

## NOTE

### STALLED PATENTS: RE-INCENTIVIZING UNIVERSITIES TO REVIEW THEIR PORTFOLIOS OF UNLICENSED PATENTS TO ACHIEVE THE BAYH-DOLE ACT'S UNFUNDED MANDATE

#### I. INTRODUCTION

The underlying technology and research that enabled Google's search engine, Gatorade's secret formula, and cell phone technologies can all be traced back to college campuses across America.<sup>1</sup> Since World War II, America's universities—mostly through government research grants—have been at the forefront of technological innovation.<sup>2</sup> It continues to be in the best interest of the general public that the scientific breakthroughs occurring in America's collegiate laboratories ultimately become the building blocks for future companies.<sup>3</sup> As a direct result of

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1. See, e.g., Vicki Loise & Ashley J. Stevens, *The Bayh-Dole Act Turns 30*, LES NOUVELLES, Dec. 2010, at 185, 188-89 (providing examples of companies that successfully commercialized technology developed at universities); *Google Algorithm Earns \$337 Million for Stanford*, IP NAV, <http://www.ipnav.com/blog/google-algorithm-earns-337-million-for-stanford> (last visited Apr. 10, 2017); see also Birch Bayh, Senator, Speech at the Licensing Executives Society Annual Meeting (Sept. 12, 2006), in Birch Bayh, *Bayh-Dole: Don't Turn Back the Clock*, LES NOUVELLES, Dec. 2010, at 181, 184 (listing additional technologies discovered by university scientists). Interestingly, the University of Florida initially elected not to pursue a patent for the Gatorade formula, enabling the university scientists to obtain a patent themselves. Zach Kyle, *Commercializing Tech Research Has Yet to Fulfill Its Promise*, MAGIC VALLEY (June 27, 2015), [http://magicvalley.com/news/local/commercializing-tech-research-has-yet-to-fulfill-its-promise/article\\_4e64c4f8-90d0-57f9-85fc-786e88da2a2e.html](http://magicvalley.com/news/local/commercializing-tech-research-has-yet-to-fulfill-its-promise/article_4e64c4f8-90d0-57f9-85fc-786e88da2a2e.html). Only after suing the inventors for breaking a disclosure rule did the University of Florida recapture twenty percent of Gatorade's royalties. *Id.*

2. See, e.g., CHRISTINE M. MATTHEWS, CONG. RESEARCH SERV., R41895, FEDERAL SUPPORT FOR ACADEMIC RESEARCH 1 (2012) (discussing the historical importance and success of federally funded research occurring in universities). Referring to the success of the "Manhattan Project," the Government established the National Science Foundation and the National Institute of Health, "establishing the notion of significant government funding for basic research." Dov Greenbaum, *Academia to Industry Technology Transfer: An Alternative to the Bayh-Dole System for Both Developed and Developing Nations*, 19 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 311, 336-37 (2009).

3. See, e.g., Eduardo Porter, *Public R&D, Private Profits and the American Taxpayer*, N.Y. TIMES, May 27, 2015, at B1 (citing MARIANA MAZZUCATO, THE ENTREPRENEURIAL STATE:

legislation—specifically the Bayh-Dole Act—this occurs through America’s complex patent system.<sup>4</sup>

The process of transferring scientific discoveries from university laboratories to the commercial sector is known as technology transfer.<sup>5</sup> The Association of University Technology Managers (“AUTM”) defines technology transfer as “the process of transferring scientific findings from one organization to another for the purpose of further development and commercialization.”<sup>6</sup> However, technology transfer is not cheap; Senator Bayh, explaining the reasons for a new patent policy in 1980, stated that the “record showed that for every dollar that was spent on research, it usually took maybe as high as 9 or 10 dollars in investment capital—sometimes a million dollars” to commercialize the results of that research.<sup>7</sup> Moreover, in many technical fields, most notably pharmaceuticals and nanotechnology,<sup>8</sup> the process of commercialization often requires years of dedicated research in order to develop commercial applications. Very often, the first commercial use of the technology is ultimately not the best use.<sup>9</sup>

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DEBUNKING PUBLIC VS. PRIVATE SECTOR MYTHS 68-70 (2015) (“Professor Mazzucato notes that [the American] government often takes the biggest risks, financing early scientific breakthroughs and providing early support to companies and organization that will eventually become champions of innovation.”); *see also* Greenbaum, *supra* note 2, at 315 & n.4.

4. Bayh-Dole Act, Pub. L. No. 96-517, 94 Stat. 3015 (1980) (codified as amended at 35 U.S.C. §§ 200–212 (2012)).

5. WENDY H. SCHACHT, CONG. RESEARCH SERV., RL33527, TECHNOLOGY TRANSFER: USE OF FEDERALLY FUNDED RESEARCH AND DEVELOPMENT 1 (2012). Technology transfer can have different meanings in various parts of industry, but the ultimate goal is uniform: spreading technology. *See id.* (“Technology transfer is a process by which technology developed in one organization, in one area, or for one purpose is applied in another organization, in another area, or for another purpose.”).

6. *About Technology Transfer*, AUTM, <https://www.autm.net/autm-info/about-tech-transfer/about-technology-transfer> (last visited Apr. 10, 2017). The organization defines itself as follows: [A] nonprofit organization with an international membership of more than 3,000 technology managers and business executives. AUTM members—managers of intellectual property, one of the most active growth sectors of the global economy—come from more than 300 universities, research institutions and teaching hospitals as well as numerous businesses and government organizations.

*The Bayh-Dole Act: It’s Working*, AUTM, <https://www.autm.net/AUTMMain/media/Advocacy/Documents/BayhDoleTalkingPointsFINAL.pdf> (last visited Apr. 10, 2017).

7. *See* Gene Quinn, *Bayh-Dole: A Success Beyond Wildest Dreams*, IP WATCHDOG (Sept. 15, 2013), <http://www.ipwatchdog.com/2013/09/15/bayh-dole-a-success-beyond-wildest-dreams/id=45171> (quoting Interview with Birch Bayh, Sen., Venable, LLP, Wash., D.C. (Oct. 13, 2010)).

8. Nanotechnology is science, engineering, and technology conducted at the nanoscale, which is about 1 to 100 nanometers. *What is Nanotechnology?*, NAT’L NANOTECHNOLOGY INITIATIVE, <http://www.nano.gov/nanotech-101/what/definition> (last visited Apr. 10, 2017). Nanoscience and nanotechnology are the study and application of extremely small things and can be used across all the other science fields, such as chemistry, biology, physics, materials science, and engineering. *Id.*

9. *Government Patent Policy: Joint Hearing Before the Comm. on Commerce, Sci., &*

It was uniformly accepted that prior to 1980, too many government-funded inventions—despite many patent approvals—were failing to be commercialized.<sup>10</sup> Congress, via the Bayh-Dole Act, hoped to streamline the commercialization of government-funded research by creating a uniform patent policy and forcing collaborations between universities and private industries.<sup>11</sup> By providing (1) universities with an economic incentive to actively engage in technology transfer and (2) private industry with exclusive licenses to government-funded technology, Congress intended to increase the likelihood that the private sector would invest in the commercialization of government-funded technology.<sup>12</sup> It was believed that these incentives ensured Congress's ultimate goal—the introduction of new products and processes to the public—would be reached.<sup>13</sup> In response to Bayh-Dole, many inventions that would have been “collecting dust on agency shelves” were now being patented and licensed to private industries by universities.<sup>14</sup> This was partly because universities, unlike government agencies, have an economic interest in actively seeking out private assistance to commercialize government-funded research.<sup>15</sup>

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*Transp. and the Comm. on the Judiciary*, 96th Cong. 517-19 (1980) [hereinafter *Government Patent Policy*] (statement of Monte C. Throdahl, Senior Vice President, Monsanto Co.).

10. See *infra* Part II.A.

11. See 35 U.S.C. § 200 (2012). Congress's explicit objective of Bayh-Dole was “to promote collaboration between commercial concerns and nonprofit organizations, including universities.” *Id.* Bayh-Dole was enacted to establish uniformity in the vesting of patent rights in inventions resulting from federally-funded research. S. REP. NO. 96-480, at 3 (1979).

12. See *infra* Part II.B.

13. See *infra* Part II.B.

14. See *Former Senator Bayh Calls for Tech-Transfer Community to Educate ‘Misinformed’ Critics*, GENOMEWEB (Mar. 12, 2007), <http://www.genomeweb.com/biotechtransferweek/former-senator-bayh-calls-tech-transfer-community-educate-misinformed-critics> (“In his AUTM presentation, . . . Bayh said that before the Bayh-Dole [A]ct, some 96 percent of patents were ‘sitting there collecting dust,’ and that in the years before the act, there was ‘a \$30-billion investment in research that resulted in no return to the taxpayer.’”).

15. 35 U.S.C. § 202; see also JENNIFER A. HENDERSON & JOHN J. SMITH, *ACADEMIA, INDUSTRY, AND THE BAYH-DOLE ACT: AN IMPLIED DUTY TO COMMERCIALIZE* 2, 6 (2002), <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.453.1958&rep=rep1&type=pdf> (“Prior to Bayh-Dole, title to scientific inventions arising from federally-funded research typically vested in the government . . . the policy left the federal government with the responsibility to develop and commercialize promising technology, functions that it was ill-equipped to perform.”); Lorelei Ritchie de Larena, *The Price of Progress: Are Universities Adding to the Cost?*, 43 *HOUS. L. REV.* 1373, 1381-82 (2007) (stating that universities file patent applications more frequently after the enactment of Bayh-Dole because of the economic incentive that universities receive from licensing their patent portfolio).

Although nearly all agree that Bayh-Dole provides a substantial framework to promote technology transfer, both policymakers and scholars agree that existing legislation has its limits.<sup>16</sup> Congress, the recent Obama Administration, scholars, and industry leaders consistently provide general critiques on technology transfer.<sup>17</sup> Nearly all of their assessments discuss policies to facilitate the transfer of new technology developed in laboratories today.<sup>18</sup> These reports highlight and critique new trends in technology transfer such as universities developing business incubators to assist startups based on university owned

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16. See H.R. Con. Res. 328, 111th Cong. (2010) (recognizing the thirtieth anniversary of the Bayh-Dole Act and reaffirming congressional commitment to the Bayh-Dole Act); WENDY H. SCHACHT, CONG. RESEARCH SERV., RL32076, THE BAYH-DOLE ACT: SELECTED ISSUES IN PATENT POLICY AND THE COMMERCIALIZATION OF TECHNOLOGY 12 (2012) (quoting Scott Shane, *Encouraging University Entrepreneurship? The Effect of the Bayh-Dole Act on University Patenting in the United States*, 19 J. BUS. VENTURING 127, 128 (2004) (“[U]niversities exploit their inventions primarily through the licensing of technology, and licensing is not equally effective across all technologies . . .”)); Michael Sweeney, Comment, *Correcting Bayh-Dole’s Inefficiencies for the Taxpayer*, 10 NW. J. TECH. & INTELL. PROP. 295, 296-97 (2012); see also PRESIDENT’S COUNCIL OF ADVISORS ON SCI. AND TECH., OFFICE OF THE PRESIDENT, REPORT ON TECHNOLOGY TRANSFER OF FEDERALLY FUNDED R&D: FINDINGS AND PROPOSED ACTIONS 8-17 (2003) (providing “recommendations” to improve current technology transfer policies that are currently the “envy of the world”). Bayh-Dole’s effects vary among technology sectors: “Patents are perceived as critical in the drug and chemical industries in part because of the ease of replicating the finished product. While it is expensive, complicated, and time consuming to duplicate an airplane, it is relatively simple to chemically analyze a pill and reproduce it.” SCHACHT, *supra*, at 3 (citing Frederic M. Scherer, *The Economics of Human Gene Patents*, 77 ACADEMIA MED. 1348, 1350 (2002)).

17. See, e.g., Memorandum on Accelerating Technology Transfer and Commercialization of Federal Research in Support of High-Growth Businesses, 2011 DAILY COMP. PRES. DOC. 1357 (Oct. 28, 2011) (“[Former President Obama] direct[ed] that the following actions be taken to establish goals and measure performance, streamline administrative process, and facilitate local and regional partnerships in order to accelerate technology transfer and support private sector commercialization.”); SCHACHT, *supra* note 5, at 13-23 (discussing the current issues and concerns of technology transfer including government recoupment on their investment and potential conflict of issues that arise on university campuses as a result of the Bayh-Dole Act); see also Sweeney, *supra* note 16, at 295-97 (describing the “purpose and problems” of Bayh-Dole in the modern world including that taxpayers may be paying twice to use technology by initially funding the research and paying to own the product). As of the publication of this Note, President Donald J. Trump has no position on technology transfer and commercialization and patent system reform. INFO. TECH. & INNOVATION FOUND., PRESIDENT-ELECT TRUMP’S POSITIONS ON TECHNOLOGY AND INNOVATION POLICY 1, 2-3, 3 tbl.2 (2016), <http://www2.itif.org/2016-trump-on-tech.pdf>.

18. See Press Release, Office of Press Sec’y, Exec. Office of the President, Report to President Calls for Renewed National Focus on Basic Research to Sustain Innovation, Create Jobs (Nov. 30, 2012), <https://obamawhitehouse.archives.gov/the-press-office/2015/11/23/press-release-report-president-calls-renewed-national-focus-basic> (“[I]t will be important to ensure that these university research programs include a focus on translating discoveries into applications and products to maintain the cycle of invention and innovation.”).

technology.<sup>19</sup> In addition, other reports raise traditional issues that include (1) whether universities, as patent owners (and business owners) have a conflict of interest;<sup>20</sup> (2) whether Bayh-Dole was the sole reason for an increase in university patenting post-1980 or other simultaneous outside forces were more influential;<sup>21</sup> and (3) whether new methods to accurately measure “utilization” could be developed in order to utilize limited resources more efficiently.<sup>22</sup> Notably, nearly all solutions related to issues of technology transfer are centered on requesting additional government funding that is earmarked for commercialization efforts,<sup>23</sup> which is now occurring more frequently through two inter-agency

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19. See Gideon D. Markman et al., *Entrepreneurship and University-Based Technology Transfer*, 20 J. BUS. VENTURING 241, 258-60 (2005) (discussing the formation of new university sponsored venture funds); see also J.H. Reichman & Paul F. Uhlir, *A Contractually Reconstructed Research Commons for Scientific Data in a Highly Protectionist Intellectual Property Environment*, LAW & CONTEMP. PROBS., Summer 2003, at 317, 341-43 (“As the costs of education skyrocket, and government funding fails to keep up in many areas, universities have aggressively sought to exploit commercial applications of research results, with an eye toward maximizing returns on investment.”).

20. See DEREK BOK, *UNIVERSITIES IN THE MARKETPLACE: THE COMMERCIALIZATION OF HIGHER EDUCATION* 66-71 (2003) (discussing how corporations create conflicts of interest on research campuses); Charles R. McManis & Brian Yagi, *The Bayh-Dole Act and the Anticommons Hypothesis: Round Three*, 21 GEO. MASON L. REV. 1049, 1059-76 (2014) (debating the impact of Bayh-Dole on the research mission of U.S. universities and whether providing incentives for universities to commercialize research is threatening “curiosity-driven” research); Liza Vertinsky, *Universities as Guardians of Their Inventions*, 2012 UTAH L. REV. 1949, 1976 (discussing the boundaries between the production of fundamental knowledge, the traditionally claimed domain of the university, and commercial application, the supposed domain of the private sector).

21. See David C. Mowery et al., *The Growth of Patenting and Licensing by U.S. Universities: An Assessment of the Effects of the Bayh-Dole Act of 1980*, 30 RES. POL’Y, 99, 103-04 (2001) (inquiring whether other factors were the cause of the increase in university patenting post the enactment of Bayh-Dole); Bhaven N. Sampat, *Patenting and US Academic Research in the 20th Century: The World Before and After Bayh-Dole*, 35 RES. POL’Y 772, 783-84 (2006) (discussing that new technologies relating to DNA and biotechnology in general may have spurred a growth in patenting by universities with or without Bayh-Dole).

