Serious Flaw of Employee Invention Ownership under the Bayh-Dole Act in Stanford v. Roche: Finding the Missing Piece of the Puzzle in the German Employee Invention Act

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Abstract

In Stanford v. Roche, the Supreme Court highlighted a serious flaw of employee invention ownership under the Bayh-Dole Act (BDA). This article argues that the current BDA is incomplete without a mechanism for contractors to secure the ownership of all federally funded inventions and proposes a revision to introduce such a mechanism. Universities’ failure to execute an express assignment will subject federally funded inventions to the common law ownership rules, which would not give the ownership to universities. Even with a written assignment, the different state laws and state legislations prevent contractors from securing the ownership of all federally funded inventions, thereby preventing the federal government from implementing a uniform policy. Therefore, this article proposes to adopt a mechanism for contractors to secure the ownership of federally funded inventions from the German Employee Invention Act (EIA). Because the EIA influenced the drafting of the BDA, the EIA and BDA share key features, which make it easy for the BDA to adopt an ownership transfer mechanism from the EIA. It also proposes to adopt a mechanism to protect inventors’ rights for compensation from the EIA so that contractors can secure the ownership of federally funded inventions not only from their employees but also non-employees with just compensation through royalty sharing without a violation of the Fifth Amendment.
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Introduction

In Stanford v. Roche, the Supreme Court took a very “textualism” approach and refused to read the text of the Bayh-Dole Act guaranteeing ownership of federally funded inventions for contractors of the federal government through an automatic transfer from the contractors’ employees. This interpretation effectively eliminated the federal government’s rights in federally funded inventions under the Act if its contractors fail to secure ownership of invention from their employees because these rights are provided through the contractors’ ownership of such inventions. The Bayh-Dole Act aims to implement a uniform policy in the ownership of a federally funded invention and sets out important objectives reflecting specific public interests unique to such inventions. These objectives are achieved through the government’s rights in

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1Bd. of Trs. of Leland Stanford Junior Univ. V. Roche Molecular Sys., __ U.S.__, 131 S. Ct. 2188, 180 L.Ed. 2d 1, 98 U.S.P.Q.2d 1761 (2011).
federally funded inventions to promote commercialization and academic-industry collaboration. Thus, the Stanford dissent argued that the majority’s interpretation is inconsistent with the Act’s basic purpose.

Due to lack of resources at technology transfer offices and the complexity of ownership issues involved in academic-industry collaboration at universities, it is not easy for universities to secure the ownership of all inventions made by their employees. This is even more true with respect inventions made by visiting researchers and student interns who are working under an informal relationship with universities, which relationship does not fall into the traditional notion of employment. Stanford highlights the complexity of ownership issues in inventions resulting from a high-tech environment where researchers and innovations inter-flow beyond the boundaries of firms. Many legal and economic scholars cite Silicon Valley's information sharing environment as its key to success. Interaction of researchers from multiple-firms and the high mobility of such researchers enhance information diffusions and inter-firm relation among firms in a region. Researcher interaction improves industrial outputs, as well as, economic growth in the high-tech district. Despite the numerous benefits praised by economists, such an information sharing culture presents a serious challenge for university technology transfer managers to manage intellectual property, particularly

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4 Walter W. Powell, Trust-Based Forms of Governance, in Trust Organization: Frontiers of Theory and Research, 51.

controlling the ownership of inventions and procuring patents based on the ownership. The *Stanford* majority’s interpretation of the Bayh-Dole Act substantially increases administration costs at universities in promoting a practice to secure pre-invention assignments from anyone involved in federally funded research activities. Moreover, universities face due diligence challenges because they cannot prevent their researchers from executing inconsistent assignment contracts when different aspects of research projects are conducted in different institutions in the private and academic sectors.\(^6\)

Contrary to steady changes in the working environment, the U.S. Patent Act remains relatively unchanged with respect to provisions and controlling ownership and inventorship, which is the starting point for determining ownership.\(^7\) The statute has a chapter dedicated to the ownership and assignment. The chapter, however, includes only two sections.\(^8\) Although the overwhelmingly majority of inventions are made by employee-inventors through their pre-invention assignment duty under an employment contract, the U.S. Patent Act is silent on the ownership of inventions resulting from employment, except for invention ownership resulting from federally funded research under the Bayh-Dole Act.\(^9\)

In contrast, patent statutes in major foreign patent jurisdictions include provisions for controlling the ownership of employee inventions.\(^10\) In Germany, a separate law, the Employee Invention Act (“EIA”), was enacted to provide detailed rules for balancing interests of employee-inventors and their employers to balance

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\(^{6}\) *Supra* note 2, Reed at 16.


\(^{8}\) 35 U.S.C. §§261, 262.


\(^{10}\) *E.g.*, Japanese Patent Law, Article 35; French IP Law, Article L611-7.
competing policies under the patent law and labor and employment law. The German EIA incorporates a mechanism for employers to secure the ownership of inventions made by their employees. The mechanism protects employers’ interests by giving employers the priority right for claiming to secure the ownership of invention made by their employee-inventors while protecting employee-inventors’ interests through rights of reasonable compensation when the inventors transfer the ownership to their employers. Many other jurisdictions adopt a similar mechanism from the German EIA. The U.S. Congress also once made an attempt to adopt a similar mechanism by introducing a series of bills based on the German EIA.

This article argues that the current Bayh-Dole Act is incomplete because the Act fails to provide a mechanism for contractors to secure the ownership of federally funded inventions from their employees. Part I of this Article discusses the flaw of the current Bayh-Dole Act highlighted by *Stanford v. Roche* and argues that a historical accident resulted in this flaw due to Congress’ failure to pass a series of bills based on the German EIA. Texts in the Bayh-Dole Act suggest that the Act assumes a transfer by operation of law to secure the ownership of federally funded inventions through a mechanism provided by the German EIA based bills. Without a mechanism, many of the federal funded inventions fall outside of the Bayh-Dole Act, if contractors fail to execute a written assignment with inventors. Common law ownership rules do not provide any help to contractors because they can guarantee only non-transferable

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11 Arbeitnehmererfindungsgesetz, ArbEG (Employees’ Inventions Act)[“EIA”]. English Translation is available in Helmut Reitzle et al., GesetzeuberArbeitnehmererfindungen / Act of Employees’ Inventions (2007). For a most comprehensive treatise in German on German EIA, see Kurt Bartenbach& Franz-EugenVolz, Arbeitnehmereffindergesetz (4ed, 2002)[“ Bartenbach”]. The ownership principle is discussed on page 254 seq. For treatises in English, see Michael Trimborn, Employees’ Inventions in Germany: A Handbook for International Businesses (2009)[“ Trimborn”]; Helmut Reitzle et al, Act on Employees’ Inventions (3ed, 2007) [“ Reitzle”].

12 For example, French IP Code Article L. 611-7, Paragraph 1.
royalty-free nonexclusive license for the contractors although many of the contractors, particularly, universities do not practice patents by themselves. The different state laws and state legislations prevent assignment contracts between the contractors and their employee-inventors from securing the ownership of all federally funded inventions, thereby preventing the federal government from implementing a uniform policy.

