXAMINING PROCEDURE ("MPEP") § 2138.05 (8th ed. Rev. 8, July 2010) ("Reduction to practice may be an actual reduction or a constructive reduction to practice which occurs when a patent application on the claimed invention is filed. The filing of a patent application serves as conception and constructive reduction to practice of the subject matter described in the application.").

252. 35 USC § 201(e) (2006) (defining "subject invention" in the BD Act).

253. *Pfaff v. Wells Elecs., Inc.*, 525 U.S. 55, 67 (1998); MPEP, *supra* note 251, at § 2138.05.

work was performed under a federal research contract). So under *Stanford*, if the engineer never explicitly assigned the prototyped invention to the university, the university would not have title in the invention and the corporation would retain exclusive ownership of the invention, and interest in the pending patent application even after the prototype was subsequently built using federal resources.<sup>254</sup>

But if the Supreme Court had held that BD statutorily vested ownership in the university, then ownership of the invention would automatically transfer to the university the moment the professor finished building the prototype, even though there is no reasonable dispute that the corporation has initial title to the invention by virtue of the hired to invent doctrine. Now, suppose 95% of the cost of invention can be traced to the corporation, and the prototype was relatively inexpensive to build. Would it be fair for the university to take entire ownership by virtue of statutorily mandated vesting? What about 50% private funding? Without question, in this scenario, the corporation owned the entire interest in the patent application when it first filed the application. Mandatory vesting under BD would divest the corporation's interest simply because a prototype was later built using federal funding, and all this despite that the prototype made zero contribution to patentability. Maybe the corporation could argue that the contractor-university's ownership of the invention is an unconstitutional taking.<sup>255</sup> And the contractor-university could argue that it has to take the invention from the corporation or it would be in violation of federal grants that require compliance with BD. The *Stanford* holding avoids this potentially bizarre result.

4. *A graduate student worked on two related projects simultaneously. The federal government funded one project while a startup pharmaceutical company funded the other project. The graduate student made an invention and actually reduced it to practice by combining elements from both research projects.*

This is a typical scenario involving comingled funds where enforceability of contracts that govern the private funder's ownership becomes critical to investment decisions. Assume here that the student validly executed a

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254. See Bd. of Trs. of the Leland Stanford Junior Univ. v. Roche Molecular Sys., Inc., 131 S. Ct. 2188, 2192 (2011).

255. Roche also made unconstitutional takings argument in its brief. Brief of Respondents (Roche) at \*43–44, *Stanford*, 131 S. Ct. 2188 (No. 09-1159), 2010 WL 288882 (arguing that Stanford's interpretation of BD "raises serious constitutional questions" in the form of the "takings problem").

present assignment agreement with the university when she started her degree program, and at precisely the same moment, she also executed a present assignment agreement with the startup company that partially funds her research. Also assume that this graduate student's invention qualified as a "subject invention" under BD because part of conception can be attributed to federal funding.<sup>256</sup> Now, supposing that 50% of the student's invention can be traced to private funding, would it be reasonable to award the university entire ownership in the invention by statutory fiat, and ignore the agreement that the student signed with the startup company? If BD automatically vests ownership of the invention in the university, there would be nothing left for the startup pharmaceutical company. Certainly if the Supreme Court had reached a contrary holding in *Stanford*, private parties would become reluctant to fund projects that might be "polluted" by federal funding, because outright university ownership would become a non-negotiable term. *Stanford* leaves open the possibility that the private funders could become co-owners of inventions by *a priori* negotiation with the university and the inventors. Though co-ownership of patents is generally not a good business practice,<sup>257</sup> the private funder could at least use the threat of co-ownership as a bargaining chip in negotiating a grant back of exclusivity from the university.

## VI. CONCLUSION

From the perspective of a HIV/AIDS patient, the set of facts in *Stanford* presents a success story of innovation that provides real tangible health consequences. Ultimately, whether Stanford loses out on a few tens of millions of dollars in licensing fees and royalties, and whether Roche's shareholders makes a few pennies more per share, matters far less to a HIV-positive patient than the fact that Roche's HIV viral load test is an effective life-saving diagnostic tool that is available. And therein lies the conundrum. For certain inventions such as this one, innovation can and does happen despite a tangle of disputed contracts and statutes between the inventor (Dr. Holodniy), the contractor (Stanford), the funding agency (NIH), and the

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256. 35 USC § 201 (2006) (defining "subject invention").

257. See generally Robert P. Merges & Lawrence A. Locke, *Co-Ownership of Patents: A Comparative and Economic Perspective*, 72 J. PAT. & TRADEMARK OFF. SOC'Y 586, 586-99 (1990) (discussing rules of patent co-ownership and "how to protect clients from the vicissitudes of the current U.S. rules"). The U.S. rule on patent co-ownership permits the co-owner of a patent to practice, license, and transfer in whole or in part that co-owner's interest in the patent without consent from, or compensation to, the other co-owner(s). *Id.* at 586. As a result, a patent owner's right to exclude others is eroded when there are co-owners, and with that erosion the economic value of the patent is diminished. See *id.*



private collaborator-innovator (Roche). Here, BD's statutory provisions, though crafted to encourage innovation, seem completely pointless.

In *Stanford*, the Supreme Court finally weighed in on this tangle of contracts and statutory provisions and clarified that contractors and inventors can indeed still have a variety of possible arrangements and contractual relationships, even if those arrangements were not part of the purpose of the BD Act. Despite relying mostly on statutory interpretation arguments, the Court managed to also reach the correct economic and policy result. The Court's affirmance of the status quo leaves reliance expectations of the innovation community relatively undisturbed and leaves room at the periphery for experimentation in private ordering arrangements, which is ultimately good for innovation even as some homogeneity among contractor/inventor relationships is sacrificed.<sup>258</sup> A contrary decision in *Stanford* would have foreclosed certain efficient contractual ownership arrangements that remain theoretically possible after *Stanford*. The bottom line is that while the university-contractor ownership model might be a good one in the vast majority of cases, why foreclose the possibility of alternative arrangements by statutory fiat when private ordering using settled contractual language can achieve equivalent function, while allowing some degree of flexibility to persist in creative arrangements.

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258. *Stanford*, 131 S. Ct. at 2192 (“Since 1790, the patent law has operated on the premise that rights in an invention belong to the inventor. The question here is whether the University and Small Business Patent Procedures Act of 1980—commonly referred to as the Bayh-Dole Act—displaces that norm and automatically vests title to federally funded inventions in federal contractors. We hold that it does not.”).