22. See Memorandum from Shaun Donovan, Dir., Office of Management & Budget, & John P. Holdren, Dir., Office of Sci. & Tech. Pol’y, to the Heads of Execs. Dep’ts & Agencies 2, 4-5 (July 9, 2015) (on file with author) (requiring for the fiscal year 2017 budget for agencies to develop “meaningful, measurable, and quantitative metrics where possible and describe how they plan to evaluate the success of [technology transfer]”); see also Brian Cummings, *The Changing Landscape of Intellectual Property Management as a Revenue-Generating Asset for U.S. Research Universities*, 21 GEO. MASON L. REV. 1027, 1042-46 (2014) (showing that there are no “effective metrics” to gauge the quantitative results of transfer technology offices).

23. See Loise & Stevens, *supra* note 1, at 193-94 (“We need to find creative new sources of funding [commercialization.]”); Walter D. Valdivia, *University Start-Ups: Critical for Improving Technology Transfer*, CTR. FOR TECH. INNOVATION AT BROOKINGS, Nov. 2013, at 1, 15, 16 figs.1 & 2, [https://www.brookings.edu/wp-content/uploads/2016/06/Valdivia\\_Tech-Transfer\\_v29\\_No-Embargo.pdf](https://www.brookings.edu/wp-content/uploads/2016/06/Valdivia_Tech-Transfer_v29_No-Embargo.pdf) (finding that the federal government should increase funding for programs that are exclusively directed at commercializing government-funded research); see also Memorandum from Donovan & Holdren, *supra* note 22, at 4-5 (“Agency budget proposals should prioritize and highlight contributions to the Lab-to-Market Cross-Agency Priority Goal . . .”).

programs.<sup>24</sup> Notably, these funds are typically only applied to the commercialization technologies being developed in laboratories today.<sup>25</sup>

However, today, just as before the enactment of the Bayh-Dole Act, government-funded research with potential commercial applications is still underutilized.<sup>26</sup> In fact, “most university inventions are never picked up by a licensee.”<sup>27</sup> Without a successful licensing agreement—which is the only method permitted to transfer technology to private industry under Bayh-Dole<sup>28</sup>—the taxpayers’ investment is being “wasted.”<sup>29</sup> Thus, instead of government-funded inventions “collecting dust” on *agency* shelves, as was the case prior to Bayh-Dole, today, many inventions are “collecting dust” on *university* shelves.<sup>30</sup> As a result, taxpayers are not receiving the full return on their investment as the Bayh-Dole Act promised—new and innovative products in the marketplace.<sup>31</sup>

Bayh-Dole is an unfunded mandate, requiring universities to commercialize technology without providing funds.<sup>32</sup> Compounding the problem is that agency grants do not typically include funds earmarked for commercialization, so the university must either supply the funds itself or partner with the private sector.<sup>33</sup> Even further, the limited funds

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24. See Loise & Stevens, *supra* note 1, at 192. Two inter-agency programs were created in the 1970s to fund companies based on government sponsored research: the Small Business Technology Transfer Program (“STTR”) and the Small Business Innovation Research Program (“SBIR”). *Birth & History of the SBIR Program*, SBIR/STTR, <https://www.sbir.gov/birth-and-history-of-the-sbir-program> (last visited Apr. 10, 2017). Collectively known as “America’s Seed Fund,” each program requires government agencies that fund scientific research to set aside a percentage of their budgets to help fund startup companies based on government sponsored research. *Id.* “[T]he SBIR and STTR Programs are affiliated with government agencies involving research and development with an extramural budget of \$100 Million dollars or more.” *Id.* Today “the SBIR and STTR Programs now have 2.2 billion dollars set aside annually to support the financing of cutting-edge technologies developed by small businesses.” *Id.*

25. See Markman et al., *supra* note 19, at 244-45, 250-51 (discussing universities’ practices for licensing basic research).

26. S. REP. NO. 96-480, at 27-28 (1979) (discussing that it is a “waste of public money” to have inventions that are patented by the federal government but not licensed to private industry).

27. See de Larena, *supra* note 15, at 1381-82, 1381 n.50 (citing ASS’N OF UNIV. TECH. MANAGERS, AUTM U.S. LICENSING SURVEY: 2004 15, 21-24 (2005) (discussing a study by the AUTM that “roughly 28.6% of processed invention reports are licensed”).

28. 35 U.S.C. §§ 201-202 (2012). Notably, 35 U.S.C. § 202(c) only applies to universities and other non-profits who accept research money from the federal government. *Id.*

29. S. REP. NO. 96-480, at 27-28.

30. See *Former Senator Bayh Calls for Tech-Transfer Community to Educate ‘Misinformed’ Critics*, *supra* note 14; *infra* Part III.

31. 35 U.S.C. § 200; see de Larena, *supra* note 15, at 1387 (“[I]f universities misuse research funds, bungle licensing deals, or simply overlook important technologies that are vested in them by the Bayh-Dole Act, then taxpayers are not receiving that deserved benefit.”).

32. 35 U.S.C. § 200.

33. Irene Abrams et al., *How Are U.S. Technology Transfer Offices Tasked and Motivated—Is*

available are earmarked for the new technology that is constantly appearing on university campuses.<sup>34</sup> This Note proposes an amendment to Bayh-Dole that will both incentivize and enable universities to review their portfolio of unlicensed patents for technologies with new commercial applications.<sup>35</sup> In order to receive any new economic grants, a university must demonstrate a method to review their unlicensed portfolio.<sup>36</sup> The amendment only applies to “Stalled Patents,” defined herein as (1) government-funded technology of which the university elects to obtain ownership by patenting and (2) that, after five years, either were never licensed to private industry or the initial licensing deal failed and the rights were returned to the university.<sup>37</sup> In other words, a Stalled Patent is any patent that, after five years, is collecting dust on the shelves of a university.<sup>38</sup>

The proposed amendment supports a pilot program that provides, *inter alia*, economic support for universities to reexamine Stalled Patents, which would result in a second, serious effort to find new commercial applications of taxpayer-funded technology.<sup>39</sup> Further, it would permit universities to utilize proceeds from licensing agreements to cover budget shortfalls, which may result in universities taking a more active approach to licensing Stalled Patents. Currently, there is little to no chance that Stalled Patents will be commercialized.<sup>40</sup> The limited funds supplied to each university’s technology transfer office (“TTO”) are often exclusively dedicated to the patenting and commercialization efforts of new technology being developed on campuses today.<sup>41</sup> Thus, in the current environment, Stalled Patents represent a waste of taxpayers’ significant investment.<sup>42</sup>

One of the noticeable benefits of the Bayh-Dole Act is that research universities began to “scour their laboratories” seeking technology with potential commercial applications.<sup>43</sup> Now, in addition, universities will

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*It All About the Money?*, RES. MGMT. REV., Fall/Winter 2009, at 18, 24-27 (discussing the budgets of technology transfer offices at universities).

34. *See infra* Part III.

35. *See infra* Part IV.

36. *See infra* Part IV.

37. The term “Stalled Patents” was created for the purposes of this Note. Essentially, the goal is to include any patent under the control of the TTO that is unlicensed to private industry after five years. This includes patents that were never licensed, or situations where the initial licensing deal failed and the patent rights returned to the TTO. *See infra* Part IV.

38. *See infra* Part IV.

39. *See infra* Part IV.

40. *See infra* Part III.

41. *See infra* Part III.

42. *See infra* Part III.

43. *See infra* Part II.B.I.

also actively review their existing portfolio, which will result in the commercialization of Stalled Patents.<sup>44</sup> The ultimate effect will be a bona fide second effort that taxpayer-funded technology yields new products and innovations for society.<sup>45</sup> Encouragingly, the potential commercial applications for many inventions increase over time, creating new commercial opportunities for Stalled Patents.<sup>46</sup>

The Bayh-Dole Act is applicable to non-profit organizations, government-owned facilities, small businesses, and corporations that receive federal funding for research.<sup>47</sup> Universities and other non-profits are treated differently under Bayh-Dole than other entities.<sup>48</sup> Thus, the scope of this Note only extends to universities that receive federal funding for research purposes. Part II provides a brief historical overview of the events leading to Bayh-Dole's enactment and a thorough analysis of all relevant provisions under the Act, and it explores the goals of technology transfer.<sup>49</sup> Part III describes a limitation of Bayh-Dole—specifically that it is inevitable that inventions subject to Bayh-Dole become Stalled Patents, thereby wasting some of the taxpayers' enormous investment in science and technology.<sup>50</sup> Part IV proposes an amendment to Bayh-Dole that provides an incentive and funded pilot program for universities to search their existing patent portfolios for new commercial applications, ensuring that they mount a significant second effort to commercialize Stalled Patents.<sup>51</sup>

## II. THE BAYH-DOLE ACT AND THE BIRTH OF TECHNOLOGY TRANSFER

Although the current industry term commonly referred to as technology transfer can trace its roots to 1980 with the enactment of the Bayh-Dole Act, the concept of universities applying science to solve real-life issues dates back to the early 1900s.<sup>52</sup> A famous, early example of American university innovation is the “Manhattan Project.”<sup>53</sup>

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44. See *infra* Part IV.

45. See *infra* Part IV.

46. See *infra* Part IV.

47. 35 U.S.C. § 201 (2012).

48. *Id.*

49. See *infra* Part II.

50. See *infra* Part III.

51. See *infra* Part IV.

52. Greenbaum, *supra* note 2, at 333-36 (stating that the Bayh-Dole Act is often credited for spawning the patent culture within American universities, however, some universities began patenting research as early as 1925). The Wisconsin Alumni Research Foundation was established in 1925 to manage the licensing of the research coming out of the University of Wisconsin at Madison. *Id.* at 335-36.

53. Steve Koppes, *How the First Chain Reaction Changed Science*, UNIV. CHI., [www.uchicago.edu/features/how\\_the\\_first\\_chain\\_reaction\\_changed\\_science](http://www.uchicago.edu/features/how_the_first_chain_reaction_changed_science) (last visited Apr. 10,

Recognizing that “the research capacity of colleges and universities was significantly important to [America’s] long-term national interests,” after World War II, the government began to aggressively fund research at universities around the nation.<sup>54</sup>

By 1980, the federal government was investing billions of dollars a year to support research and development.<sup>55</sup> Government funds supported basic research—research that is conducted without specific applications in mind—that remained unattractive for businesses to pursue despite the potential for improving economic growth and the people’s well-being.<sup>56</sup> Congress understood it was inevitable, and possibly very beneficial to society, that government-funded research would produce patentable inventions.<sup>57</sup> In fact, throughout the 1970s, various agencies were obtaining patents on government-funded research with no economic incentive to commercialize the new technology.<sup>58</sup> As a result, before Bayh-Dole, about ninety-five percent of government-

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2017) (discussing how researchers at the University of Chicago and the University of California, Berkeley contributed to the development of the atomic bomb). For a brief history of university scientists and government officials collaborating to create the atomic bomb, see *Manhattan Project*, ENCYCLOPEDIA BRITANNICA, [www.britannica.com/event/Manhattan-Project](http://www.britannica.com/event/Manhattan-Project) (last visited Apr. 10, 2017).

54. CHRISTINE M. MATHEWS, CONG. RESEARCH SERV., R41895, FEDERAL SUPPORT FOR ACADEMIC RESEARCH 1 (2012) (citing Letter from Vannevar Bush, Dir., Office of Research & Dev., to Harry Truman, U.S. President (July 25, 1945), [www.nsf.gov/od/lpa/nsf50/vbush1945.htm](http://www.nsf.gov/od/lpa/nsf50/vbush1945.htm)). Vannevar Bush was the national science advisor to both Presidents Franklin Roosevelt and Harry Truman. Letter from Bush, *supra*; Letter from Franklin D. Roosevelt, U.S. President, to Vannevar Bush, Dir., Office of Research & Dev. (Nov. 17, 1944); see Greenbaum, *supra* note 2, at 336-38 (“In arguably one of the most important science pronouncements of the 20th century, Bush called for, among other things, the establishment of a centralized government funding source for research . . . establishing the notion of significant government funding for basic research.”). Bush’s urging directly led to the formation of both the National Science Foundation and the National Institute of Health. Greenbaum, *supra* note 2, at 336-38.

55. SCHACHT, *supra* note 16, at 1-2 (providing a historical perspective on the passing of Bayh-Dole).

56. *Id.* at 2. The Association of American Universities provides:

The innovations that have improved the country’s productivity and quality of life are ultimately grounded in the results of basic research. Basic research is the part of the research and development (R&D) that contributes to our fundamental stock of knowledge, yet is conducted without specific applications in mind. Despite its value to society as a whole, basic research is underfunded by private firms precisely because it is performed with no specific commercial applications in mind. Instead, businesses have an incentive to concentrate their R&D spending on the development of products or processes with direct commercial value.

U.S. CONG. JOINT ECON. COMM., THE PIVOTAL ROLE OF GOVERNMENT INVESTMENT IN BASIC RESEARCH (2010), [https://www.jec.senate.gov/public/\\_cache/files/2b3adec5-b9b3-449c-82f8-1f92a3749b71/jec-r-d-report.pdf](https://www.jec.senate.gov/public/_cache/files/2b3adec5-b9b3-449c-82f8-1f92a3749b71/jec-r-d-report.pdf).

57. S. REP. NO. 96-480, at 2-3 (1979). The U.S. government held legal title to all patents that arose from federally funded research, but multiple agencies had funding authority and each one had its own policy to deal with private parties and intellectual property rights. *Id.*

58. *Id.* at 1-3.

owned patents were never licensed by the private sector, despite many patents having significant commercial potential.<sup>59</sup>

During the 1970s, “many in Congress were of the opinion that additional [commercial] applications could be pursued by the private sector if [the private sector was] provided the proper incentives.”<sup>60</sup> Subpart A discusses the issues and rationale that led to the joint congressional support and passage of the Bayh-Dole Act.<sup>61</sup> Next, Subpart B discusses Congress’ explicit and implicit policies for passing Bayh-Dole and the applicable provisions.<sup>62</sup> Finally, Subpart C introduces the TTO,<sup>63</sup> a specialized entity on university campuses that manages the complex process of commercializing government-funded discoveries that occur on university campuses.<sup>64</sup>

#### *A. Before the Bayh-Dole Act: Government-Funded Inventions Collected Dust on Agency Watch*

By the late 1970s, many in government felt that the failure of American industry to keep pace with foreign industries was, in part, due to government patent policy.<sup>65</sup> In the only report to Congress discussing Bayh-Dole, Senator Bayh stated:

Evidence is mounting that the United States is falling behind its international competition in the development of new products and

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59. *Id.* at 2.

60. See SCHACHT, *supra* note 16, at 2; HENDERSON & SMITH, *supra* note 15, at 2 (“Overall, this pre Bayh-Dole paradigm produced an environment where federally-funded research infrequently led to viable products or services.”).

61. See *infra* Part II.A.

62. See *infra* Part II.B.

63. See *infra* Part II.C. TTOs are also referred to as Technology Licensing Offices or Technology Ventures Offices. See, e.g., *About Research at Penn State*, PENN ST., <http://www.research.psu.edu/ovpr> (last visited Apr. 10, 2017); *Mission*, COLUM., <http://techventures.columbia.edu/mission> (last visited Apr. 10, 2017).

64. ASS’N OF UNIV. TECH. MANAGERS, *THE AUTM BRIEFING BOOK: 2015*, at 5 (2015), <http://www.autmvisitors.net/sites/default/files/documents/AUTM%20Briefing%20Book%202015.pdf>.

65. S. REP. NO. 96-480, at 2-3 (1979). In 1980, on behalf of the Committee on the Judiciary, Representative Robert Kastenmeier stated that:

The crisis in U.S. productivity and the governmental role in it has not gone unnoticed, however. In May of 1978 the President called for a major policy review of industrial innovation as the key to increased productivity in the United States. . . . These recommendations, in turn, were received by the President, and formed the basis of a major legislative proposal which was conveyed to the Congress. Special emphasis was placed on the role of the patent system and the patent policy regarding funded research in promoting industrial innovation. . . . Both [universities and small businesses] lack the resources to cope with the bewildering regulatory and bureaucratic problems associated with transfer of patent rights pursuant to government contracts; and the university sector in particular is an important link to the private sector.