In order to propose a mechanism for contractors to secure the ownership of federally funded inventions, Part II of this article examines a statutory model based on federal laws for handling inventions closely related to national security. These Acts provide an effective mechanism for securing rights in the ownership of inventions in operation of law. However, the increased administrative costs on both the United States Patent and Trademark Office (“USPTO”) and applicants would not justify an adoption of the mechanism in these Acts for the Bayh-Dole Act.

Part III of this article examines the German EIA and compares it with the Bayh-Dole Act. The U.S. Congress’ interest in the German EIA led to the overall structure of Bayh-Dole to share key features from EIA and thus it is easy for the Bayh-Dole Act to adopt an ownership transfer mechanism developed under the German EIA. The comparison also revealed a lack of a mechanism from the current Bayh-Dole Act for protecting inventors’ rights for compensation when the ownership is transferred to their employers, although the Bayh-Dole Act provides inventors a similar right for compensation.

Part IV of this article discusses how and what aspects of the German EIA should be adopted in the Bayh-Dole Act. It will also propose to adopt, from the German EIA, a mechanism to protect inventors’ rights for compensation. Moreover, today’s university research environment makes it necessary for the federal government to apply the Bayh-
Dole restrictions and conditions to federally funded inventions made by students and visiting researchers regardless of employment status with the contractors. With just compensation through royalty sharing, the Bayh-Dole Act should be revised to allow contractors to secure the ownership of inventions from these untraditional employees as long as their inventions resulted from the federally funded research activities.

I. Lack of Ownership Transfer Mechanism: Significant Flaw in Bayh-Dole Act

1. Stanford v. Roche

The invention at issue in Stanford is a technology based on the polymerase chain reaction (“PRC”) technique for detecting and quantifying HIV, the virus that causes AIDS, in human blood samples (HIV measurement technology). 13 A Stanford researcher, Dr. Holodniy, completed this invention with other Stanford researchers. In June 1988, Dr. Holodniy executed a pre-invention assignment contract which included the term “I agree to assign or confirm in writing to Stanford and/or Sponsors” with respect to his future inventions. 14 Because he had no prior experience with the PRC technique, he was instructed by his boss to visit a private biotech firm, Cetus and learn the technique. In February 1989, Dr. Holodniy executed another pre-invention assignment agreement with Cetus when he began his regular visits to Cetus. 15 The contract with Cetus included the term “I will assign and do hereby assign to Cetus” with respect to his future inventions.

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13 The polymerase chain reaction (PCR) was developed by a researcher, Kary Mullis. Dr. Mullis shared the 1993 Nobel Prize in Chemistry for his PRC technology with a Canadian biochemist, Dr. Michael Smith.
14 Bd. of Trs. of Leland Stanford Junior Univ. v. Roche Molecular Sys., 583 F.3d 832, 841 (Fed. Cir. 2009).
15 Id.
After receiving enough training at Cetus, Dr. Holodniy returned to Stanford and completed the HIV measurement technology. Stanford received government funding for its HIV research through the National Institute of Health. On May 14, 1992, Stanford filed a patent application which resulted in three separate patents covering different aspects of the HIV measurement technology. However Dr. Holodniy did not execute an assignment of the ownership of his invention in the 1992 patent application until May 4, 1995. All three patents include a notation that the invention was made with the aid of federal funding.

Meanwhile, Roche purchased all PRC related assets from Cetus in December 1991. It began to sell HIV detection kits which are widely used in hospitals and clinics. In April 2000, Stanford and Roche started a license negotiation in discussing possible licensing conditions and contesting Roche’s ownership through the 1989 Holodniy assignment. This negotiation led to no agreement. On October 14, 2005, Stanford filed suit against Roche, asserting infringement of the three patents by Roche’s HIV detection kits. Roche answered and counterclaimed against Stanford, alleging that Stanford lacked standing to maintain the suit because Roche possesses ownership of the invention with respect to all three patents.

The U.S. Court of Appeals for the Federal Circuit (“Federal Circuit”) agreed with Roche that it secured the ownership of Holodniy’s invention when it acquired Cetus’s PRC assets. The Federal Circuit applied its own case law for the question of whether contractual language affects a present assignment of patent rights or an

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16 Id., at 832.
17 Id.
18 Id., at 837-8.
19 Id., at 832.
20 Id., at 841-842.
agreement to assign rights in the future inventions, and found that the Cetus assignment contract constitutes the former and the Stanford assignment contract constitutes the latter. 21 Under its precedents, the term in the Cetus assignment contract “I hereby assign” triggered an automatic transfer of the ownership upon the completion of invention in contrast to the term in the Stanford assignment “I agree to assign” which needed an additional step to consummate the promise and trigger transfer of the ownership. Once the invention was completed, the Cetus contract trumped the Stanford contract although the Stanford contract originated first, prior to the execution of the Cetus contract. In denying Stanford’s ownership, the Federal Circuit effectively eliminated the federal government’s rights in the invention expressly provided in the Patent Act. 22

With a 7 to 2 vote, this conclusion was supported by the U.S. Supreme Court in rejecting the view that the ownership provisions for federally funded inventions in the Patent Act overrides the state contract law and common law rules controlling invention ownership. 23 Authored by Chief Justice Roberts, the Stanford majority reemphasized the common law ownership rule under its precedent that the ownership of invention belongs to the inventor and rejected Stanford’s position that the ownership of federally funded inventions vested in the inventor’s employer – the federal contractor. It compared federal laws which vest the ownership of invention to the federal government contrary to the common law rule and found no texts in the Bayh-Dole Act, supporting

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21 Id.
22 The Government has a nonexclusive, nontransferable, irrevocable, paid up license to use the invention. 35 U.S.C. §202(c) (4). It also has a right to require the patentee to grant a license to a third party and may have direct control of the invention under certain circumstances; 35 U.S.C. §§203, 202(c)(1), 202(c)(2)-(3). In Stanford, Stanford obtained rights in the ownership of the invention in suit through Dr. Holodniy’s co-inventors. Through these rights, the Government secured these rights with respect to the invention in suit. Had the invention made solely by Dr. Holodniy, the Government would have secured any of these rights.
23 Stanford, 180 L. Ed. 2d at 13.
the contractor’s ownership. The majority also examined the text defining “subject invention” and denied Stanford’s interpretation to include all inventions made by the contractor’s employee with the aid of federal funding as contrary to the rule to avoid redundancy in statutory terms. Instead, the majority adopted an interpretation including only inventions owned by the contractor through a valid and enforceable assignment contract because this interpretation makes every word in the definition meaningful and consistent with a common definition of the word in dictionaries. This interpretation is further supported by texts in other provisions in the Bayh-Dole Act. The majority found that the scope of subject invention under Stanford’s interpretation went overbroad by including any invention resulting from federally funded research activities regardless of the inventor’s employment relationship with the contractor or the amount of federal funds to support the activities.