H.R. REP. NO. 96-1307, pt. 1, at 1-2 (1980).

inventions . . . . One factor that can be clearly identified as a part of this problem is the inability of Federal agencies to deliver new inventions and processes from their research and development programs to the marketplace where they can benefit the public. A prime cause of this failure is the existence of ineffective patent policies regarding ownership of potentially important discoveries.<sup>66</sup>

Before Bayh-Dole, agencies acquired the patent rights to federally funded research by default.<sup>67</sup> Prior to 1980, private industry licensed and developed only five percent of the nearly 28,000 patents owned by the government.<sup>68</sup> Over 26,000 patents—covering cutting edge biology, pharmaceuticals, and computing technologies with enormous potential—remained significantly underutilized.<sup>69</sup> Even more troubling, “of that five percent only an infinitesimally small number led to a commercial product.”<sup>70</sup> Thus, taxpayers were essentially receiving no return on their investment, which funded both the initial technology and the expense of patenting that technology.<sup>71</sup>

This underutilization was mainly attributable to three factors. First, it was unclear to the private sector which entity would own the intellectual property rights.<sup>72</sup> At that time, there were at least twenty-four different patent policies effective in government agencies funding scientific research.<sup>73</sup> In some instances, agencies permitted universities

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66. S. REP. NO. 96-480, at 1-2.

67. *Id.* at 2-3.

68. *Id.*; see also SCHACHT, *supra* note 16, at 2. *But see* Sampat, *supra* note 21, at 780-81 (questioning the study that produced the five percent statistic because the patents cited in this study were based primarily on research funded by the U.S. Defense Department, and it is more likely that the lack of licensing was primarily because the patents had little or no commercial potential).

69. See S. REP. NO. 96-480, at 2; Llewellyn Joseph Gibbons, *Tech Transfer: Everything (Patent) Is Never Quite Enough*, 48 U. LOUISVILLE L. REV. 843, 848 (2010) (citing Terry A. Young, *Technology Transfer from US Universities: The Need to Value IP at the Point of Commercialisation*, in VALUING INTELLECTUAL PROPERTY IN JAPAN, BRITAIN, AND THE UNITED STATES 24 (Ruth Taplin ed., 2004)).

70. Gibbons, *supra* note 69, at 848.

71. S. REP. NO. 96-480, at 2-3 (1979).

72. See *id.* at 1-3 (arguing that even when private industries reached out to agencies, their complicated licensing procedures made it very difficult on industry). In 2005, former Senator Bayh explained the lack of technology transfer prior to the Bayh-Dole Act:

The problem was that whenever federal dollars went into research—as almost all of our universities were getting federal grants to do research—and any ideas that were developed from those dollars, those grants, the patents that were secured were owned by the government and no private individual or company could get access to them.

Quinn, *supra* note 7 (quoting Interview with Bayh, *supra* note 7).

73. S. REP. NO. 96-480, at 2; HENDERSON & SMITH, *supra* note 15, at 2 (“[S]pecific details of patent policy were left to the various agencies funding federal research, leading to significant variation in the policy actually applied in individual cases.”).

to obtain title to government-funded research, but that occurred on an agency-by-agency basis or via case-by-case petitions.<sup>74</sup>

Second, the different patent policies led to complicated and limited licensing procedures, sometimes even within the same agency.<sup>75</sup> Primarily, agencies offered only non-exclusive licenses to private partners.<sup>76</sup> Since the cost of commercialization is often ten-fold the cost of the invention,<sup>77</sup> “it was widely argued that without title (or at least an exclusive license) to an invention and the protection [that] it convey[ed], a company would not invest the additional, and often substantial time and money necessary to commercialize a product or process for the marketplace.”<sup>78</sup> Unless an exclusive license was obtained, any competitor could obtain a license and piggyback off any further developments that occurred.<sup>79</sup>

Finally, the agencies had neither a legal duty nor an economic incentive to license patents to industry.<sup>80</sup> Agencies adopted a very passive approach for licensing technology to the private sector.<sup>81</sup> As a result of these three factors, “over 90 percent of all Government patents [were] not used.”<sup>82</sup> In essence, quality and potentially society-altering technology “collected dust” on agencies’ shelves and private industry remained unwilling to license government-funded technology.<sup>83</sup> In the years before the Bayh-Dole Act, Senator Bayh stated that there was “a \$30 billion investment in research that resulted in no return to the taxpayer.”<sup>84</sup>

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74. See S. REP. NO. 96-480, at 2; Sampat, *supra* note 21, at 777-78.

75. S. REP. NO. 96-480, at 2 (arguing that even when private industries reached out to agencies, their complicated licensing procedures made it very difficult on industry).

76. See SCHACHT, *supra* note 16, at 2.

77. See, e.g., S. REP. NO. 96-480, at 19.

78. SCHACHT, *supra* note 16, at 2. In the business community, non-exclusive licenses are generally viewed as having no patent protection. See S. REP. NO. 96-480, at 18; *Government Patent Policy*, *supra* note 9, at 466 (statement of Dr. Jordan J. Baruch, Assistant Secretary for Science and Technology, Department of Commerce) (“The willingness of industry to develop those inventions and to commercialize them depends on industry’s ability to earn a satisfactory return on those investments, recognizing their often highly risky nature, before others can copy cheaply what they have produced at such risk and expense.”).

79. Gibbons, *supra* note 69, at 848 (quoting Young, *supra* note 69, at 25) (“Companies were loath to invest in commercialization of government owned patents because as one commenter quipped ‘what is available to everyone is of interest to no one.’”); see, e.g., Scherer, *supra* note 16, at 1350-52 (highlighting that the cost of reverse engineering a pharmaceutical drug is a fraction of the cost of developing it).

80. See S. REP. NO. 96-480, at 2-3.

81. *Id.*

82. *Id.* at 18.

83. *Former Senator Bayh Calls for Tech-Transfer Community to Educate ‘Misinformed’ Critics*, *supra* note 14; see also S. REP. NO. 96-480, at 18; Gibbons, *supra* note 69, at 848.

84. *Former Senator Bayh Calls for Tech-Transfer Community to Educate ‘Misinformed’*

### B. *The Bayh-Dole Act: A Uniform Patent Policy Since 1980*

The U.S. Constitution provides the foundation for America's patent system: "[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."<sup>85</sup> The First Congress executed that power by enacting the Patent Act of 1790.<sup>86</sup> In 1980, Congress once again flexed this muscle.<sup>87</sup>

#### 1. The Bayh-Dole Act's Explicit and Implicit Policies and Objectives

Congress explicitly details the policies and objectives of Bayh-Dole as codified in 35 U.S.C. § 200:

It is the policy and objective of the Congress to use the patent system to promote the utilization of inventions arising from federally supported research or development; . . . 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; [and] to promote the commercialization and public availability of inventions made in the United States by United States industry and labor; to ensure that the Government obtains sufficient rights in the federally supported inventions to meet the needs of the government and protect the public against nonuse or unreasonable use of inventions . . . .<sup>88</sup>

The overarching theme of Bayh-Dole is to "promote the utilization" of government-funded technology in order to benefit the public.<sup>89</sup> Bayh-Dole was based on the fact that the benefits to the public from invention stem from its use.<sup>90</sup> Congress sought to accomplish these policies and

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*Critics, supra* note 14.

85. U.S. CONST. art. I, § 8, cl. 8.

86. Patent Act of 1790, ch. 7, 1 Stat. 109-112, *repealed by* Patent Act of 1793, ch. 11, 1 Stat. 318-323. The Act provided "[t]hat upon the petition of any person or persons . . . setting forth, that he, she or they, hath or have invented or discovered" an invention, a patent could be granted to "such petition or petitioners" or "their heirs, administrators or assigns." *Id.* "Although much in intellectual property law has changed in the 220 years since the first Patent Act, the basic idea that inventors have the right to patent their inventions has not." Bd. of Trs. of Leland Stanford Junior Univ. v. Roche Molecular Sys., Inc., 563 U.S. 776, 785 (2011).

87. See Patent Rights in Inventions Made with Federal Assistance, ch. 38, 94 Stat. 3019-29 (1980) (codified as amended 35 U.S.C. §§ 200-211 (2012)).

88. 35 U.S.C. § 200.

89. *Id.*

90. See Michael S. Mireles, Jr., *Stats as Innovation System Laboratories: California, Patents, and Stem Cell Technology*, 28 CARDOZO L. REV. 1133, 1141 (2006) ("The primary purpose of the

objectives by providing a uniform patent policy for government-funded research.<sup>91</sup> Via its simple provisions—and one Supreme Court case<sup>92</sup>—it is very clear which entity owns title to government-funded research and what happens if that entity chooses not to take ownership.<sup>93</sup>

Congress provided economic incentives for universities as well as inventor-scientists to participate in the process of technology transfer, which Congress understood would encourage universities to commercialize basic research.<sup>94</sup> First, expanding patent policies would properly motivate universities to “mount a serious effort to help the public gain a greater return on the billions of tax dollars invested in academic research.”<sup>95</sup> In fact, it was expected that the “potential profits from patents [would] ‘keep scores of institutions scouring their labs for commercially valuable innovations.’”<sup>96</sup>

Second, policymakers realized that when government agencies retained title to inventions there was little incentive for the inventor to remain involved in the commercialization of the technology.<sup>97</sup> In fact,

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Bayh-Dole Act is to ensure that government-funded inventions are commercialized, and thus allow the public to benefit from those inventions.”).

91. See 35 U.S.C. § 200; S. REP. NO. 96-480, at 26-27 (1979) (“S.414 deals with this problem by establishing a uniform legislative policy that will override conflicting statutes.”); see, e.g., April L. Butler, Case Note, *Stealing Thunder from Government Contractors: Thwarting the Intent of the Bayh-Dole Act in Campbell Plastics v. Brownlee*, 31 U. DAYTON L. REV. 477, 490 (2006) (“The [Bayh-Dole] Act created a uniform patent policy for federally funded inventions . . .”). But see *Government Patent Policy*, *supra* note 9, at 463 (statement of Russell B. Long, U.S. Senator for Louisiana) (arguing that a uniform patent policy must be initiated, but that title of federally funded inventions must reside with the entity that pays for it—the government).

92. Bd. of Trs. of Leland Stanford Junior Univ. v. Roche Molecular Sys., Inc., 563 U.S. 776, 776 (2011). For a complete discussion of the implications of *Roche Molecular Sys., Inc.*, see *infra* note 117.

93. 35 U.S.C. § 202.

94. Markman et al., *supra* note 19, at 244-45 (“Hence, where in the past universities have passively licensed their technologies today many research universities actively search for ways to channel proprietary technology to maximize rents and to spawn new companies.”); see also Risa L. Lieberwitz, *The Marketing of Higher Education: The Price of the University’s Soul*, 89 CORNELL L. REV. 763, 780-82 (2004) (reviewing BOK, *supra* note 20). Senator Bayh and Senator Birch each believed in a Jeffersonian ideal that the “best thing government could do to provide incentives for success was get out of the way of these individuals.” Ashley J. Stevens, *The Enactment of Bayh-Dole*, 29 J. TECH. TRANSFER 93, 94 (2004). Competing views include a Hamiltonian belief that a strong central government should manage resources and a populist view that the government could only hurt technology transfer but should ensure that everyone benefits financially from government efforts. *Id.*

95. Lieberwitz, *supra* note 94, at 781-82.

96. *Id.* (quoting BOK, *supra* note 20, at 77). But see Scott Shane, *Stop Pushing Universities to License More Inventions*, BLOOMBERG (Feb. 29, 2012, 6:57 PM), [www.bloomberg.com/bw/articles/2012-02-29/stop-pushing-universities-to-license-more-inventions](http://www.bloomberg.com/bw/articles/2012-02-29/stop-pushing-universities-to-license-more-inventions) (arguing that stronger incentives to commercialize do not suddenly make university inventions more valuable to the marketplace).

97. S. REP. NO. 96-480, at 22 (1979).

“[v]irtually all experts in the innovation process stress very strongly that such involvement by the inventor is absolutely essential, especially when the invention was made under basic research where it is invariably in the embryonic stage of development.”<sup>98</sup> Congress accomplished this by requiring universities to share royalties with the inventor-scientist.<sup>99</sup>

Congress accepted the argument, and history seems to vindicate, that the prospect of earning royalties would make universities work harder to identify commercially promising discoveries in their laboratories.<sup>100</sup> Consistent with traditional values—that revenue from research should be utilized to fund further research<sup>101</sup>—universities must invest to further research and education.<sup>102</sup> However, the Bayh-Dole Act does not provide universities an unlimited property right to research funded by taxpayers.<sup>103</sup> In return for the ability to patent and profit from federally funded research, universities are required to relinquish certain rights to which a patent holder is typically entitled.<sup>104</sup>

## 2. The Bayh-Dole Act’s Provisions: The Ownership Waterfall

Bayh-Dole was passed by a lame duck Congress on December 12, 1980, with minimal floor debate.<sup>105</sup> At the time of its enactment, it was

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98. *Id.*

99. 35 U.S.C. § 202(c)(7)(B) (2012).

100. *See* BOK, *supra* note 20, at 77, 141.

101. *See id.* (discussing the formation of the Wisconsin Alumni Research Foundation in 1925). Henry Steinbeck, a professor at the University of Wisconsin, donated his lucrative patent for irradiating milk to the University of Wisconsin to create a foundation to fund research. *Id.*

102. 35 U.S.C. § 202(c)(7)(C).

103. *See infra* Part II.B.2–4.

104. *See infra* Part II.B.2–4.

105. Sampat, *supra* note 21, at 780. Bayh-Dole was ultimately signed into law as part of House Bill 6933 of the 96th Congress. *See* Patent and Trademark Laws, Amendment, ch. 30, 94 Stat. 3015-18 (1980) (codified as amended in scattered sections of 35 U.S.C.). Bayh-Dole originated as Senate Bill 414, introduced by Senators Birch Bayh and Robert Dole. SEAN O’CONNOR ET AL., NAT’L RESEARCH COUNCIL, LEGAL CONTEXT OF UNIVERSITY INTELLECTUAL PROPERTY AND TECHNOLOGY TRANSFER 16-17 (2010), [sites.nationalacademies.org/cs/groups/pgasite/documents/webpage/pgp\\_058897.pdf](https://www.nationalacademies.org/cs/groups/pgasite/documents/webpage/pgp_058897.pdf). Prior to enactment, the text of Senate Bill 414 was used to replace all relevant original text of House Resolution 6933 in an amendment-by-substitution procedure. *Id.* The first five sections dealt with the procedures of the United States Patent and Trademark Office. *Id.* Section 6 related to government-funded inventions and subsequently became known as Bayh-Dole. *Id.* Unlike House Resolution 6933, Bayh-Dole originally applied only to non-profits, universities, and small businesses. *Id.*; *see* 35 U.S.C. § 202(a). This narrowing of scope eased the concerns of both consumer advocates and antitrust attorneys fearing monopolies for large corporations. *See* Vanessa Bell, Note, *The State Giveth and the State Taketh Away: Patent Rights Under the Bayh-Dole Act*, 24 S. CAL. INTERDISC. L.J., 491, 502-03 (1983). Regardless, Bayh-Dole was extended to large and for-profit businesses several years later by President Ronald Reagan via an executive order. Memorandum from Ronald Reagan, U.S. President to the Heads of Executive Departments and Agencies (Feb. 18, 1983), [www.presidency.ucsb.edu/ws/?pid=40945](https://www.presidency.ucsb.edu/ws/?pid=40945). The Executive Order stated:

applauded—and still is—for its simple language and honorable goals.<sup>106</sup> All “subject inventions”<sup>107</sup> performed by a university under a federal “funding agreement,”<sup>108</sup> whether funded entirely or partially by the government, are subject to Bayh-Dole.<sup>109</sup> This includes both inventions conceived under federal funding but reduced to practice at the inventor’s personal expense and inventions conceived long before a government contract if put to practice during the course of the contract.<sup>110</sup>

The written funding agreement requires universities<sup>111</sup> to (1) “disclose each subject invention to the [relevant] Federal agency within a reasonable time”;<sup>112</sup> (2) “make a written election within two years after disclosure to the Federal agency”<sup>113</sup> stating it is electing to take title to the subject invention; and (3) “file a patent application subject to any statutory bar date.”<sup>114</sup> Notably, “the Federal government may receive title to any subject invention” when either the university does not elect to retain rights or fails to comply with any of these ongoing obligations.<sup>115</sup> If neither the university nor the government elects title to a subject

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To the extent permitted by law, agency policy with respect to the disposition of any invention made in the performance of a federally-funded research and development contract, grant or cooperative agreement award shall be the same or substantially the same as applied to small business firms and nonprofit organizations under Chapter 38 of Title 35 of the United States Code.

*Id.*

106. *See de Larena, supra* note 15, at 1377-86 (describing the noble intent of the drafters).

107. “[S]ubject invention” is defined as “any invention of the [university] conceived or first actually reduced to practice in the performance of work under a funding agreement.” 35 U.S.C. § 201(e) (2012).

108. The term “funding agreement” is defined as “any contract, grant, or cooperative agreement entered into between any Federal agency . . . and Contractor for the performance of experimental, developmental, or research work funded in whole or in part by the Federal Government.” *Id.* § 201(b).

109. *Id.* §§ 201(b), 202(a).

110. *See id.* § 201(b). The provisions of the Bayh-Dole Act “shall take precedence over any other Act which would require a disposition of rights in subject inventions of [universities] in a manner that is inconsistent with this chapter.” *Id.* § 210(a).

111. Bayh-Dole applies to “contractor[s],” defined as “any person, small business firm, or nonprofit organization that is a party to a funding agreement.” *Id.* § 201(c) (emphasis added). Non-profit organizations include any “universities and other institutions of higher education.” *Id.* § 201(i).

112. *Id.* § 202(c)(1).

113. *Id.* § 202(c)(2).

114. *Id.* § 202(c)(3).

115. *Id.* If a university fails to properly disclose a subject invention in accordance with 35 U.S.C. § 202(c)(1), the government has discretion in determining whether to “demand title.” *Campbell Plastics Eng’g & Mfg. v. Brownlee*, 389 F.3d 1243, 1249-50 (Fed. Cir. 2004). The government does not need to show “harm” in order to invoke forfeiture. *Id.* As established in *Gen-Probe Inc. v. Center for Neurologic Study*, 853 F. Supp. 1215, 1217-18 (S.D. Cal. 1993) and *Platzer v. Sloan-Kettering Institute for Cancer Research*, 787 F. Supp. 360, 365 (S.D.N.Y. 1992), there is no private right of action under 35 U.S.C. § 202.

invention, then the inventor-scientist may elect to obtain rights to the research.<sup>116</sup>

In its only interpretation of the Bayh-Dole Act, the Supreme Court in 2011 held that title to a subject invention under Bayh-Dole does not automatically vest to the university.<sup>117</sup> Instead, like any normal entity, a university must first obtain rights from the inventor-scientist (or employee) via an assignment—a typical requirement of any employment agreement, even within academia.<sup>118</sup> Thus, a university must (1) obtain ownership of the invention from the inventor(s) via assignment(s) and (2) elect to obtain ownership in accordance with the provisions of Bayh-Dole.<sup>119</sup> Interestingly, Bayh-Dole's provisions do more than merely determine ownership of government-funded research.<sup>120</sup>

### 3. The Bayh-Dole Act's Provisions: Universities' Legal Obligations Begin Once They Elect Ownership

The legal obligations placed on universities by Bayh-Dole do not subside once a university obtains a patent on a subject invention.<sup>121</sup> The “practical effect of Sections 202 and 203 is that [universities] must actively pursue commercialization, through the development and eventual public availability of inventions to which they have elected to

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116. 35 U.S.C. § 202(d).

117. Bd. of Trs. of Leland Stanford Junior Univ. v. Roche Molecular Sys., Inc., 563 U.S. 776, 786 (2011). In *Roche Molecular Sys., Inc.*, a dispute arose over ownership of a patent covering a diagnostic test for HIV developed by a scientist employed by Stanford University. *Id.* at 780-82. Prior to invention, the Stanford scientist visited a private company, and in doing so, signed an agreement assigning any new ideas developed from his visit to the company. *Id.* Finding for the private company, the U.S. Supreme Court held that patents have always vested in the inventor, and that ownership is determined by the inventor's assignment. *Id.* at 785-86. Thus, to be a “subject invention” under Bayh-Dole, the university must first acquire title by a proper assignment. *Id.* at 786-93.

118. *Id.*

119. 35 U.S.C. § 202.

120. See *infra* Part II.B.3.

121. See 35 U.S.C. §§ 202–203; HENDERSON & SMITH, *supra* note 15, at 5. Describing the congressional negotiations of the Bayh-Dole Act:

The principles of the Bayh-Dole Act were the result of years of intense and emotional debate, dealing with fundamental concerns. The record shows that the debate included such issues as whether exclusive licenses would lead to monopolies and higher prices; whether taxpayers would get their fair share; whether foreign industry would benefit unduly; and whether ownership of inventions by a contractor is anti-competitive. Safeguards were hammered out in numerous legislative drafts. It is certain that the Act became much stronger because of the thorough debate that took place prior to its passage.

*The Bayh-Dole Act: A Guide to the Law and Implementing Regulations*, COUNCIL ON GOVERNMENTAL REL. 1, 3 (1999), [http://www.umventures.org/sites/umventures.com/files/COGR\\_Bayh\\_Dole.pdf](http://www.umventures.org/sites/umventures.com/files/COGR_Bayh_Dole.pdf).

retain title” or risk government intervention.<sup>122</sup> One argument against the Bayh-Dole Act was that taxpayer funded research is being “given” to universities, and “once the monopoly is given to the [university], the public will be unable to find out what has happened to the results of the research it paid for.”<sup>123</sup> Also, there were many in Congress who felt that “inventions should belong to those who pay to have them created,” meaning the government or the taxpayers themselves.<sup>124</sup>

For those opposing Bayh-Dole, “[o]ne of the great concerns of the time was that dominant companies might license university inventions with the deliberate purpose of suppressing them if they threatened existing products.”<sup>125</sup> To appease these dissenters and “prevent any undesirable economic concentration,” the drafters of Bayh-Dole built in several protectionist provisions.<sup>126</sup> First, the specific “federal agency”<sup>127</sup> that provides funding obtains the right to “require periodic reporting on the utilization or efforts obtaining utilization that are being made by the [university] or his licensees.”<sup>128</sup> Second, the government retains a “grant-back right”<sup>129</sup> on every invention developed using federal funds.<sup>130</sup> That right secures the federal government a “nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States . . . throughout the world.”<sup>131</sup>

Third, to ensure a maximum benefit to the public, drafters included a federal “march-in right.”<sup>132</sup> If a university “has not taken, or is not expected to take within a reasonable time, effective steps to achieve practical application of the subject invention” the government may invoke its march-in right.<sup>133</sup> Under this provision, agencies can require a

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122. See HENDERSON & SMITH, *supra* note 15, at 5.

123. *Government Patent Policy*, *supra* note 9, at 463-64 (statement of Russell B. Long, U.S. Senator for Louisiana).

124. *Id.* at 463.

125. Joseph Allen, *Advice for the Trump Administration and New Congress: Protect Bayh-Dole and Restore the Patent System*, IP WATCHDOG (Dec. 6, 2016), <http://www.ipwatchdog.com/2016/12/06/trump-administration-congress-protect-bayh-dole-restore-patent-system/id=75290>.

126. S. REP. NO. 96-480, at 28 (1979); see also 35 U.S.C. §§ 202-203 (2012); HENDERSON & SMITH, *supra* note 15, at 4-5.

127. The term “federal agency” is defined as “any executive agency as defined in section 105 of title 5, and the military departments as defined by section 102 of title 5.” 35 U.S.C. § 201(a).

128. *Id.* § 202(c)(5). However, any information obtained under this provision shall be treated by the federal agency as “commercial and financial information obtained from a person and privileged and confidential and not subject to disclosure.” *Id.*

129. Sweeney, *supra* note 16, at 298.

130. 35 U.S.C. § 202(c)(4).

131. *Id.*

132. *Id.* § 203.

133. *Id.* § 203(a)(1).

university or exclusive licensee of a subject invention to license such invention to any responsible applicant.<sup>134</sup> Thus, it appears evident that a university must take legitimate and reasonable steps to utilize government-funded research, or risk losing their patent monopoly.<sup>135</sup> However, as discussed below, this is an empty threat, as the government has never utilized this provision.<sup>136</sup>

#### 4. The Bayh-Dole Act's Provisions: Patent Owner with an Asterisk

Universities are not true patent owners because, *inter alia*, Bayh-Dole prohibits universities from assigning patent rights.<sup>137</sup> This provision was enacted to prevent universities from acquiring patents on government-funded research and subsequently selling them to the highest bidder to cover any outstanding budget shortfalls.<sup>138</sup> Further, it prevents private companies from licensing technology in order to suppress it.<sup>139</sup> Interestingly, universities were initially prohibited from providing exclusive licenses in durations greater than five years,<sup>140</sup> and exclusive licenses could only be offered to small businesses.<sup>141</sup> Congress soon recognized that this severely inhibited a university's ability to

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134. *Id.* § 203(a). To qualify and moderate these powers, Bayh-Dole requires that any license granted pursuant to the march-in provision must be made “upon terms that are reasonable under the circumstances.” *Id.*

135. *Id.* §§ 202–203; HENDERSON & SMITH, *supra* note 15, at 5 (showing support that Bayh-Dole provides an implied duty to commercialize on universities). For a discussion on the procedures for an agency to utilize 35 U.S.C. § 293, see 37 C.F.R. § 401.6 (2016).

136. *E.g.*, Allen, *supra* note 125; *see also* Ryan Whalen, Note, *The Bayh-Dole Act & Public Rights in Federally Funded Inventions: Will the Agencies Ever Go Marching in?*, 109 NW. U. L. REV. 1083, 1106–11 (2015) (discussing that the government has never utilized the march-in provision and providing details of the various petitions). Joseph Allen, who served as a Professional Staffer on the U.S. Senate Judiciary Committee to former Senator Bayh at the time Bayh-Dole was drafted and subsequently enacted recently stated:

That there haven't been more cases does not mean the system doesn't work. March in rights are the fail safe mechanism of tech transfer. Just like airbags in your car, hopefully they'll never be needed. March in rights haven't been necessary for a simple reason: universities are effectively enforcing their deals. If a licensee is not meeting development milestones, the license is revoked and another developer sought.

Allen, *supra* note 125.

137. 35 U.S.C. § 202(c)(7)(A) (2012).

138. Joseph Allen, *Does University Patent Licensing Pay Off?*, IP WATCHDOG (Jan. 27, 2014), <http://www.ipwatchdog.com/2014/01/27/does-university-patent-licensing-pay-off/id=47655>.

139. Allen, *supra* note 125.

140. SCHACHT, *supra* note 16, at 7; *see also* S. REP. NO. 96-480, at 7 (1979). However, the funding federal agency was able to approve extended exclusive licenses on a case-by-case basis. S. REP. NO. 96-480, at 7 (quoting S. Res. 414, 96th Cong. (1979) (enacted)).

141. SCHACHT, *supra* note 16, at 7; S. REP. NO. 96-480, at 7 (quoting S. Res. 414, 96th Cong. (1979) (enacted)).

license technology.<sup>142</sup> Thus, four years after enacting the Bayh-Dole Act, Congress amended its relevant provisions removing these licensing restrictions.<sup>143</sup> Today, universities can offer both exclusive and non-exclusive licenses for any duration and field of use.<sup>144</sup> However, universities are required to license technology only to (1) small business firms,<sup>145</sup> unless “infeasible following a reasonable inquiry,”<sup>146</sup> and (2) companies located in the United States, who will produce products in the United States.<sup>147</sup>

Universities must also share a portion of all royalties derived from subject inventions with the inventor.<sup>148</sup> Notably, this provision does not impose a sharing ratio or minimum share requirement between the university and the inventor.<sup>149</sup> The monetary incentive for the inventor-scientist that (1) ensures the inventor-scientist discloses the invention to the university, (2) encourages him or her to think of the possible commercial applications for the technologies being developed, and (3) most importantly, encourages participation in the commercialization process.<sup>150</sup> Finally, Bayh-Dole “require[s] that the balance of any royalties or income earned by the [university] with respect to subject inventions, after payment of expenses (including payment to inventors) incidental to the administration of subject inventions, . . . be utilized for the support of scientific research or education.”<sup>151</sup> As discussed below, in direct response to Bayh-Dole, nearly all universities performing government-funded research established a TTO to oversee the technology transfer process.<sup>152</sup>

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142. SCHACHT, *supra* note 16, at 7 (quoting S. REP. NO. 98-662, at 3 (1984)) (“[E]xtending the time frame for licensing to large firms ‘is particularly important with technologies such as pharmaceuticals, where long development times and major investments are required prior to commercialization.’”).

143. *See* S. REP. NO. 98-662, at 3; SCHACHT, *supra* note 16, at 7.

144. 35 U.S.C. § 202(c)(7) (2012).

145. The term “small business firm” is defined as “a small business concern as defined at section 2 of Public Law 85-536 (15 U.S.C. 632) and implementing regulations of the Administrator of the Small Business Administration.” 35 U.S.C. § 201(h).

146. 35 U.S.C. § 202(c)(7)(D).

147. *Id.* § 200. Interestingly, an early draft of the Bayh-Dole Act included a “windfall” provision, providing that if a university received a certain amount of revenue, the government was entitled to recoup a certain percentage. S. REP. NO. 96-480, at 30 (1979).

148. 35 U.S.C. § 202(c)(7)(B).

149. *Id.*; *Platzer v. Sloan-Kettering Inst. for Cancer Research*, 787 F. Supp. 360, 367-68 (S.D.N.Y. 1992) (“[N]othing in the language [of Bayh-Dole] suggests that the share should be a specified ratio. Nor does the definition of ‘share’ suggest that a particular ratio was intended.”).

150. *See* discussion *infra* Part II.C.

151. § 202(c)(7)(C).

152. *See* Sampat, *supra* note 21, at 781; Valdivia, *supra* note 23, at 6, 7 fig.1 (depicting the exponential growth of TTOs across the United States during the 1980s and early 1990s, and stating that “[a]fter Bayh-Dole was enacted universities created the organizational capacities for managing

### C. *The Technology Transfer Office*

Agencies that fund basic research on university campuses do not supply funds to commercialize that research; “[t]he government is primarily funding basic research or research related to agency missions—neither of which is geared to market needs.”<sup>153</sup> In addition, research scientists (the inventors), and often the universities themselves, are unable or unwilling to provide the substantial investment—both in time and in money—required to commercialize basic inventions.<sup>154</sup> As a result, in order for Bayh-Dole to be successful, a desirable method needed to be established for private industries to both access and license government-funded research.<sup>155</sup> Today this occurs through licensing arrangements between universities and private businesses.<sup>156</sup> However, Bayh-Dole’s provisions fail to provide any guidance as to the method universities must follow in order to achieve this transfer of technology.<sup>157</sup> Thus, it was up to the universities themselves to create reliable methods for transferring technology from the laboratories to the commercial sector.<sup>158</sup> These methods have evolved with the passage of time,<sup>159</sup> but regardless of the universities’ technology transfer method, and in direct response to Bayh-Dole, a TTO exists on nearly every research campus.<sup>160</sup>

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their intellectual property, opening and staffing technology transfer offices (TTOs) in a great hurry”).

153. Allen, *supra* note 138.

154. See Allen, *supra* note 125 (“Under [Bayh-Dole] the considerable risk and expense of taking them from the lab into the market falls on the private sector.”).

155. Katherine J. Strandburg et al., *The Pull of Patents*, 77 *FORDHAM L. REV.* 2143, 2164-65 (2009) (“[T]he U.S. government has made an explicit policy decision to allow funded entities to obtain patents and thereby has encouraged participation in the commercialization of federally funded research.”).