The majority’s statutory interpretation follows a traditional formalistic approach in trying to find out the ordinary meaning of the words and phrases that the parties disputed in context of the structure of the statute and use of the words and phrases in other provisions. Even though basic policy and objectives are expressly set out in the Bayh-Dole Act, they played no role for its interpretation. Such a “textualism” interpretation often leads to results that Congress did not intend. Therefore, authored by a strong purposivist Judge, Justice Breyer, the Stanford dissent criticized the majority’s interpretation to bring a conclusion inconsistent with the Bayh-Dole Act’s basic purposes and undercuts the Act’s ability to implement its objectives.

24 Id., at 13.
25 Id.
26 Id.
27 Id., at 14.
28 Id., at 16.
29 Id. at 19 (Breyer, J., Dissenting).
2. Losing Essential Piece of the Puzzle of the Bayh-Dole Act: Historical Accident

Although the Stanford majority’s statutory interpretation was technically correct in refraining its role in confirming plain meaning or resolving ambiguity, Justice Breyer was correct that it led to a result that Congress did not intend nor expected, by letting inventors lawfully assign federally funded inventions and taking them out of the scope of the Bayh-Dole Act controls. The interpretation also leads to a conclusion that the common law rule controls the ownership of federally funded inventions if the federal contractors fail to secure the ownership through an assignment contract. Moreover, it leads to a conclusion that the state contract law and special legislations control the ownership of such inventions even if the contractors diligently try to secure the ownership through an assignment contract. Such conclusion also subjects the ownership of federally funded inventions to a risk of a technical drafting trap. These conclusions allow many federally funded inventions out of the Bayh-Dole Act’s restrictions, conditions, and allocation rules and make it impossible for the federal government to implement a uniform ownership rule.

Obviously, Congress did not intend to bring such results. Justice Breyer offered two solutions for avoiding the results: (1) interpreting the contractors’ assignment contract to be consistent to the Bayh-Dole Act’s purpose;30 and (2) interpreting the Bayh-Dole Act in applying the ownership rule under Executive Order 10096,31 which requires transfer of the ownership of invention by the federally funded employees to the

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30 Id at 21 (Breyer, J., Dissenting).
federally funded employers. The first solution cannot avoid the result brought by contractors’ failure to execute an assignment contract. The second solution can avoid all unintended results but the executive order provides no basis to apply its rule to inventors, who are not employees of the federal government. Further, the Bayh-Dole Act does not provide a procedure to protect inventors and third-parties.

However, a mechanism for contractors to secure the ownership of all federally funded inventions from their employee-inventors is an essential part of the Bayh-Dole Act for implementing a uniform policy. Without the mechanism, many of the federally funded inventions fall out of the Act’s governing scope. As the Stanford majority admits, reading the definition of subject invention to mean all inventions made by the contractor’s employees, requiring transfer of the invention ownership to the contractor is plausible enough in the abstract. If Congress intended contractors to secure the ownership by operation of law, why did it fail to include an ownership transfer mechanism for their contractors? One can find a possible answer in the Act’s legislative history: Congress lost a chance to adopt an ownership transfer mechanism from the German EIA when it failed to pass bills for controlling the ownership of inventions under the employment relationship in the private sector.

Chapter 18 of the U.S. Patent Act was introduced through the enactment of the Bayh-Dole Act to implement multiple goals through a uniform patent policy for ownership allocation and license with respect to federally funded inventions. Among

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32 Id. at 22 (Breyer, J., Dissenting).
33 Id. at 14.
the goals, promoting commercialization of federally funded inventions is the most successful; it was achieved by giving ownership of the inventions to universities and encouraging academic-industry collaboration through ownership.\textsuperscript{35}

Interestingly, a review of legislative history reveals that U.S. and German legislators began their efforts leading to the current Bayh-Dole Act and German EIA at the same historical point, in the pre-WWII era.\textsuperscript{36} The needs for spurring scientific and technological development for warfare increased government sponsored R&D in both academic and private sectors and led legislators to adopt some forms of patent policies for the ownership of patents resulting from the R&D by the end of WWII.\textsuperscript{37}

However, the two Acts developed very differently because of different focuses and social backgrounds. Acts and regulations, which are roots of Bayh-Dole, aimed to balance rights of the federal government against rights of their employees and contractors; in contrast, regulations leading to the German EIA, aimed to balance rights of employers against rights of their employees regardless of their employment in the private or government sector. At the start of efforts to develop a uniform invention ownership allocation policy, the U.S. Legislators’ main concern was to give the federal government access to federally funded inventions, because the U.S. Supreme Court developed a common law rule that employers do not have any rights in the ownership of inventions even if the inventions resulted from the performance of duty under a contract


\textsuperscript{36} O’Connor et al., at 6.

\textsuperscript{37} O’Connor et al., at 7.
with their employees and contractors. To remedy the ownership problem, U.S. employers in the private sector developed a practice to have their employees execute pre-invention assignment contracts. Following the trend of freedom of contract, U.S. Courts upheld and enforced such contracts. U.S. employees were unable to develop a collective power to enact a law for reversing the trend. Acknowledging the industry practice, U.S. Legislators enacted a series of laws to secure the ownership of national security related inventions. To modify the common law ownership rule, these Acts adopt a clear language to take the ownership of federally funded inventions away from the federal employees and contractors and gave it to the federal government. The President also issued an Executive Order for the federal government to secure ownership of inventions made by federal employees.

In contrast, German law has already addressed the need to give the government access to use inventions owned by its employee or a private person through the operation of a compulsory license provision in the German Patent Act. A more serious need was to remove a conflict between the labor and employment law and the patent law. German employee-inventors were able to develop a significant collective bargaining power well before the pre-WWII era and pressed German legislators to enact a law confirming their rights. The German EIA was enacted to address this need as

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38 For further discussions, see infra Part II, 3. B.
40 Id., at 157.
41 Id., at 148.
44 Infra note 170, Hoisl at 7.
well as a need to enhance Nazi policy for advancing technology to develop high-tech weapons including atomic bombs.\textsuperscript{45}

Despite the different focuses, the Bayh-Dole Act and the German EIA share key features for transferring the ownership of invention.\textsuperscript{46} Since preceding Acts and Regulations developed in fairly the same time frame, it is very likely that the German EIA strongly influenced the ownership allocation rules and transfer mechanism between the contractors and the federal government under the Bayh-Dole Act.\textsuperscript{47} Moreover, this influence is supported by Congress’ attempts to pass a series of bills based on the German EIA.\textsuperscript{48} In the 1970s, the U.S. Congress introduced a series of bills to implement a federal policy for controlling the employee invention ownership in the private sector.\textsuperscript{49} These German EIA based employee invention bills could have introduced a mechanism for contractor-employers to secure the ownership of inventions from their employees in the operation of law.\textsuperscript{50} Accordingly, it is likely that the Bayh-Dole Act intentionally left the ownership rules under the contractor-employee relationship to the German EIA based bills. Congress lost an important piece of the puzzle for developing a system for implementing a uniform federal policy in federally funded inventions when it failed to pass the bills. As will be discussed below, some texts in the Bayh-Dole Act supports Congress’ assumption of incorporating the missing

\textsuperscript{46} Infra, Part III, 1.
\textsuperscript{47} Id.
\textsuperscript{49} H.R. 15512, §414(2).
\textsuperscript{50} Infra, note 76.