156. 35 U.S.C. § 202; see also Strandburg et al., *supra* note 155, at 2156-57 (“[A]warding patents to a university for government-funded research [provides the necessary incentive] to facilitate postpatent research, development, and commercialization.”).

157. HENDERSON & SMITH, *supra* note 15, at 5 (“[T]he [Bayh-Dole] Act does not provide specific mechanisms to achieve commercialization and the public access it requires. This effectively leaves the mechanisms of accomplishing this duty to the discretion of each grantee or contractor.”); Strandburg et al., *supra* note 155, at 2148 (“The Bayh-Dole Act enables universities to participate in the commercialization process, but it does not obligate them to pursue any particular strategy with respect to federally funded research.”).

158. Strandburg et al., *supra* note 155, at 2164-65 (“As a general matter, universities are not required by law to create technology transfer offices, delay or withhold publication of research results, patent research results, issue exclusive licenses, or be entrepreneurs. . . . Universities remain in the driver’s seat and may decide which road to take and at what speed.”).

159. *Id.* at 2165-66 (listing various methods universities may achieve Congress’s goals set out in Bayh-Dole).

160. See Sampat, *supra* note 21, at 781-82; Valdivia, *supra* note 23, at 6, 7 fig.1.

The goal of TTOs around the country is to “[f]acilitate the translation of academic research into practical applications, for the benefit of society on a local, national and global basis.”<sup>161</sup> In essence, the TTO is the link between academia and industry.<sup>162</sup> This link often results in the TTO taking an active role in the commercialization of new technology.<sup>163</sup> For example, employees at a TTO may regularly visit their respective university’s laboratories.<sup>164</sup> Those visits are beneficial for a multitude of reasons. First, they encourage the inventor-scientist to consider commercial applications for their research at an early stage of development.<sup>165</sup> Second, the scientists are reminded to provide invention disclosure statements as required by Bayh-Dole.<sup>166</sup> Further, interactions between the TTO and researchers enable the TTO to complete early evaluations of the technology, learning directly from the inventor—the person with the most knowledge about the new technology—potential early commercial applications.<sup>167</sup>

Under Bayh-Dole, a university may only recoup a limited amount of the revenues generated from licensing agreements to cover some of the costs related to technology transfer.<sup>168</sup> This includes the cost of obtaining a patent, which for a highly complex patent can regularly exceed \$16,000.<sup>169</sup> Due to such a large cost, one job of the TTO is to identify technology with significant commercial applications, while permitting other technology to enter into the public domain.<sup>170</sup>

Although Bayh-Dole “focused universities on ‘commercially relevant technologies and closer ties between research and technological development,’ the costs of patenting are such that ‘most university

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161. *Mission*, *supra* note 63; *see also About Research at Penn State*, *supra* note 63 (“[T]ransfer of University-developed technologies for commercialization, thereby providing benefits to researchers, the University, and the citizens of the Commonwealth.”).

162. *About Research at Penn State*, *supra* note 63.

163. *See, e.g., About*, U. MICH., [www.techtransfer.umich.edu/about](http://www.techtransfer.umich.edu/about) (last visited Apr. 10, 2017) (“We work with researchers and faculty to provide advice about potential tech transfer issues during research activities and to assist in the invention reporting process.”).

164. *E.g., Rosa Grimaldi et al., 30 Years After Bayh-Dole: Reassessing Academic Entrepreneurship*, 40 RES. POL’Y, 1045, 1048 (2011).

165. *Id.*

166. 35 U.S.C. § 202(c)(1) (2012); *see also* Grimaldi, *supra* note 164, at 1048.

167. Grimaldi, *supra* note 164, at 1048.

168. 35 U.S.C. § 202(c)(7).

169. Gene Quinn, *The Cost of Obtaining a Patent in the US*, IP WATCHDOG (Apr. 4, 2015), <http://www.ipwatchdog.com/2015/04/04/the-cost-of-obtaining-a-patent-in-the-us/id=56485>. Notably, universities are entitled to the “small entity” rate, which reduces their filing fee. *See* 37 C.F.R. § 1.27(a)(3) (2017).

170. *See* Kyle, *supra* note 1 (noting that Katy Ritter, director of the technology transfer office at Boise State University stated that “[she] would love to patent more, but we have to be judicious about what IP we choose to protect because of budget constraints”).

licensing offices barely break even.”<sup>171</sup> One empirical study has stated that “it takes between five and ten years for a TTO to break even, if it does at all.”<sup>172</sup> A second study indicates that few TTOs raised significant income from licensing their patents under Bayh-Dole.<sup>173</sup> Nearly all of the profitable TTOs are the direct result of revenue related to one “blockbuster” or “home run” patent.<sup>174</sup> For example, since 2008, Northwestern University has led all universities in revenues from subject inventions—to the tune of nearly \$1.36 billion as a direct result of licensing the anti-seizure drug Lyrica to Pfizer.<sup>175</sup> In reality, nearly eighty-five percent of TTOs are not self-sustaining.<sup>176</sup>

Notwithstanding that many TTOs are a cost to their respective university,<sup>177</sup> there are other significant intangible benefits that TTOs generate to both the university and the general public including, inter alia, “supporting 4 million good paying jobs” throughout the United States, and generating significant revenue for the local economy.<sup>178</sup> It is unclear what factors indicate a successful TTO.<sup>179</sup> TTOs often cite

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171. SCHACHT, *supra* note 16, at 12 (quoting Shane, *supra* note 16, at 128); *see also* Greenbaum, *supra* note 2, at 359-60 (“More often than not, technology transfer offices drain university resources, promising the sky but delivering little.”).

172. Jay P. Kesan, *Transferring Innovation*, 77 *FORDHAM L. REV.* 2169, 2180 (2009) (quoting Margo A. Bagley, *Academic Discourse and Proprietary Rights: Putting Patents in Their Proper Place*, 47 *B.C. L. REV.* 217, 234 (2006)).

173. *See* Valdivia, *supra* note 23, at 6, 7 fig.2 (depicting the distribution of licensing gross income by university). One empirical study found that:

In 2012, a year very much in line with the ten-year trends in this sector, the top 5% of earners (8 universities) took 50% of the total licensing income of the university system; and the top 10% (16 universities) took nearly three-quarters of the system’s income. Not only licensing revenue is highly asymmetric but also the highest earners have become a select club with a stable membership. Only 37 universities have been able to reach the top 20 of licensing revenue any given year over the last decade.

*Id.* at 6.

174. SCHACHT, *supra* note 16, at 19 (“The financial rewards derived from patenting often are a small portion of the total amount of R&D funding for academic institutions and what substantial money does flow into individual institutions tends to be the result of one ‘blockbuster’ patent.”); *see also* Greenbaum, *supra* note 2, at 360-61 (discussing the “home run” mentality of technology transfer offices).

175. *See* Andrew L. Wang, *Northwestern University Leads Nation in Tech Transfer Revenue*, *CRAIN’S CHI. BUS.* (Oct. 27, 2012), [www.chicagobusiness.com/article/20121027/ISSUE01/310279974/northwestern-university-leads-nation-in-tech-transfer-revenue](http://www.chicagobusiness.com/article/20121027/ISSUE01/310279974/northwestern-university-leads-nation-in-tech-transfer-revenue) (stating that Northwestern University’s TTOs revenues are “mask[ing] a lackluster record of entrepreneurship at Illinois Institutions of higher education”). According to the AUTM, Northwestern received twenty-four percent of the \$3.4 billion total received by all TTOs. Kyle, *supra* note 1.

176. Irene Abrams et al., *How Are U.S. Technology Transfer Offices Tasked and Motivated—Is It All About the Money?*, *RES. MGMT REV.*, Fall/Winter 2009, at 18, 31 tbl.11 (2009) (providing a detailed statistical analysis of TTOs in the United States).

177. *See supra* text accompanying notes 171-76.

178. Allen, *supra* note 125.

179. *See* Vertinsky, *supra* note 20, at 2004-07 (discussing that statistics might not hold TTOs

positive statistics such as “companies started” or “patents obtained” in order to increase their funding from the university.<sup>180</sup> These statistics are often misleading; about seventy-five percent of all startups fail, and very often, patents either remain unlicensed or the licensing agreement fails and the patent rights revert back to the university.<sup>181</sup>

TTOs often have very limited resources (and time) to review inventions and determine if obtaining a patent is worth pursuing or to permit the research to enter the public domain.<sup>182</sup> Consequently, TTOs are unable to patent every invention that has commercial viability.<sup>183</sup> Thus, they only pursue patent protection on technology that has been determined to have significant and plausible commercial implications—and enormous commercial potential.<sup>184</sup> Interestingly, despite only patenting technology with realistic commercial implications, many either remain unlicensed by the TTO (or the initial licensing deal fails), so the rights return to the TTO, and the patent is not relicensed to the public.<sup>185</sup>

### III. CURRENTLY, THERE ARE NO REPERCUSSIONS IF TECHNOLOGY TRANSFER OFFICES FAIL TO LICENSE STALLED PATENTS, AND NO INCENTIVE FOR TECHNOLOGY TRANSFER OFFICES TO REVIEW THEIR PORTFOLIO OF STALLED PATENTS

In general, there are no accurate means to measure the success, or lack thereof, of the Bayh-Dole Act.<sup>186</sup> However, in 2002, *The Economist*

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accountable).

180. See, e.g., ASS'N OF UNIV. TECH. MANAGERS, *supra* note 64, at 5 (boasting that as a result of the Bayh-Dole Act, universities have spun off nearly 5000 companies, been issued over 80,000 patents, and from 1996–2013, had an economic impact of nearly 1.1 trillion dollars on the U.S. gross industrial output); PENN STATE, ANNUAL REPORT OF RESEARCH ACTIVITY (2016), [https://www.research.psu.edu/sites/default/files/2016\\_OVPR\\_Annual\\_Report.pdf](https://www.research.psu.edu/sites/default/files/2016_OVPR_Annual_Report.pdf) (last visited Apr. 10, 2017) (stating that technology transfer at Pennsylvania State University has resulted in thirty-six patents issued and eight startup companies formed).

181. See Allen, *supra* note 138.

182. See SCHACHT, *supra* note 16, at 19; Abrams et al., *supra* note 176, at 44.

183. See Loise & Stevens, *supra* note 1, at 192 (“[F]unding the technology transfer function itself is a major issue at most universities . . . .”); Samantha R. Bradley et al., *Models and Methods of University Technology Transfer* 10-11 (Dep’t of Econ., Univ. of N.C. Greensboro, Working Paper No. 13-10, 2013), <http://bryan.uncg.edu/assets/research/econwp/2013/13-10.pdf> (“TTO must be selective about which inventions to pursue.”).

184. See Loise & Stevens, *supra* note 1, at 192; Bradley et al., *supra* note 183, at 10-11. An empirical study detailing the priorities that TTO managers place on the outcome of TTO activities found that most universities favor licensing revenues when measuring the success of its TTO. Richard Jensen & Marie Thursby, *Proofs and Prototypes for Sale: The Licensing of University Inventions*, 91 AM. ECON. REV. 240, 243-45 (2001). However, according to that same survey, the goal of commercializing inventions is just slightly less than that of licensing revenues. *Id.* at 245.

185. See *infra* Part III.

186. See *supra* notes 179-81 and accompanying text.

labeled Bayh-Dole as “[p]ossibly the most inspired piece of legislation to be enacted in America over the past half-century.”<sup>187</sup> The passing of Bayh-Dole sparked the formation of new companies, helped introduce new products into the market, and as a result, new jobs across the nation.<sup>188</sup> Nearly all agree that Bayh-Dole, as currently written, provides a great foundation which we can continue to build on<sup>189</sup>: “It is readily apparent that the Act’s underlying philosophy is sound. The point, rather, is to recognize where it has strayed from [its] philosophy . . . .”<sup>190</sup>

Bayh-Dole has been very effective in facilitating the introduction of new products in technology sectors such as pharmaceuticals and nanotechnology.<sup>191</sup> However, even within those industries, very often only inventions with the clearest and simplest path to commercialization are successfully being licensed to industry.<sup>192</sup> In fact, “most university inventions are never picked up by a licensee.”<sup>193</sup> Thus, many inventions that a TTO has elected to patent—meaning at one time a TTO felt the invention had significant commercial value—sit idly in the TTO’s patent portfolio awaiting utilization.<sup>194</sup>

Further, as discussed above, all current proposals to enhance Bayh-Dole focus primarily on the commercialization of developing technology—meaning the technology being developed in labs today.<sup>195</sup> This problem is compounded because due to budget constraints, TTOs

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187. *Innovation’s Golden Goose*, ECONOMIST (Dec. 12, 2002), [www.economist.com/node/1476653](http://www.economist.com/node/1476653) (“Together with amendments in 1984 and augmentation in 1986, this unlocked all the inventions and discoveries that had been made in laboratories throughout the United States with the help of taxpayers’ money. More than anything, this single policy measure helped to reverse America’s precipitous slide into industrial irrelevance.”).

188. See H.R. Con. Res. 328, 111th Cong. (2010) (“Whereas economic activity spurred on by the Bayh-Dole Act include the formation of more than 6,500 new companies from the inventions created under the act, an estimated contribution of \$450,000,000,000 to the United States gross industrial output, and the creation of 20,000 new high technology jobs between 1999 and 2007. . . .”); see also ASS’N OF UNIV. TECH. MANAGERS, *supra* note 64, at 5 (“From 1996 to 2013, the economic impact of university and nonprofit patent licensing was \$518 billion on the U.S. gross domestic product [and] \$1.1 trillion on the U.S. industrial output.”).

189. See H.R. Con. Res. 328; ASS’N OF UNIV. TECH. MANAGERS, *supra* note 64, at 5.

190. Sweeney, *supra* note 16, at 297.

191. See *supra* notes 16, 187-89 and accompanying text.

192. See Mats A. Lundqvist & Karen L. Williams, *Adding Licensing and Venture Creation to a University Mission of Open Exchange* 16 (Chalmers Publ’n Library, Working Paper A307, 2005), [http://publications.lib.chalmers.se/records/fulltext/12551/local\\_12551.pdf](http://publications.lib.chalmers.se/records/fulltext/12551/local_12551.pdf).

193. de Larena, *supra* note 15, at 1381-82.

194. See *supra* Part II.C; see, e.g., Kyle, *supra* note 1 (“After spending thousands on initial filings, Boise State has chosen not to pursue patents on the drugs, though it has filed for patents for two other Hampikian inventions: a miniature pump for use in forensic DNA analysis and a transducer that can generate energy. So Hampikian plans to pay himself to file patents for the cancer drugs, though he will likely need investors to advance them.”).

195. See *supra* notes 17-25 and accompanying text.

are often forced to focus their efforts on new technology, not their existing patent portfolios.<sup>196</sup> In addition, TTOs are trying to commercialize basic research, which is inherently difficult.<sup>197</sup> Currently, Bayh-Dole does not impose penalties for TTOs who obtain large portfolios of Stalled Patents, nor does it provide a specific incentive for TTOs to actively review their portfolios of Stalled Patents.<sup>198</sup>

Stalled Patents are in direct contrast to the Bayh-Dole Act's underlying policies; it is impossible for new products to be introduced to society when the only entity that is legally permitted to develop that technology fails to do so.<sup>199</sup> Moreover, when licensing agreements fail—meaning that the licensee is no longer in business or fails to commercialize the invention—the license typically reverts back to the TTO.<sup>200</sup> In such situations, TTOs typically do not seek a second licensee.<sup>201</sup> Thus, in many cases, instead of inventions collecting dust on the shelves of agencies, today, inventions—many of which are Stalled Patents—are collecting dust on the shelves of TTOs.<sup>202</sup>

Notably, “[w]hen universities and other private contractors underutilize or improperly apply their Bayh-Dole responsibilities, taxpayers are often left footing the bill or are deprived of a potentially vital new technology (or both).”<sup>203</sup> This Part discusses that, due to nobody's fault in particular, it is inevitable that commercially viable inventions arising from federally funded research become Stalled Patents.<sup>204</sup> Specifically, Subpart A discusses why TTOs are obtaining large patent portfolios with no fear of the government marching in.<sup>205</sup> Next, Subpart B addresses, in part, why the funding (or lack thereof) and the structure of TTOs lead to Stalled Patents.<sup>206</sup> In fact, TTOs (1) have no incentive to actively commercialize Stalled Patents and (2) do not have the resources to actively commercialize them.<sup>207</sup> Further, due to their structure within the university, limited budgets, and the constant

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196. See *infra* Part III.B.1.