William Hovell, \textit{Patent Ownership: An Employer’s Rights to His Employee’s Invention}, 58 Notre Dame L.Rev. 863 (1983); O’Connor et al., at 29
piece with the German EIA based bills. This historical accident brought unintended results as highlighted in Stanford.

3. Unintended Results: Common Law Ownership Rules

The Stanford majority confirmed that the common law governs the ownership of federally funded inventions.\textsuperscript{51} Under this rule, the ownership of invention belongs to the inventor.\textsuperscript{52} An employer does not have ownership of the invention made by his employee unless there is an express agreement to transfer the ownership to the employer.\textsuperscript{53} Without a mechanism to secure the ownership in operation of law, the Bayh-Dole Act pre-supposes an expressive contract between the contractor and their employees to assign all rights of inventions once the inventions are complete.\textsuperscript{54} However, limited resources at university technology transfer offices may prevent execution of a pre-invention contract with every employee and researchers who engage in federally funded research activities because different teams of researchers, including visiting researchers and student-interns, engage in different aspects of research projects in today’s academic-industry collaboration. If contractors failed to execute an express assignment contract, federally funded inventions remain with inventors unless the exception of “specially hired to invent” applies to the employment relationship between the inventor and employer-contractor.\textsuperscript{55} It is unlikely that the employment relationship between the contractor and their employee-

\textsuperscript{51} Id. at 12.
\textsuperscript{52} Gayler v. Wilder, 51 U.S. 477, 493, 10 How. 477, 13 L.Ed. 504 (1850).
\textsuperscript{54} Regulations issued by the Administrator of the General Services Administration assumed pre-invention assignment agreements between the contractors and their employees. Bayh-Dole implementation Regulations provides a model patent contract. A clause of the contract requires the contractor to agree to secure the ownership of federally funded inventions that the contractor elects to retain title for the Federal agency. 37 CFR§401.14(a), clause (f) (1). Mary LaFrance, Employee Ownership of Federally-Funded Inventions under Stanford University v. Roche Molecular Systems, 2010 Emerging Issues Analysis 4809 at 6. (2010).
\textsuperscript{55} Infra Part I, 3.B.
inventors fall into the exception. The “shop rights” the common law rules provide employers for equity has no value to university-contractors because they do not practice patents by themselves.

A) Fundamental Rule: Inventors as Original Owners

In the United States, only a natural person or plural natural persons can be the sole inventor or joint inventors, excluding a possibility for a non-human legal entity such as a corporation from inventorship. It is a fundamental rule that ownership of invention is originally vested in the inventor.\textsuperscript{56} Thus, the examination of ownership always starts from the determination of inventorship.\textsuperscript{57} Although the ownership issue is often intertwined with the inventorship issue, it is important to note that the inventorship issue “who is a true and original inventor or inventors,” is a separate question from ownership issues, “who owns property rights in the invention made by the inventor(s)?”

Texts in the Bayh-Dole Act make it unclear whether it follows this fundamental rule and thus necessary for the Stanford Court to clarify the meaning of these phrases in terms of the fundamental rule of invention ownership.\textsuperscript{58} The Act defines subject invention to which it governs as “any invention of the contractor conceived or first actually reduced to practice.”\textsuperscript{59} Nothing in the definition touches upon contractor-employees who conceived or reduced the invention.\textsuperscript{60} It is unclear whether “any


\textsuperscript{57} Donald S. Chisum, Chisum on Patents, §22.02(1972, Supp. 2010).

\textsuperscript{58} Stanford, 180 L. Ed. 2d. at 14&15.

\textsuperscript{59} 35 U.S.C. §201(e)

\textsuperscript{60} Stanford, 180 L. Ed. 2d. at 18 (Breyer, J., Dissenting). Justice Breyer commented that “[s]ince the “contractor” (e.g., a university or small business) is unlikely to “conceiv[e]” of an idea or “reduc[e]” it “to practice” other than through its employees, the term “invention of the contractor” must refer to the work and ideas of those employees.”
invention of the contractor” includes all inventions by such employees.\(^\text{61}\) In the provision for allocating the ownership of subject invention, the Act adopts a phrase “elect to retain title” to describe the contractor’s right.\(^\text{62}\) This suggests the ownership as being vested in contractors because contractors cannot retain the ownership of invention unless they already received it.\(^\text{63}\) In another provision, the term “retention of rights” is used for an employee-inventor to file an application on its own.\(^\text{64}\) This suggests that the Act follows the initial ownership rule exclusive to the inventor.\(^\text{65}\) These phrases seem inconsistent because they suggest entitlement of the ownership for both parties in operation of law.

The rule that the ownership of invention is assignable is another important rule.\(^\text{66}\) Although the Patent Act applies to determine inventorship, federal law plays a very small role in the determination of ownership before filing a patent application with the USPTO when rights in the ownership of invention are transferred from the original inventor(s).\(^\text{67}\) An inventor may contract to transfer rights in future inventions before completion of the inventions; nevertheless rights and obligations for the transfer under such contract is controlled by state law.\(^\text{68}\) Unlike the German EIA, Bayh-Dole has no express provision to limit inventor rights in transferring their rights in the ownership of

\(^{61}\) Id.


\(^{63}\) Stanford, 180 L. Ed. 2d. at 7. This is the interpretation advanced by Stanford.

\(^{64}\) 35 U.S.C. §202(d).

\(^{65}\) Stanford, 180 L. Ed. 2d. at 15 n.6. The majority distinguished “title” to be retained by contractors from “rights” to be retained by inventors. (“That argument has some force. But there may be situations where an inventor, by the terms of an assignment, has subsidiary rights in an invention to which a contractor has title, as §202(d) suggests.”

\(^{66}\) Stanford, 180 L. Ed. 2d. at 12.

\(^{67}\) Mary LaFrance, Nevada’s Employee Inventions Statute: Novel, Nonobvious, and Patently Wrong, 3 Nevada L.J. 88, 90.

\(^{68}\) Supra note 57, Chisum on Patents, §22.03.
federally funded inventions to a party other than their employers. Such transfer may occur before or after patent filing.

Texts in the Bayh-Dole Act may read to conflict with another fundamental rule, a patent may be issued to an applying inventor, although a patent may issue to an inventor’s assignor if the inventor assigns rights in the invention to a third-party. This rule is codified in Patent Act that applications can be assignable by an instrument in writing. The statute makes clear that a patent application must be filed by the inventor, even if rights in the invention are transferred to a third-party. In contrast, the Bayh-Dole Act requires contractor-employers, instead of their employee-inventors, to file domestic and foreign patent applications. This conflict with the fundamental rule also makes unclear who is the original owner, because the right of the contractor is defined as an “elect to retain title to a subject invention” throughout the Act.

These texts, inconsistent to the fundamental rules, would make sense if Congress enacted Bayh-Dole with an assumption that contractors would secure ownership of inventions through the German EIA based bills. The phrase “any invention of the contractor” should read to mean those which the employer-contractor secures the ownership by exercising the right to claiming the invention while preventing any disposition of federally funded inventions to a party prior to the contractor’s exercise of

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69 Justice Breyer thinks there should be a limitation to prevent inventors from unilaterally terminating their assignment agreements their employer-contractors through a separate assignment to transfer the ownership of federally funded invention to a third party. Stanford, 180 L. Ed. 2d at 17 (Breyer, J., Dissenting).

70 Stanford, 180 L. Ed. 2d at 12.


72 35 U.S.C. §111. PTO Rule 41(a). Supra, note 57, Chisum §11.02[2][a]. An application should be made by the actual human inventor or inventors even if the inventor or inventors assign all rights to the invention to another person or entity. 37 C.F.R. §1.46.

73 35 U.S.C. §202(c) (3).

74 35 U.S.C. §202(c) (3).

the right.\textsuperscript{76} When the contractor fails to exercise the right, the ownership remains with the employee-inventor. Thus, the term “retain” is used for both contractor and inventor.\textsuperscript{77}

Further, the contractor’s duty of filing a patent application is parallel to the employer’s duty of patent application in the bills.\textsuperscript{78} However, the bills made clear that the application must be filed in the name of the inventor, and thus the text in the Bayh-Dole Act should also read the same way.\textsuperscript{79} In short, these texts tend to support Congress’s intent to introduce a mechanism for employer-contractors to secure the ownership made by their employees though the German EIA bills.

\textbf{B) Employers’ Rights in Employee Invention under U.S. Common Law}

U.S. common law gives employers very limited rights in inventions made by their employees even if they are hired to invent. This is particularly true with respect to university researchers because many of them are hired to teach and conduct basic research. Without any written assignment contract, the majority of inventions fall out of the scope of the Bayh-Dole Act, even if they resulted from federally funded research activities.

As the \textit{Stanford} majority made note, it is often true that property rights in fruits of labor belong to his employer.\textsuperscript{80} This rule does not apply to patents because mere employment is not sufficient to transfer the ownership of employee invention to the employer.\textsuperscript{81} In general, the ownership of inventions belongs to inventors and does not transfer to their employers unless the inventors expressly agree to assign the

\begin{flushright}
\textsuperscript{76} \textit{Id.} §412.  \\
\textsuperscript{77} \textit{Id.} §413.  \\
\textsuperscript{78} \textit{Id.} §413.  \\
\textsuperscript{79} \textit{Id.} §421.  \\
\textsuperscript{80} \textit{Id.}  \\
\textsuperscript{81} \textit{Id.}  \\
\end{flushright}

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inventions. As early as 1843, the U.S. Supreme Court has always assumed ownership of employee inventions to the inventor. However, it tried to keep balance with interests of employers by giving a royalty free non-exclusive license. From the first Patent Act in 1790, the U.S. patent system has been granting patents only to applications filed by the first and true and inventors. The same first Patent Act presumes an invention made by multiple joint-inventors. The employer of an inventor, however, cannot be qualified as a co-inventor. Regardless of financial contribution or an instruction given by a natural person-employer, she cannot obtain any rights in the ownership of invention unless she is a joint inventor of the invention that resulted from joint labors with her employee-inventor. To qualify as a joint-inventor, she must make a contribution to the conception of the invention. This is a stark contrast to the ownership of authorship under U.S. Copyright Law, which gives the ownership directly to employers under the work-for-hire doctrine.

Therefore, universities cannot be a co-inventor and thus, can secure the ownership of invention only when they receive the ownership from inventors through an express assignment agreement. To protect interests of employers who fail to execute an express agreement, U.S. Courts developed common law rules to give some rights to such employers; (1) if an employee is specially hired to make the particular invention or

82 Id. at 12.
83 Supra note 57, Chisum on Patents, §22.03.
84 Id.
85 Patent Act of 1790, §6. Since patent applications were not examined under 1790 Act, a patentee needed to produce evidence that he is a first and true inventor for enforcing his patent at a court.
86 Id. §1. For a general discussion, see supra note 57, Chisum on Patents, §2.02[1].
87 Steams v. Barrett, 1 Mason 153, 22 F.Cas. 1175, No. 13,337 (C.C.D. Mass. 1816) cited in supra note 57, Chisum on Patents, §2.02
88 Stern v. Trs. of Columbia Univ., 434 F.3d 1375, 77 U.S.P.Q.2d 1702 (Fed. Cir. 2006). See also, supra note 57, Chisum on Patents, §2.02[2][a].
89 17 U.S.C. §101. For a discussion to compare the ownership rules between copyright and patents, see supra note 54, LaFrance at 100.
(2) if an employee is hired to make inventions in general. Universities also obtain these rights when their employment with inventors meets these conditions. However, it is unlikely that federally funded inventions meet the second condition, which gives rise to the ownership to universities.

Interestingly, the foundation of the current common law rule of ownership allocation is developed through the federal government's struggles over the ownership of their employees' inventions. One of the earliest cases disputing the ownership of an employee invention is *United States v. Burns* (1871). In this case, the inventor was a Major in the United States Army and his duty had nothing to do with making inventions. He invented a tent during his employment and obtained a patent on the invention. Although the Army agreed to pay a royalty for a license to use his patented tent, it later attempted to avoid payment. While affirming the Court of Claims’ judgment to order the payment, the U.S. Supreme Court commented as to the government’s rights in the ownership of invention, "there is no right to use an invention made by an employee without a license unless the employee was ‘specially hired to make experiments with a view to suggest improvements, devices a new and valuable improvement ...’".

This ownership rule, exclusive to inventors, is further reinforced in *Solomons v. United States* (1890) another case involving a federal government employee; the Court held that the mere presence of an employment contract with an inventor does not give rise to any rights in the invention for his employer. In dicta, the Court commented on the applicability of this rule to private employee-inventors in the same force.

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90 *U.S. v. Burns*, 79 U.S. 246 (1870)
91 *Id* at 252.
result, the ownership rule, exclusive to inventors, took a firm root as a common law rule in U.S. case law.

Although U.S. Courts have consistently denied any rights in the ownership to non-inventors, only because the invention resulted from the performance of an employment contract, they have been concerned about fairness and equity with respect to interests to employers who provided physical facilities and financial supports for making the invention.\(^94\) Such concern led to the development of two exceptions to the ownership exclusive to the inventor rule: (1) a non-exclusive personal non-transferable license called ‘shop right’ and (2) a duty of assignment based on the contract to hire inventors for inventing particular subject matter. The McClurg case was decided in 1843 and involves an invention made by an employee of a private firm. In this case, the U.S. Supreme Court affirmed a Circuit Court’s finding to presume a license with respect to an improvement made by the inventor in the course of his employment.\(^95\) Relying on McClurg, the Court endorsed the presence of an implied license in Hapgood, another case involving an employee-inventor of a private firm. However, the Court clearly distinguished the nature of employment giving rise to a license from that of employment, giving rise to a duty to assign rights in the ownership of invention.\(^96\) Although the inventor was hired to invent in general, such employment gave rise only to a personal and non-transferable license. The Court denied the Plaintiff’s claim to transfer the ownership of invention.