197. See *supra* notes 56, 101 and accompanying text.

198. See *infra* Part III.A.

199. See *supra* Part II.B.

200. Shinae Kim-Helms, *Review of Key Clauses in University/Biotechnology Industry Licensing Agreements*, LES NOUVELLES, Mar. 2007, at 371, 380 (“After the agreement is terminated, the rights granted to the licensee revert back to the licensor and any further use of the licensed technology by the licensee would constitute infringement.”).

201. See *infra* Part III.B.1.

202. See *infra* Part III.A–B.

203. See Sweeney, *supra* note 16, at 299.

204. See *infra* Part III.A–B.

205. See *infra* Part III.A.

206. See *infra* Part III.B.

207. See *infra* Part III.A–B.

development of new technology on campuses, TTOs are typically only focused on commercializing new technology.<sup>208</sup>

*A. Technology Transfer Offices Are Obtaining Large Patent Portfolios with No Fear of the Government Marching In*

The march-in provision was included in the Bayh-Dole Act to protect the taxpayer by ensuring that new technology is introduced to society and to provide “a sufficient safeguard to protect public welfare requirements and prevent any undesirable economic concentration.”<sup>209</sup> Some scholars argue that the ultimate result of 35 U.S.C. §§ 202 and 203 is that universities now have an implied duty to commercialize government-funded research.<sup>210</sup> But this is an empty implication.<sup>211</sup> Since the enactment of Bayh-Dole, only six march-in petitions were filed, none of which have been successful.<sup>212</sup> In fact, “[i]n more than 35 years only one case has met the criteria of the march-in provision.”<sup>213</sup> That case was also rejected.<sup>214</sup>

Notably, nearly all march-in petitions were based on the fact that the price of a specific drug was too high.<sup>215</sup> It appears that there is no chance of a march-in petition being filed because a university failed to license a specific patent or licensed it to a company that fails to commercialize it.<sup>216</sup> And if a march-in petition were to be filed against a university, there is little, if any, chance of the petition being successful.<sup>217</sup> Regardless, a successful march-in petition would not nullify the patent; the petitioning entity receives a license to practice the previously licensed invention without fear that the original licensee can file a lawsuit against them.<sup>218</sup>

Consequently, whether the university fails to license a particular patent or licenses the patent to a company with a very low success rate,

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208. See *infra* Part III.B.

209. 35 U.S.C. § 203 (2012); S. REP. NO. 96-480, at 28 (1979).

210. E.g., HENDERSON & SMITH, *supra* note 15, at 4-5 (stating that the ultimate result of Bayh-Dole is an implied duty for universities to commercialize government-funded technology).

211. See *Therien v. Trs. of Univ. of Pa.*, No. 04-4786, 2006 U.S. Dist. LEXIS 746, at \*8 (E.D. Pa. Jan. 10, 2006) (holding that Bayh-Dole may not impose on universities any duties to commercialize subject inventions); see also JOHN R. THOMAS, CONG. RESEARCH SER., R44597, MARCH-IN RIGHTS UNDER THE BAYH-DOLE ACT 7-12 (2016).

212. See THOMAS, *supra* note 211, at 8-10 (detailing the six march-in petitions that have been filed in the past thirty-five years).

213. See Allen, *supra* note 125.

214. *Id.*

215. See THOMAS, *supra* note 211, at 9.

216. *Id.* at 8-10.

217. *Id.*

218. *Id.* at 7-8.

there is no risk that the university will be susceptible to the federal government's march-in provision.<sup>219</sup> In fact, because of this, some universities are deliberately not licensing patents.<sup>220</sup> As a result, under current practices, universities are obtaining enormous patent portfolios at ever-growing costs, without any fear of the government marching in.<sup>221</sup> As discussed in the next Subpart, due to budget constraints and passive licensing policies, TTOs' ever-growing patent portfolios inevitably result in Stalled Patents.

*B. Limited Financial Incentives and Limited Technology Transfer Resources Result in More Stalled Patents—And Nearly No Chance of Fulfilling the Bayh-Dole Act's Mandate of Commercial Innovation*

Bayh-Dole's provisions provide no guidance—and no funds—as to the method universities must follow in order to achieve the transfer of technology.<sup>222</sup> Moreover, due to the government's unwillingness to utilize the march-in provision, universities are free to choose any licensing scheme they wish.<sup>223</sup> For various reasons, “[u]niversities are generally quite passive about licensing their technology.”<sup>224</sup> Subpart 1 illustrates why TTOs focus their limited resources on new technology.<sup>225</sup> Subpart 2 explains why, due to the “blockbuster effect,” some TTOs “over patent.”<sup>226</sup> This leads to both an increase in Stalled Patents and an environment that discourages TTOs from seeking new licensees to commercialize Stalled Patents.<sup>227</sup>

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219. *Id.*; *Therien v. Trs. of the Univ. of Pa.*, No. 04-4786, 2006 U.S. Dist. LEXIS 746, at \*8 (E.D. Pa. Jan. 10, 2006); *see also* Whalen, *supra* note 136, at 1099-1106 (describing the reasons why each march-in petition was declined).

220. *See de Larena, supra* note 15, at 1417-19 (describing “questionable” licensing procedures of TTOs); *Bayhing for Blood or Doling out Cash?*, *ECONOMIST* (Dec. 20, 2005), <http://www.economist.com/node/5327661> (providing an example where the licensee of a Bayh-Dole patent aggressively sued companies infringing on its patent to test for breast cancer). An analysis of this tactic is outside the scope of this Note. For a review of whether the patent system is creating an environment of universities acting as patent trolls, *see id.*

221. *See infra* Part III; *see also Available Technologies*, COLUM.: TECH. VENTURES, <http://innovation.columbia.edu/technologies> (last visited Apr. 10, 2017) (listing over 1300 technologies available to license from Columbia University); *Technologies Available for Licensing*, PENN. ST., <https://www.research.psu.edu/otm/license-technologies> (last visited Apr. 10, 2017) (providing a list of several hundred different technologies available for licensing from Pennsylvania State University).

222. *See supra* Part II.C.

223. *See supra* Part III.A.

224. *de Larena, supra* note 15, at 1413.

225. *See infra* Part III.B.1.

226. *See infra* Part III.B.2.

227. *See infra* Part III.B.2.

1. Due to Limited Budgets, Technology Transfer Offices  
Primarily Focus Resources on the Commercialization of New  
Technology, Which Directly Results in Stalled Patents  
Collecting Dust on University Shelves

The drafters of the Bayh-Dole Act believed—and at least one empirical study has proved—that providing universities with economic incentives increases the likelihood that technology is successfully transferred from the laboratory to society.<sup>228</sup> However, due to the provisions of Bayh-Dole and the actual funding agreement between the government and the university, financial resources for commercialization are limited.<sup>229</sup> In addition, “universities collect only one third of the licensing revenues raised by the TTO but shoulder all of the operating costs.”<sup>230</sup> Traditionally, federal research grants prohibit universities from utilizing the funds for commercializing the research that the grants help develop.<sup>231</sup> When there are residual revenues retained by the university, Bayh-Dole only permits the funds to be spent on additional research and education, not commercialization.<sup>232</sup>

Today, most TTOs operate at a loss and may be a drain on valuable university resources.<sup>233</sup> Studies have shown that, on a yearly average,

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228. McManis & Yagi, *supra* note 20, at 1057-59 (finding empirical support for the conclusion that Bayh-Dole played an important role in technology transfer in the United States compared to other nations). One author compared the United States’ and Sweden’s technology transfer industries:

Moreover, in a comparison of U.S. and Swedish Innovation Systems that affect the commercialization of university technology generally, the authors of a 2002 study noted that “[t]he US model is very much focused on creating (economic) incentives for universities to commercialize their research output,” whereas “the Swedish model, which is similar to most European Union countries’ models in some respects, is very much an attempt by the government to directly create mechanisms that facilitate commercialization” . . . . “In light of [this] analysis . . . it is unlikely that Sweden is harvesting the full commercial potential of its research output as successfully as the US.”

*Id.* (quoting Brent Goldfarb & Magnus Henreckson, *Bottom-Up Versus Top-Down Policies Towards the Commercialization of University Intellectual Property*, 32 RES. POL’Y 639, 640 (2003)). *But see* Jennifer Carter-Johnson, *Unveiling the Distinction Between the University and Its Academic Researchers: Lessons for Patent Infringement and University Technology Transfer*, 12 VAND. J. ENT. & TECH. L. 473, 510-11 (2010) (highlighting that profit motivations, particularly for inventor-scientists, is less existent in academia); Shane, *supra* note 96 (“Successful commercialization of university inventions depends on more than just incentives.”).

229. *See* 35 U.S.C. § 202 (2012); Valdivia, *supra* note 23, at 6, 7 fig.2, 9; Kesan, *supra* note 172, at 2179-80.

230. Valdivia, *supra* note 23, at 9.

231. ASS’N OF AM. UNIVS. ET AL., REGULATORY AND FINANCIAL REFORM OF FEDERAL RESEARCH POLICY: RECOMMENDATION TO THE NRC COMMITTEE ON RESEARCH UNIVERSITIES 1-2 (2011), [www.aau.edu/WorkArea/DownloadAsset.aspx?id=11662](http://www.aau.edu/WorkArea/DownloadAsset.aspx?id=11662) (discussing the growing fiscal challenges of operating in the field of technology transfer).

232. 35 U.S.C. § 202(c)(7)(C). *But see* Sweeney, *supra* note 16, at 310 (stating that it is impossible for the government to monitor the use of this revenue).

233. *E.g.*, Valdivia, *supra* note 23, at 9; *see de Larena, supra* note 15, at 1431-33. Notably,

about eighty-four percent of TTOs lose money.<sup>234</sup> As demonstrated in the next Subpart, nearly all of the profitable TTOs are based on profits from one or two blockbuster patents.<sup>235</sup> Thus, under current policies, there is little incentive for universities to actively pursue licenses if initial efforts fail.<sup>236</sup> Alternately stated, if a patent is not immediately licensed with the hope of becoming a “blockbuster,” there is little economic incentive for the TTO to actively seek a license agreement<sup>237</sup>—particularly when the average licensing agreement results in \$13,126 of revenue.<sup>238</sup>

This is particularly troubling because, as noted in Part IV, the market for a specific technology may have since grown, and there now are new, lucrative applications available.<sup>239</sup> If the TTO were to actively pursue licenses for Stalled Patents, there is a distinct possibility that a licensee could be found.<sup>240</sup> This would result in new technology being introduced into society, fulfilling the Bayh-Dole Act’s mandate.<sup>241</sup> Currently, that is not occurring; TTOs adopt a passive approach to licensing Stalled Patents, and there is little hope for Stalled Patents to become the basis for commercial products.<sup>242</sup> In fact, one common method of licensing Stalled Patents is “simply to list available technologies on a website, hoping that potential licensees will come upon them in Internet searches.”<sup>243</sup>

The longer a patent remains unlicensed, the less likely that a TTO locates a licensee.<sup>244</sup> This problem is compounded because new inventions are always being developed on university campuses, directing the efforts of TTO’s away from Stalled Patents.<sup>245</sup> Thus, there is little or no chance that the public will benefit from the use of commercial products based on Stalled Patents.

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“over half of all technology-transfer income goes to just ten schools.” de Larena, *supra* note 15, at 1431.

234. Abrams, *supra* note 176, at 30-31 (finding that only sixteen percent of TTOs are self-sustaining); Valdivia, *supra* note 23, at 9.

235. *See infra* Part III.B.2.

236. *See* Kyle, *supra* note 1.

237. *See* de Larena, *supra* note 15, at 1381-82.

238. *See* Kyle, *supra* note 1.

239. *See infra* Part IV.B.

240. *See* McManis & Yagi, *supra* note 20, at 1057-59.

241. *See supra* Part II.

242. de Larena, *supra* note 15, at 1413-14.

243. *Id.*; *see, e.g., Available Technologies*, *supra* note 221.

244. *See supra* notes 233-38 and accompanying text.

245. *See, e.g.,* E-mail from Stanford Univ., Office. of Tech. Licensing, to author (Jan. 11, 2017, 8:00 AM) (on file with author) (listing only the new technologies that are available for potential licensees at Stanford University).

## 2. The Blockbuster Effect and Passive Licensing Practices Lead to an Increase in Stalled Patents

Accounts “of blockbuster patents have fueled the ambition of TTO heads and university administrators alike.”<sup>246</sup> It is easy to see how some TTOs, blinded by Stanford’s windfall profits from Google or Northwestern University’s profits from Lyrica, patent any invention that has the potential to produce a similar payout.<sup>247</sup> Scholars have referred to this as the “blockbuster effect” or the “lottery effect” whereby TTOs file large numbers of patent applications because of their belief that there is a chance that one might result in enormous returns.<sup>248</sup> Famed former Dean of the Harvard Law School, Professor Derek Bok explains:

Most universities have not earned much money from royalties; the odds of making anything substantial from patenting a new discovery are extremely small. Still, the extraordinary success of a few patents and the many millions of dollars in royalties earned each year by a small minority of schools are enough to keep scores of institutions scouring labs for commercially valuable innovations.<sup>249</sup>

In addition, by focusing on short-term “lottery” patents, many TTOs do not focus on the long-term investment potential of these inventions.<sup>250</sup> This is known as the “home run” mentality: “TTO officers focus their limited time and resources on technologies that appear to promise the biggest, fastest payback. Technologies that might have longer-term potential . . . tend to pile up in the queue, get short shrift, or get overlooked entirely.”<sup>251</sup> Thus, when a licensing agreement is not immediately reached, it becomes very unlikely that the TTO will successfully license the patent.<sup>252</sup> In fact, one study found that a majority of university inventions are never licensed.<sup>253</sup> Considering that the “first use of an invention is usually not the most important one,” viable

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246. Valdivia, *supra* note 23, at 11.

247. *See id.* at 11-12; de Larena, *supra* note 15, at 1381-82; Kesan, *supra* note 172, at 2180-81; *see also* Sweeney, *supra* note 16, at 309 (“Therefore, the vast majority of patents are applied for in the hopes that they will ‘win’ big.”).

248. *See* Sweeney, *supra* note 16, at 309.

249. BOK, *supra* note 20, at 77. Empirical data suggests that universities with the smallest research and development budgets have a probability of less than five percent of landing a blockbuster patent in a given year. Valdivia, *supra* note 23, at 11-12, 11 tbl.2.

250. *See* Robert E. Litan et al., *Commercializing University Innovations: A Better Way* 7, [http://www.brookings.edu/~media/research/files/papers/2007/5/innovations-litan/05\\_innovations\\_litan.pdf](http://www.brookings.edu/~media/research/files/papers/2007/5/innovations-litan/05_innovations_litan.pdf).

251. *See id.*

252. *Id.*

253. de Larena, *supra* note 15, at 1381 n.50 (citing ASS’N OF UNIV. TECH. MANAGERS, *supra* note 27, at 15, 21-24).

and valuable commercial products are collecting dust on the shelves of TTOs.<sup>254</sup>

Scholars have expressed concern that TTOs are obtaining too many patents.<sup>255</sup> For example, Columbia University lists 1340 technologies that are available to be licensed.<sup>256</sup> One of Columbia University's public approaches to technology transfer is to list all available patents that can be licensed on their website, in the hope that private industry will contact their office to "start the licensing process."<sup>257</sup>

The goal of Bayh-Dole is to provide a financial incentive to universities to increase the chance of a technology being commercialized.<sup>258</sup> A TTO that actively pursues licensees increases the overall likelihood of success that technology will be transferred from the laboratory to society.<sup>259</sup> A passive approach to licensing is in direct opposition to that goal; it creates even more Stalled Patents and limits the likelihood that Stalled Patents will be commercialized.<sup>260</sup> Thus, a passive approach to licensing by TTOs leads to the current scenario where a large percentage of the taxpayers' investment—and an additional investment by the TTO to patent the technology—are "wasted."<sup>261</sup> Provided TTOs can be incentivized to review their portfolio of Stalled Patents and actively seek out licensees, it is possible—even likely—that new products will be introduced into society, further satisfying the Bayh-Dole Act's noble mandate.<sup>262</sup> It is entirely possible that the next society altering technology is collecting dust on the shelf of a TTO; and with up to fifteen years remaining on its patent term, there is a large financial upside for private industry to invest their time and money.