This implied license was further elaborated in the context of the employment law rule in the government employer case discussed above, Solomons.\(^97\) The Court

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\(^94\) Supra note 57, Chisum on Patents, §22.03[d].
\(^95\) McClurg v. Kingsland, 42 U.S. 202, 1 How. 202, 11 L.Ed. 102 (1843).
\(^97\) Solomons V. U.S., 137 U.S. 342 (1890).
made it clear that an employee has given his employer an irrevocable license to use his invention if he is hired to invent something. The Court explained a justification of such implied license relying on the fact that the inventor “recognized his obligations of service flowing from his employment and the benefits resulting from his use of property, and the assistance of the co-employees, of his employer.”\(^{98}\) In short, the U.S. Supreme Court acknowledged the fundamental employment rule. Nevertheless, the Court decided to maintain the supremacy of the ownership exclusive to the inventor rule while giving a license to remedy employers for their loss of rights in the ownership of inventions, a type of property resulting from their employees’ labor. The Court later called this royalty free non-exclusive license as a “shop right” by giving definition that “where a servant, during his hours of employment, working with his master’s materials and appliances, conceives and perfects an invention for which he obtains a patent, he must accord his master a non-exclusive right to practice the invention.”\(^{99}\) Since employee-inventors receive federal funds from universities, as well as, assistance of co-workers and access to facilities, universities are clearly entitled to a “shop right” for federally funded inventions made by their employees. However, such right has no value to universities because universities do not practice inventions by themselves and a “shop right” is non-transferable.

In addition to being subject to "shop rights," U.S. employees are under a duty to transfer rights in the ownership of their inventions if the nature of employment indicates that the employees are specially hired to invent a specific machine or process. It is unlikely that the employment between universities and their employees fall into this category. In *Standard Parts Co.*, the employment contract between a private employer

\(^{98}\) *Id.*, at 346.

\(^{99}\) *United States v. Dubilier Condenser Corp.*, 289 U.S. at 188.
and its employee expressly indicated that the inventor was hired to develop a process and machinery for the production of a part used in a particular product of the employer.\footnote{Standard Parts Co. v. Peck, 264 U.S. 52 (1924).} Although the contract was silent with respect to patents resulting from the development, the Court affirmed the District Court's decree to order the employee to transfer the ownership of patents to his employer. Even if a researcher is hired to conduct a particular research project identified in a funding agreement, it is unlikely that the employment contract with the university met this degree to specify subject matter of invention which gives rise to an ownership assignment duty.

U.S. common law requires a high degree in identifying subject to be invented because this “specially hired to invent” doctrine is an exception to the ownership rule exclusive to inventors. U.S. Courts repeatedly held that an employment contract to hire an employee for inventing something in general does not give rise to a duty of assignment.\footnote{Supra note 57, Chisum on Patents, §22.03[2]. E.g., Aetna-Standard Eng’g Co. v. Rowland, 493 A. 2d 1375, 228 U.S.P.Q. 292 (Pa, 1985).} In another case involving a government employee, \textit{Dubilier Condenser Corp.}, the U.S. Supreme Court emphasized the distinction between the contract of hiring an inventor for conducting research and making inventions in general, and that of hiring an inventor for making a particular invention.\footnote{U.S. v. Dubilier Condenser Corp., 289 U.S. 178, 17 U.S.P.Q. 154 (1933).} According to the majority in \textit{Dubilier}, hiring an employee for making an invention gives rise to an ownership assignment duty with respect to an employee invention, only if the invention is the precise subject of the employment contract. This follows that a term in the contract must support what the employer paid for and consequently belongs to the employer. The Court highlighted the distinction between rights in the ownership of inventions and other types of properties resulting from regular labor. Only the former resulted from
inventive activities exercising their unique creativity beyond ordinary skill. Due to this special nature of inventions, rights in the ownership of the invention do not transfer to employers unless employees specially bargained for and agreed to the compensation for the inventions when they entered into the employment contract. It is rare for universities to have an employment contract detailing tasks for university researchers. Further, university researchers engage in basic research, which usually results in inventions that needs further investment for commercialization. Inventors did not have an opportunity to bargain for such inventions when they were employed by universities.

The Court also used this special nature of invention to define the scope of “shop rights.” Employers are in equity entitled only to a license to use the invention but have no equity to demand a transfer of the ownership of invention because the invention is the original conception of the employee; it should remain as the property of the employee.\textsuperscript{103} In \textit{Dubilier Condenser Corp.}, the nature of the employment contract only supported that the inventor was hired for conducting research in general. This finding led to the Court’s rejection to transfer patents held by the employee-inventor to the federal employer. Thus, \textit{Dubilier} also confirms that universities can only obtain a “shop right.”

This reluctance of implying a contract to assign rights in the ownership of invention is supported by the patent policy for promoting innovations through inventions. To preserve incentives to invent, U.S. case law prevents employers from taking away property rights in the invention and secures employee-inventors opportunities to bargain with their employers for fair value of the invention.\textsuperscript{104} In other words, the patent policy of innovation promotion through a reward to inventors is

\textsuperscript{103} \textit{Id.}, at 188.
\textsuperscript{104} \textit{Supra} note 54, LaFrance at 93; \textit{Supra} note 57, Chisum on Patents, §22.03[2].
implemented through the bargain between inventors and their employers over a transfer of property right in the invention.

The Bayh-Dole Act touches upon neither a “shop right” nor the “specially-hired doctrine.” Under the common law ownership rule, in addition to the contractors, the government may have a “shop right” with respect to inventions made by their contractors’ employees depending on the nature of contract. Some may view the provision to require an agreement in the contract with respect to the government’s right to use the invention as simply confirming the common law “shop rights.”

Bayh-Dole’s legislative history rejects such view and supports a view that the right is created only through an express license with the contractor. In the early effort to develop a uniform patent policy for the ownership of federal employees, the government issued an executive order including the definitions of the employment which gives rise to the duty to transfer the ownership of invention and that of giving rise to a “shop right.” A report leading to the executive order also included a recommendation for the ownership of the federally funded inventions developed by government contractors. It did not recommend using the definitions for deciding the ownership of contractor inventions; instead it adopted a general rule to retain the government ownership of such inventions with some exceptions. The recommendation required inclusion of a clause to grant the government a right to use the invention and “March-in Rights” in the contract between the federal agency and its contractor when an exception applies and the government allows the contractor to retain

108 Id., at 5. O’Connor et al., at 8.
ownership of federally funded inventions. 109 This recommendation was implemented by the Kennedy Administration in 1963. 110 Since the Bayh-Dole Act codified government’s rights, the rights to use the invention under the Act should be viewed separate from a “shop right” under the common law ownership rule. Thus, these rights are available only through an express license from the contractors who hold the ownership of inventions and patents.