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254. *Government Patent Policy*, *supra* note 9, at 519 (statement of Monte C. Throdahl, Senior Vice President, Monsanto Co.).

255. See Rochelle Dreyfuss, *Protecting the Public Domain of Science: Has the Time for an Experimental Use Defense Arrived?*, 46 ARIZ. L. REV. 457, 464-65 (2004); Michael A. Heller & Rebecca S. Eisenberg, *Can Patents Deter Innovation? The Anticommons in Biomedical Research*, 280 SCI. 698, 698-700 (1998) ("By conferring monopolies in discoveries, patents necessarily increase prices and restrict use—a cost society pays to motivate invention and disclosure. The tragedy of the anticommons refers to the more complex obstacles that arise when a user needs access to multiple patented inputs to create a single useful product."); Kesan, *supra* note 172, at 2189-93 (discussing various theories that universities over-patenting actually impedes innovation).

256. *Available Technologies*, *supra* note 221.

257. *Start the Licensing Process*, COLUM., <http://techventures.columbia.edu/main-section/industry/start-licensing-process> (last visited Apr. 10, 2016) (providing contact information for licensing).

258. See *supra* Part II.

259. See *supra* Part III.

260. See *supra* Part III.

261. See *supra* notes 26-30 and accompanying text.

262. See *infra* Part IV.

IV. BY RE-INCENTIVIZING UNIVERSITIES TO ACTIVELY LICENSE STALLED PATENTS, TECHNOLOGY TRANSFER OFFICES WILL SCOUR THEIR EXISTING PATENT PORTFOLIOS, INCREASING THE CHANCE OF UTILIZATION OF GOVERNMENT-FUNDED TECHNOLOGY

As a direct result of the Bayh-Dole Act's economic incentive, TTOs began to search their laboratories for government-funded inventions with potential commercial applications.<sup>263</sup> Some of these inventions—particularly the “low hanging fruit”—were successfully commercialized; products such as Google and Lyrica have changed society for the better and resulted in millions of dollars of royalties to university coffers.<sup>264</sup> However, many fully-funded government inventions—inventions that at one time a university believed had significant commercial applications—remain unlicensed, collecting dust on the shelves of TTOs.<sup>265</sup> Stalled Patents result in a “double” net loss; both taxpayers and universities have invested significant funds to develop and patent the technology.<sup>266</sup> In today's economic climate, government agency and university budgets are already stretched thin.<sup>267</sup> Commercializing Stalled Patents will improve both the universities and the taxpayers' economic standing. Although nearly all agree that an increase in funding for the sole purpose of commercialization will increase the success rate of technology transfer—which is occurring more consistently than ever before<sup>268</sup>—alternative solutions are available.<sup>269</sup>

When TTOs elect to patent government-funded research, studies show that most patents are never licensed to the private sector for commercialization.<sup>270</sup> As discussed in Part I, the proposed amendment only applies to Stalled Patents.<sup>271</sup> Amending Bayh-Dole to provide new incentives for TTOs to license Stalled Patents will result in an increase in the likelihood that Stalled Patents are licensed to private industry and, potentially, commercialized.<sup>272</sup> Currently, that chance is zero.<sup>273</sup> This Note identifies an issue with current technology transfer policies

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263. See *supra* note 96 and accompanying text.

264. See *supra* Part III.

265. See *supra* Part III.

266. See *supra* Part III.

267. See *supra* Part III.B.1.

268. See *supra* note 24 and accompanying text.

269. See *infra* Part IV.

270. See, e.g., de Larena, *supra* note 15, at 1381-82.

271. See *supra* Part I.

272. See McManis & Yagi, *supra* note 20, at 1057.

273. See *infra* Part IV.

and budgeting;<sup>274</sup> the goal is to encourage policymakers to consider proposals to commercialize Stalled Patents. In the current environment, furthering that discussion is better than the status quo.

The proposed amendment will re-incentivize universities to actively seek licenses for Stalled Patents.<sup>275</sup> The amendment provides the necessary economic resources and incentives so TTOs mount a second legitimate effort to help the public gain a greater return on their billions of dollars of investments.<sup>276</sup> Further, the proposal provides something that Bayh-Dole, in its current form, will never provide—a potential and actual consequence to the TTO if licensing efforts are ineffective.<sup>277</sup>

A five-year term should be selected because the review would occur before the second maintenance fee is due, a cost that may result in TTOs permitting a patent to become abandoned (and enter the public domain)<sup>278</sup>—an outcome that studies show will result in the underutilization of the technology.<sup>279</sup> In addition, Stalled Patents will have up to fifteen years of their patent term remaining, ample time for an exclusive licensee to see enormous profits from their investments in the commercialization of Stalled Patents.<sup>280</sup> This is important because as addressed previously, the cost of commercializing basic research is often ten times the price of developing it.<sup>281</sup> Further, after five years, the commercial potential for Stalled Patents is both greater and easier to predict.<sup>282</sup>

The effect of this proposal will be very similar to the enactment of Bayh-Dole; however, instead of scouring their laboratories to locate commercially desirable inventions,<sup>283</sup> universities will reexamine their existing patent portfolios comprised of Stalled Patents. Such Stalled Patents (1) were based on research previously funded entirely by taxpayers, (2) were considered to be of significant commercial value at one time by the university, and (3) were afforded patent protection after the university expended its limited resources for this right.<sup>284</sup> By

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274. *See supra* Part III.

275. *See infra* Part IV.

276. *See infra* Part IV.

277. *See infra* Part IV.

278. *See Maintain Your Patent*, U.S. PAT. & TRADEMARK OFF., <https://www.uspto.gov/patents-maintaining-patent/maintain-your-patent> (last visited Apr. 10, 2017) (stating that maintenance fees are due three times during the life of a patent and may be paid “without surcharge at 3 to 3.5 years, 7 to 7.5 years, and 11 to 11.5 years after the date of issue”).

279. *See id.*

280. *See supra* Part III.B.

281. *See supra* Part II.C.

282. *See infra* Part IV.A.

283. *See supra* notes 19, 88, 98, 229, 242 and accompanying text.

284. *See supra* notes 98, 177-80, 189-96 and accompanying text.

supplying new resources and an additional economic upside specifically for TTOs to review their portfolio of Stalled Patents, TTOs will be exploiting new opportunities that were not available five years prior. TTOs will now reexamine their portfolios of Stalled Patents on an annual basis and perhaps find new commercial applications for the technology—applications that were not possible at the time of the invention.<sup>285</sup> In fact, the first use of a patent is most likely not the most advantageous one, thus, making it likely that some Stalled Patents will have significant commercial applications.<sup>286</sup>

Subpart A explains why after five years the commercial potential for many inventions actually increases.<sup>287</sup> Next, this Note discusses that allowing universities to keep a greater percentage of revenues, and permitting those revenues to cover budget shortfalls, creates an environment that requires TTOs to take an increasingly active approach to licensing, or risk legitimate consequences—an outcome that is not possible under the current system.<sup>288</sup> Additionally, it suggests that university TTOs are uniquely positioned on the university campus and may have access to resources that they are currently underutilizing.

*A. The Five-Year Maturing Period May Allow Society to Build  
the Necessary Infrastructure and Allow Society Time to  
Adopt the Technology*

Universities, unlike private companies, conduct basic research.<sup>289</sup> The commercial applications for basic research are often unclear, particularly when comparable technology has not been introduced into society.<sup>290</sup> During the proposed five-year gap, it is possible that technological advances result in that basic research “maturing,” thereby reducing the barriers to innovation.<sup>291</sup> As many authors have discussed, successfully bringing technology from the laboratory to the real world

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285. See *infra* Part IV.A.

286. See *Government Patent Policy*, *supra* note 9, at 519 (statement of Monte C. Throdahl, Senior Vice President, Monsanto Co.).

287. See *infra* Part IV.A.

288. See *infra* Part IV.B.

289. See *supra* note 56 and accompanying text.

290. E.g., Clive Thompson, *On Demand: When Uber Wanted a Team of Robotics, It Raided a University Lab to Get Them*, N.Y. TIMES, Sept. 13, 2015 (Magazine), at 40 (discussing that as technology fields mature, universities are able to profit on their basic research).

291. *Id.* (“At Level 1, an area of scientific inquiry is so new that nobody understands its basic principles. At Level 9, the related technology is so mature its ready to be used in commercial products.”).

often requires both proper infrastructure and societal acceptance.<sup>292</sup> Below is a simple example of the infrastructure argument:

To introduce tractor technology to farming in an undeveloped area means more than just landing a tractor in a field—there has to be a supply of fuel, and spare parts, and training for those using the tractor or servicing it, and the fields have to be dry enough to use the tractor, and there has to be something for the tractor to pull, like a plow, and a place for the tractor to be parked so it is out of the weather, and won't get stolen.<sup>293</sup>

In addition, society must be ready to accept and adopt the innovation.<sup>294</sup> For example, *The New Yorker* discussed the social rejection of Google's much-maligned but technologically innovative product Google Glass.<sup>295</sup> Thus, when a TTO reviews its portfolio of Stalled Patents, the five-year time lapse may have permitted society—in both infrastructure and social norms—to catch up.<sup>296</sup> Moreover, the improved infrastructure may result in potential applications for the underlying technology that were not in existence during initial licensing efforts.<sup>297</sup> It is possible, even inevitable, that some Stalled Patents have zero commercial potential, but considering that it took over fifty years for touch-screen technology to go from the laboratory to the iPhone,

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292. See, e.g., Philip Auerswald, *Funding ≠ Innovation*, LINKEDIN PULSE (May 27, 2015), <https://www.linkedin.com/pulse/funding-innovation-philip-auerswald>.

293. Gerald Barnett, *Sparrows, Mocking Birds, and Crows*, RES. ENTERPRISE (Nov. 13, 2013), <http://researchenterprise.org/2013/11/23/sparrows-mockingbirds-and-crows>; see also Auerswald, *supra* note 292 (stating that “[t]he apparatus for bringing the fruits of science to market” must exist in society or innovation is impossible).

294. See, e.g., Katrien Luijkx et al., “Grandma, You Should Do It—It’s Cool” *Older Adults and the Role of Family Members in Their Acceptance of Technology*, 12 INT’L J. ENV’T RES. & PUB. HEALTH 15470, 15473-80 (2015) (finding that gender and age are significant factors when society is trying to adopt new technology); Viswanath Venkatesh & Michael G. Morris, *Why Don’t Men Ever Stop to Ask for Directions? Gender, Social Influence, and Their Role in Technology Acceptance and Usage Behavior*, 24 MIS Q. 115, 128-31 (2000) (finding that society must be ready to accept the technology, both in the short and long term).

295. Anisse Gross, *What’s the Problem with Google Glass?*, NEW YORKER (Mar. 4, 2014), <http://www.newyorker.com/business/currency/whats-the-problem-with-google-glass> (finding that the technology made people “uncomfortable”). One Google Glass user stated: “I’m not wearing my \$1,500 face computer on public transit where there’s a good chance it might be yanked from my face.” *Id.* He went on to say:

I won’t wear it out to dinner, because it seems as rude as holding a phone in my hand during a meal. I won’t wear it to a bar. I won’t wear it to a movie . . . . Again and again, I made people very uncomfortable. That made me very uncomfortable. People get angry at [Google] Glass. They get angry at you for wearing [Google] Glass.

*Id.*

296. See Auerswald, *supra* note 292.

297. See Venkatesh & Morris, *supra* note 294, at 128-31; Barnett, *supra* note 293.

sometimes it just takes time for other technologies to catch up.<sup>298</sup> In essence, the benefit to society (and the university) if even just one Stalled Patent became a “blockbuster” would be enormous. Perhaps the next cancer-fighting drug is collecting dust on the shelf of a university right now, waiting to be licensed to private industry.

Some scholars argue—just as opponents to the enactment of the Bayh-Dole Act did—that Stalled Patents should be placed in the public domain in order to permit academic research to occur free from a potential patent infringement suit.<sup>299</sup> However, for many Stalled Patents, the initial commercial possibilities are often unclear and may require a substantial monetary investment in order to be commercialized.<sup>300</sup> Thus, particularly for the commercially desirable Stalled Patents, the prospective licensee must be willing to invest the necessary capital in order to commercialize the underlying technology; otherwise, there will continue to be underutilization of Stalled Patents.<sup>301</sup> For some, the potential upside of a blockbuster patent, even with a shorter patent term,<sup>302</sup> will be sufficient to encourage this.<sup>303</sup> Without exclusivity, no company would make the time and cost intensive investment to commercialize Stalled Patents.<sup>304</sup>

Allowing technology to mature five years will permit TTOs and private industries to more accurately predict which unlicensed technologies are worth an additional investment.<sup>305</sup> This will also permit TTOs to utilize their limited resources more effectively.<sup>306</sup> In other words, the technological and societal changes over five years will enable TTOs to predict which Stalled Patents have commercial upside and to focus their limited resources on finding a licensee for those specific

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298. See Mary Bellis, *Who Invented Touch Screen Technology*, THOUGHTCO. (Aug. 6, 2016), <https://www.thoughtco.com/who-invented-touch-screen-technology-1992535>; see also Thompson, *supra* note 290, at 40 (discussing NASA’s “Technology Readiness Scale”).

299. See, e.g., Sweeney, *supra* note 16, at 307-09 (arguing that (1) Stalled Patents must be given to the public; and (2) because they are unlicensed, technology transfer revenues will be unaffected).

300. See Auerswald, *supra* note 292; Thompson, *supra* note 290, at 40-41, 44.

301. See *supra* Part II.A.

302. A patent term is generally twenty years; however, design patents have a shorter term length of fifteen years. *General Information Concerning Patents*, U.S. PAT. & TRADEMARK OFF. (Oct. 2015), <https://www.uspto.gov/patents-getting-started/general-information-concerning-patents#heading-23>. Thus, for Stalled Patents, the licensee may still enforce their monopoly up to a maximum of fifteen years. See *id.*

303. See *supra* Part III.

304. See *supra* Part III.

305. See *supra* Part III.

306. See *supra* notes 290-97 and accompanying text.

technologies. This will increase both the likelihood that private industry will license Stalled Patents from TTOs, and that those licenses will turn into commercial products.<sup>307</sup> This is consistent with the ultimate goal of Bayh-Dole—introducing new products into society.<sup>308</sup> Importantly, the same prohibition on universities assigning patents to non-practicing entities will persist, thus eliminating the possibility that a university assigns the rights to a patent troll.<sup>309</sup> The march-in provision will also remain in effect, so if the new licensee does not develop the technology as expected, or is overcharging for the product, the license can be revoked and a new partner can be sought.<sup>310</sup>

*B. Creating Economic Incentives and Exploiting the Unique Structure (and Placement) on University Campuses Will Result in the Increased Commercialization of Stalled Patents*

It is the role of the TTO, often with the assistance of the inventor, to determine potential commercial applications of basic research and identify the best path to commercialization.<sup>311</sup> Prior to applying for a patent, an employee of the TTO has met with the inventor-scientist in order to (1) ensure that the proper disclosure statements are filed and (2) explore any and all commercial applications of the technology.<sup>312</sup> Typically this process continues throughout the patenting and subsequent commercialization process.<sup>313</sup> Regardless of whether the inventor remains with the university, the information that the inventor provided will always be available to employees of the TTO.<sup>314</sup>

Unlike individuals or private companies that “move on” from failed research, the TTO has no reason to “move on” as its exclusive job is to locate a licensee for patents in their portfolios.<sup>315</sup> For better or worse, the TTO is a part of technology transfer, and they will remain on

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307. See *supra* notes 290-97 and accompanying text.