Throughout legislative history, contractor-employment relationship has been left behind from the exercise to develop the best practice of ownership allocation because the exercise focused on the allocation between the government and its contractors. 111 Such relationship was only discussed with respect to the German EIA based bills. 112 In other words, implementation of the best ownership allocation relied on the assumption that contractors are able to secure ownership of all inventions that fall into the definition of “subject invention” through pre-invention assignment contract practice until the bills introduce an ownership transfer mechanism in operation of law. Unfortunately, this assumption is not always proven true as illustrated in Stanford. Moreover, Congress has never been able to pass the bills. Common law rule is not helpful for contractors, particularly universities, to secure the ownership of invention if they fail to execute an assignment contract. If a contractor fails to secure the ownership, the federal government loses rights in the federally funded invention because all rights are secured only through an agreement with its contractors.

109 Id.
111 O’Connor et al., at 15.
4. Unintended Results: Non-Uniform Assignment under State Contract Law and Special Legislations

Even if contractors execute an express assignment contract with their employees, it is unclear whether the assignment duty is enforceable if the duty includes assignments of all inventions which fall into the definition “conceived and first actually reduced to practice in the performance of work under a funding agreement.” The *Stanford* majority suggests such assignment duty is overbroad. Moreover, enforceable scope of such assignment agreement may differ from one state to another. Such non-uniformity of securing the ownership of federally funded inventions through pre-invention assignment contract hinders promoting the goals of the Bayh-Dole Act.

Despite the important role played by the pre-invention assignment contract in implementing a federal policy, U.S. Courts leave interpretation of contract terms and enforceability to the governance of state policies through the application of state contract law. The U.S. Supreme Court empowered state courts to develop their own law governing a state question such as ownership and transfer of patents. However, state courts in general acknowledge the significance of federal case law and follow the precedent of the U.S. Supreme Court. This led to a development of fairly uniform common law rules in ownership and assignment enforceability throughout state and federal courts in the United States.

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114 *Stanford*, 180 L. Ed. 2d at 16
115 *Infra* Part 1, 2C.
116 *Supra* note 57, Chisum on Patents, §22.03[4].
117 *Erie R. Co. v. Tompkins*, 304 U.S. 64 (1938).
Although the uniform common law requires an express agreement to transfer the ownership, the state law governs the agreement in general with some exceptions.\textsuperscript{119} One such exception is the question, whether a patent assignment clause creates an automatic assignment?\textsuperscript{120} The question is governed by the federal law because it closely relates to the question of standing in patent cases governed by a federal law. Under the Federal Circuit case law, the contract language “agree to assign” indicates a mere promise to assign; thus, the assignment of future inventions does not occur unless a subsequent written instrument executes the assignment.\textsuperscript{121} In contrast, the language “do assign” or “will assign” indicates a present assignment and rights in the inventions are automatically transferred to the employer as soon as the inventions are completed.\textsuperscript{122} Accordingly, whether a contractor secures a transfer of ownership of a federally funded invention depends on the terms used in the pre-invention assignment contract that the contractor and its employees agreed upon, thus contractors easily fall into a technical drafting trap.\textsuperscript{123} Although it is likely that state courts also follow the Federal Circuit case law, they may apply their own law, which may lead to a different conclusion with respect to the ownership of a federally funded invention.

Further, different state public policies, for the ownership of an assignment agreement in employment contracts, lead to non-uniformity of the scope of inventions.


\textsuperscript{121} \textit{Id.} at 1290; \textit{FilmTec Corp. v. Allied-Signa, Inc.}, 939 F.2d 1568, 1572 (Fed. Cir. 1991); \textit{Stanford}, 583 F.3d at 841.

\textsuperscript{122} Justice Breyer criticize this interpretation to distinguish two equitable claims based on the terms in pre-assignment contracts and urge to apply the pre-\textit{FilmTec} rule that treat two claims equally and give the ownership of invention to Stanford because the Stanford contract came first and then subsequently obtained a post-invention assignment. \textit{Stanford}, 180 L. Ed. 2d at 20 (Breyer, J., Dissenting).

\textsuperscript{123} \textit{Id.}
which contractors can secure the ownership of federally funded inventions from their employees. In general employers are not required to pay any additional compensation as a consideration for a transfer of rights in the invention. This is because U.S. courts view the payment of salary, assistance of co-employees, and right to use an employer's facility constitutes sufficient consideration. Legal scholars criticize case law endorsing U.S. industry pre-invention assignment practice without any compensation and some argue that lack of additional compensation dampens incentive to invent and contradicts with the federal policy of patent system under the Copyright and Patent Clause. These academic views are not persuasive to U.S. courts, which refuse to find any right that the constitutional clause gives rise to inventors. Since the common law ownership rules require such pre-invention assignment agreement, being not only expressive but also clear, to give a notice to inventors with respect to what they give up in exchange for their salary, courts find inventor salary as sufficient consideration to enforce the agreement.

Although U.S. Courts favor to enforce an express assignment contract, if employees’ duties of assignment are overbroad, they may decline to enforce an agreement literally. Courts may reinterpret the overbroad agreement to limit the

125 E.g., Goodyear Tire & Rubber Co. v. Miller, 22 F.2d 353 (9th Cir. 1927).
129 Supra note 39, Jay Dratler Jr., at 142.
duties within a reasonable scope.\textsuperscript{130} In some states an employment contract including an overbroad assignment agreement is void and unenforceable.\textsuperscript{131} In general, legislations enacted in these states prevent employers from enforcing a contract obligating a transfer of rights in the ownership of the invention, which is developed entirely on the employee's own time unless, (1) the invention relates to employers' business or to the employer's actual or "demonstrably anticipated" research and development; or (2) results from work performed by the employee for the employer.\textsuperscript{132} In contrast only one State, Nevada, enacted an Act which allows transfer of rights in the ownership of invention automatically without any express agreement if the invention is made during the term of employment and fell within the scope of the employee’s job description.\textsuperscript{133} In some states, a contract to transfer rights in the ownership of any invention made during the term of employment may be valid and enforceable regardless of the inventor's duty or employer's business as long as the invention resulted from work the employee conducted for his employer.\textsuperscript{134}

In short, the ownership of an invention may or may not transfer to contractors depending on the state law which governs the employment relationship. There is no uniform federal law to govern the enforceable scope of an employee invention assignment agreement. When the U.S. Congress failed to pass the German EIA based bills, it also lost a chance to develop a uniform policy to govern the assignment contract


\textsuperscript{132} Supra note 54, LaFrance at 96.

\textsuperscript{133} Supra note 54, LaFrance at 88

for employee inventions including federally funded inventions. Further, the Stanford majority’s comment on the scope of subject invention suggests its interest to override the state contract law and special legislation and prevent the enforcement of overbroad assignment duty. This leads to another uncertainty, whether the ownership of a federally funded invention may or may not transfer to contractors.