308. See *supra* note 90 and accompanying text.

309. 35 U.S.C. § 202(c)(7)(A) (2012). For a definition of patent trolls, see Marianna Galtstyan, *Who Are Patent Trolls & How Do They Work?*, INVESTOPEDIA (July 15, 2015), <http://www.investopedia.com/articles/investing/071515/who-are-patent-trolls-how-do-they-work.asp>.

310. See Allen, *supra* note 125.

311. See *supra* Part II.C.

312. See *supra* Part II.C.

313. See *supra* Part II.C.

314. See *supra* Part II.C.

315. See *supra* Part II.C.

universities' campuses for the near future.<sup>316</sup> In essence, the TTO is the perfect—and perhaps only—entity that can assist in the commercialization of Stalled Patents.<sup>317</sup> Currently, TTOs have little or no repercussions if they fail to locate licensees for their technology.<sup>318</sup> Even when TTOs generate licensing revenues, the universities are prohibited from applying that revenue on budget shortfalls.<sup>319</sup> Subpart 1 proposes removing that limitation with regards to Stalled Patents.<sup>320</sup> This will result in TTOs taking a more active approach to licensing Stalled Patents, increasing the likelihood of locating a successful licensee.<sup>321</sup> Finally, Subpart 2 proposes funding a university “commercialization pilot program,” where the funding is contingent on universities demonstrating a plan to commercialize Stalled Patents.<sup>322</sup>

1. By Removing the Limitation That Revenue Cannot Be Used to Cover Budget Shortfalls, the Proposed Amendment Will Capitalize on Both the Unique Structure of Technology Transfer Offices and Their Place in Universities

Currently, universities, the government, and the public are receiving nothing in return for their investment in Stalled Patents.<sup>323</sup> The drafters of the Bayh-Dole Act had a grand vision that the revenue from licensed patents would fund new research and education.<sup>324</sup> Unfortunately, for Stalled Patents, reaching that vision is impossible.<sup>325</sup> Stalled Patents are unlicensed technologies and, therefore, generate zero dollars in licensing revenues to fund future research and education on university campuses.<sup>326</sup>

Thus, removing this spending prohibition for Stalled Patents does not result in a net loss to the public or the university.<sup>327</sup> Conversely, eliminating the provision provides a new chance that Stalled Patents are

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316. *See supra* Part II.C.

317. *See supra* Part II.C.

318. *See supra* Part III.

319. *See* 35 U.S.C. § 202(e)(7)(C) (2012).

320. *See infra* Part IV.B.1.

321. *See infra* Part IV.B.1.

322. *See infra* Part IV.B.2.

323. *See supra* Part III.

324. 35 U.S.C. § 202(c)(7)(C).

325. *See supra* Part III.

326. *See supra* Part III. In order for a TTO to receive revenue on a patent, it must be licensed. 35 U.S.C. § 202(c)(7). Stalled Patents are not licensed; thus, currently there are no revenues to invest in furthering science and technology. *See id.*

327. *See* 35 U.S.C. § 202(e)(7); *see also supra* notes 233-40 and accompanying text.

commercialized.<sup>328</sup> Considering that currently that chance is essentially zero, any increase must be welcomed.<sup>329</sup> Moreover, the goal of Bayh-Dole to introduce new products into society now becomes a legitimate possibility.<sup>330</sup>

TTOs typically report to the trustees or administrators of universities, or in some cases, to the president of the university.<sup>331</sup> Regardless, both parties are acutely aware of the continued losses that most TTOs incur.<sup>332</sup> If university administrators believe that (1) there is a significant potential for commercial revenue in Stalled Patents—which there is—and (2) all licensing revenues from Stalled Patents can be used to cover budget shortfalls, they will apply external pressure on the TTOs to review Stalled Patents for possible new commercial applications.<sup>333</sup> This pressure will be exacerbated due to the typical budget constraints that universities are currently facing.<sup>334</sup> That pressure will provide what the march-in provision will never accomplish—a legitimate negative consequence to the TTO (and its employees) if commercialization efforts are not fruitful.<sup>335</sup>

One could argue that the added financial incentive and increased pressure from university officials would result in very aggressive TTOs.<sup>336</sup> However, nearly all criticisms of overly aggressive TTOs result from universities over-patenting or universities that actively seek infringement suits.<sup>337</sup> These behaviors occur regardless of this proposal and, more importantly, will not be increased as a result of this

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328. See *supra* Part IV.

329. See *supra* notes 233-40 and accompanying text.

330. See *supra* Part III.

331. See Abrams et al., *supra* note 176, at 24-25, 24 tbl.5 (finding that about half of the TTOs reported directly to administration, and about one-third reported directly to the president of the university).

332. See, e.g., SCHACHT, *supra* note 16, at 19; see also Greenbaum, *supra* note 2, at 358-61.

333. See Abrams et al., *supra* note 176, at 34 tbl.12 (showing that revenue maximization is an important driver of technology transfer).

334. Terran Lane, *On Leaving Academe*, CHRON. HIGHER EDUC. (Aug. 9, 2012), <http://chronicle.com/article/On-Leaving-Academe/133717> (describing the current “budget climate” at universities).

335. See *supra* Part III.B.

336. See, e.g., Kesan, *supra* note 172, at 2179-80 (discussing one survey that found TTOs tend to place more emphasis on revenue and slightly less emphasis on “importance of commercialization of inventions”). *But see* Abrams et al., *supra* note 176, at 34 tbl.12 (finding that revenue maximization was the third most important factor that motivated TTOs).

337. See de Larena, *supra* note 15, at 1417-19 (summarizing questionable licensing procedures from universities).

amendment.<sup>338</sup> In fact, the only side effect of this amendment will be that TTOs may aggressively seek new licensing agreements.<sup>339</sup> Under Bayh-Dole, licensing agreements are the only way new products are introduced into society, thus this active response is actually a desirable outcome.<sup>340</sup>

2. The Government Can Incentivize Universities to Actively Review Their Portfolios of Stalled Patents by Encouraging Technology Transfer Offices to Take Advantage of Their Place on University Campuses

Congress passed the Bayh-Dole Act in order to commercialize government-funded technology, introduce new products into society, and rebuild American industry.<sup>341</sup> Today, “business deaths now outpace business births worldwide.”<sup>342</sup> Commercializing Stalled Patents will result in new businesses, helping to spur new economic growth.<sup>343</sup> According to Steve Case, founder of Revolution Ventures and former member of then-President Obama’s Council on Jobs and Competitiveness, “[i]n order for America to maintain its position as the most innovative and entrepreneurial nation, we must win the global battle for talent, and create pathways for fledgling startups to become iconic American businesses.”<sup>344</sup>

In 2015, Senators Jerry Moran and Mark R. Warner “introduced the fourth version of their Startup Act—a piece of legislation they have been lobbying for and tinkering with for more than three years.”<sup>345</sup> The Startup Act proposed significant changes to the immigration and tax systems in order to spur entrepreneurship.<sup>346</sup> Senator Warner stated that the proposed bill would “devote more federal funding to help American universities more quickly commercialize technology and inventions

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338. *See id.*

339. *See* McManis & Yagi, *supra* note 20, at 1057-58.

340. *See* 35 U.S.C. § 202 (2012); *supra* Part II.B.

341. *See supra* Part II.

342. *See* J.D. Harrison, *Senators Take Another Shot at Startup Act, Pitching Tax Tweaks and Immigration Reform*, WASH. POST (Jan. 18, 2015), [https://www.washingtonpost.com/business/on-small-business/senators-take-another-shot-at-startup-act-pitching-tax-tweaks-and-immigration-reform/2015/01/16/3ff2a584-9db1-11e4-a7ee-526210d665b4\\_story.html?utm\\_term=.807038f4fc0f](https://www.washingtonpost.com/business/on-small-business/senators-take-another-shot-at-startup-act-pitching-tax-tweaks-and-immigration-reform/2015/01/16/3ff2a584-9db1-11e4-a7ee-526210d665b4_story.html?utm_term=.807038f4fc0f).

343. *See supra* Part II.

344. *See* Harrison, *supra* note 342.

345. *Id.*

346. Startup Act, S. 181, 114th Cong. (2015).

spawned by on-campus research.”<sup>347</sup> Senator Warner considered this feature to be the most valuable part of the bill.<sup>348</sup> The proposed bill directs the Secretary of Commerce to use certain federal agency extramural budget funds to “award grants to institutions of higher education . . . for initiatives to improve commercialization and transfer of technology.”<sup>349</sup>

This Note goes further, proposing that universities must prove that they have plans in place to actively review and commercialize their existing portfolio of Stalled Patents in order to receive additional funding for commercialization. It is possible that this funded mandate will supply TTOs with the necessary resources to actively review their portfolio of Stalled Patents.<sup>350</sup> In essence, a small additional investment by taxpayers earmarked for the commercialization of Stalled Patents may be necessary for society (and the university) to receive any return on their initial investment.<sup>351</sup>

Consistent with Bayh-Dole, universities will be free to choose what “plan” they propose to license and commercialize Stalled Patents.<sup>352</sup> One suggestion—which requires minimal investment—suggests that universities encourage both Master of Business Administration (“M.B.A.”) and Juris Doctor candidates to participate in technology transfer.<sup>353</sup> These students can review a TTO’s portfolio of Stalled Patents, identify technology that may have new commercial applications, and prepare market analyses on said technology.<sup>354</sup> The law students can provide legal assistance to both the TTO employees and the inventor (if still employed by the university).<sup>355</sup> In addition, the students will very

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347. Harrison, *supra* note 342.

348. *Id.* (noting Senator Warner stated that the increased federal funding part of the proposed bill receives little attention but is “one of the most valuable parts of the bill”).

349. S. 181 § 8(b)(2)(A)(i).

350. *See supra* Part III.

351. *See supra* Part III.

352. *See supra* Parts II–III.

353. *See infra* note 359.

354. *See, e.g., About OTC: Job Postings*, U. MINN., <http://www.research.umn.edu/techcomm/jobs.html#Us2fnvRDvso> (last visited Apr. 10, 2017) (describing that M.B.A. students can assess the commercial viability of new inventions, develop marketing materials, and identify potential licensees).

355. *See CTV Fellows Program*, COLUM.: TECH. VENTURES, <http://techventures.columbia.edu/about-ctv/ctv-fellows-program> (last visited Apr. 10, 2017) (“Fellows gain exposure to intellectual property, marketing, management, editing, and licensing research.”); *Entrepreneurship and Intellectual Property Clinical Practicum*, MAURICE A. DEANE SCH. L. HOFSTRA U., <http://law.hofstra.edu/clinics/entrepreneurshipandintellectualpropertyclinicalpracticum/> (last visited Apr. 10, 2017) (“Students in the Entrepreneurship and Intellectual Property Clinical Practicum provide transactional (non-litigation) assistance to small businesses and start-up companies, with a particular focus on intellectual property issues that arise for start-ups in the earliest stages of venture formation.”).

often have access to the inventor-scientist, which increases the likelihood that the technology is commercialized.<sup>356</sup> It is even possible that the students can join new businesses centered on these technologies.<sup>357</sup> M.B.A. students are constantly drafting new business plans and analyzing business proposals as a requirement of their degree.<sup>358</sup> Therefore, offering practical, real-world experience can only maximize the students' educational experience and provide potential upside for universities.

Some schools have implemented similar—and successful—programs, but the programs are not dedicated to commercializing Stalled Patents.<sup>359</sup> As a result, and similar to TTO employees, the students' efforts are primarily dedicated to emerging technology. However, an increase in funding for such programs—some of which is earmarked for commercializing Stalled Patents—will only result in a greater chance of commercializing both emerging technology and Stalled Patents, which in turn can only benefit society.

## V. CONCLUSION

Recent publications affirm the notion that the government's enormous investment in technology created the foundation for many of the innovative products and services in today's society.<sup>360</sup> However, government funding cannot spur technological growth on its own; “[b]oth government research and entrepreneurial capital are necessary

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356. See *supra* notes 94-98 and accompanying text.

357. *CTV Fellows Program*, *supra* note 355 (“[Columbia Technology Venture] Fellows pursue exciting careers at the intersection of science, technology, business, and law. Over 160 Alumni have worked at companies including IBM, Bristol Myers-Squibb, Allied Minds, McKinsey, Merck, Samsung Ventures, at various law firms and startups, and at universities such as UCLA, Harvard, NYU, and the University of Vermont.”).

358. See, e.g., *id.*; Jeremy Ferguson, *First Year MBA Experience: Preparing for the Business Plan Competition*, B.C. CAROLL SCH. MGMT.: BC MBA ADMISSIONS BLOG (Jan. 20, 2015), <http://carrollschoolblog.bc.edu/blog/first-year-mba-experience-preparing-for-the-business-plan-competition>.

359. E.g., *CTV Fellows Program*, *supra* note 355. For example:

The Columbia Technology Ventures Fellows Program is a globally-recognized Fellowship that gives Columbia graduate students and post-docs hands-on experience working on early stage technology assessments, writing marketing abstracts, and preparing marketing campaigns. . . . Fellows work closely with CTV on a part-time, remote basis. The Program is intended to enhance our understanding of the commercial potential of Columbia technologies, while providing Fellows a valuable educational experience.

*Id.*

360. See *supra* Parts I–II.

conditions for the advance of commercial innovation.”<sup>361</sup> The Bayh-Dole Act created a system that (1) ensured private industry had easy access to government-funded research and (2) provided economic incentives for both universities and private industry to commercialize that research.<sup>362</sup> For many inventions, this system resulted in innovative products that are changing America for the better.<sup>363</sup> But “[t]axpayers have a large, unacknowledged role in the nation’s innovation.”<sup>364</sup> Part of that role is ensuring taxpayers receive the greatest return for their investment in science and technology.<sup>365</sup> Thus, any proposal with the potential to do so—especially in light of the current treatment of Stalled Patents—must be taken seriously.<sup>366</sup>

Due to nobody’s fault in particular, Stalled Patents exist in the portfolios of every TTO. Now is the time to “double down” on Bayh-Dole by providing universities funds in order to review their portfolio of Stalled Patents. Over thirty-five years ago, Congress expressed concern that “unused patents . . . represent[ed] a partial waste of our vast research and development programs and their development will insure that the public is receiving the full benefits of this taxpayer-supported effort.”<sup>367</sup> Today, that same problem exists.<sup>368</sup> Even more troubling, under current law, there is virtually no chance that new products and services are introduced into society based on these Stalled Patents.<sup>369</sup> This Note proposes an amendment to existing legislation that will provide a significant increase in the likelihood that Stalled Patents become the foundation for new and innovative products that are ultimately utilized by the original funders—taxpayers.<sup>370</sup> The proposal ensures that TTOs mount a second bona fide effort to commercialize Stalled Patents.<sup>371</sup>

Although the possibilities of new innovations being introduced to society based on Stalled Patents may be limited, the societal benefits of a

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361. Jeff Madrick, *Innovation: The Government Was Crucial After All*, N.Y. REV. BOOKS (Apr. 24, 2014), <http://www.nybooks.com/articles/2014/04/24/innovation-government-was-crucial-after-all>.

362. See *supra* Parts II–III.

363. See *supra* notes 1-3, 227 and accompanying text.

364. See Porter, *supra* note 3.

365. See *supra* Parts III–IV.

366. See *supra* Parts III–IV.

367. S. REP. NO. 96-480, at 30 (1979).

368. See *supra* Part III.

369. See *supra* notes 265-66, 323-27 and accompanying text.

370. See *supra* Part IV.

371. See *supra* Part IV.

new Google or cancer-fighting drug make this proposal worthwhile—taxpayers deserve that opportunity.<sup>372</sup>

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372. Valdivia, *supra* note 23, at 11-12, 11 tbl.2 (finding that even the TTOs with the most limited budget have a legitimate chance of finding a blockbuster).

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