Finally, the Stanford majority’s interpretation of the Bayh-Dole Act did not prevent employee-inventors from transferring the ownership of federally funded inventions to a party other than their employer- contractors. Stanford could not have avoided its loss of ownership even if it executed an automatic assignment with the inventor had the inventor already executed an assignment contract with a third-party prior to the Stanford assignment. In academic-industry collaborations, researchers move back and forth between universities and industry partners and conduct different aspects of research project in various locations with different research teams. Researchers sign multiple assignments with a variety of terms throughout the project, which readily leads to inconsistent duties on researchers as highlighted in Stanford. With limited resources, it is impossible for contractors to conduct due diligence on all researchers with respect to their prior assignments.

II. Ownership Transfer Mechanism under Federal Laws for Handling National Security Related Invention

136 Stanford, 180 L. Ed. 2d at 16. (“Stanford’s reading suggests that the school would obtain title to one of its employee’s inventions even if only one dollar of federal funding was applied toward the invention’s conception or reduction to practice.”)
137 Id. at 19.
138 Supra note 2, Reder at 16.
Since a uniform policy is implemented through contractors’ ownership of federally funded inventions, the Bayh-Dole Act should adopt a mechanism to transfer the ownership to contractors. Congress incorporated such a mechanism in federal laws for handling inventions closely related to national security. Statutes and regulations dealing with such invention provide a mechanism to secure the government’s ownership through an automatic transfer by operation of law. They also provide a procedure for inventors and their assignees to challenge the federal government’s ownership to protect their interests. Stanford urged the Supreme Court to read the Bayh-Dole Act to implicitly adopt the mechanism. The Court rejected Stanford’s interpretation because the Act does not include clear language to negate the common law ownership rules and lack procedure to protect inventors and third-parties who did not receive federal funds.\(^\text{139}\) This suggests that the Bayh-Dole Act may be revised to adopt the mechanism from these federal laws by including texts to vest the ownership in contractors and adopting a procedure to protect a third-party. However, such a revision may not be feasible because it will substantially increase administration costs on both the USPTO and contractors.

1. **Atomic Energy Act**

Atomic Energy Act of 1954 (“AEA”) is an Act enacted by Congress to secure the government’s ownership by operation of law.\(^\text{140}\) Subject invention of AEA is an invention which is useful in the utilization of special nuclear material or atomic energy in atomic weapons, thus closely related to national security (“NMAE invention”).\(^\text{141}\) Thus, the Act includes a declaration of the strong federal policy for using the invention

\(^{139}\) *Stanford*, 180 L. Ed. 2d at 13-16.


\(^{141}\) *Id.*, at§11 and §151a-b.
to improve the general welfare and avoid its use in an atomic weapon.\textsuperscript{142} Reflecting this policy, the Act prevents the USPTO from issuing a patent to a NMAE invention as long as it is used in an atomic weapon.\textsuperscript{143} It makes clear that the federal government’s ownership of the invention falls into the definition of NMAE invention by operation of law. The Act uses the language which is very different from that of the Bayh-Dole Act in defining ownership. A provision for defining the government’s ownership of subject invention reads that any NMAE invention is, “vested in and...the property of the Atomic Energy Commission if the invention is made or conceived in the course of any contract or arrangement entered into with or for the benefit of the Commission.”\textsuperscript{144}

To secure the federal government’s ownership of a NMAE invention by operation of law, AEA provides a mechanism to find out any NMAE inventions included in a patent application filed by an inventor regardless of whether the inventions resulted from federal funds. Like the Bayh-Dole Act with respect to the contractor, AEA imposes an obligation to all applicants to file a statement explaining the full facts surrounding the making and conceiving the invention when they file a patent application directing to NMAE inventions.\textsuperscript{145} AEA requires the USPTO to forward copies of the application and the statement to the Atomic Energy Commission (“AE Commission”) as soon as the USPTO concludes that the invention is in the condition of allowance.\textsuperscript{146} The USPTO must issue a patent directly to the AE Commission, if the Commission directs.\textsuperscript{147} The Act also provides a right to applicants to challenge the Commission's ownership of invention if applicants believe that the invention is not

\textsuperscript{142} Id. at §1.
\textsuperscript{143} Id. at §151 a.-b.
\textsuperscript{144} Id. §152.
\textsuperscript{145} Id.
\textsuperscript{146} Id.
\textsuperscript{147} Id.
made or conceived in the course of any contract or arrangement with the Commission.  

The Act imposes a duty on inventors to file a report of an invention with the AE Commission or a patent application with the USPTO if they made an Atomic Energy invention. The dispute of ownership is resolved through an interference procedure at the USPTO. The Act reinforces the government’s ownership by negating any waiver or giving the authority to the AE Commission to request the USPTO to transfer the ownership of the patent in the NMAE invention if an applicant submits a statement including false material statements.

It should be noted that NMAE inventions are different from other inventions because the federal government is able to prevent the USPTO from issuing a patent even if the government does not have any rights in the ownership of the inventions. Not only AEA but also the Secret Invention Act gives the government authority to dispose of rights in any property right from the invention. Under the Secret Invention Act, the USPTO screens patent applications to find those directing to NMAE inventions and may issue a secret order to keep the invention, if the disclosure of the invention is detrimental to national security regardless of government ownership. If a secret order is issued, a grant of patent is withheld as long as the disclosure is detrimental to security. The only remedy for the applicants’ loss of patent rights is monetary compensation. Further, whenever a patent is issued on an NMAE invention, the Act provides a right for

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148 Id.
149 AEA §151 c.
150 Supra note 57, Chisum on Patents, §1.1
152 Id. §181
153 Id. §183
the Commission to use the invention, as well as, a right to issue a compulsory license for a third-party to use the invention.\textsuperscript{154}

2. **National Aeronautics and Space Act**

Another type of invention, closely related to the national security, is inventions relating to aeronautical and space activities. Congress felt it necessary to promote such activities for improving the general welfare and national security and enacted the National Aeronautics and Space Act (“NAS Act”).\textsuperscript{155} Under the NAS Act, aeronautical and space activities include (1) research into and the solution of problems of flight within and outside the earth’s atmosphere, (2) the development, construction, testing and operation for research purposes of aeronautical and space vehicles, and (3) such other activities as may be required for the exploration of space.\textsuperscript{156} Due to a strong federal policy for national security, as done in EIA, the NAS Act makes clear the transfer of the ownership of federally funded inventions in operation of law through the provision, which reads “such invention shall be the exclusive property of the United States”\textsuperscript{157}

The NAS Act provides a mechanism similar to the EIA to secure government ownership of subject invention. The NAS Act imposes all applicants to file a statement surrounding the circumstance under which the invention is made so that National Aeronautics and Space Administration (“NASA”) can determine if the invention resulted from the performance of any contract work with NASA.\textsuperscript{158} It gives authority to NASA for requesting the USPTO to issue a patent directly to it on behalf of the federal

\textsuperscript{154} AEA §153.
\textsuperscript{155} National Aeronautics and Space Act (NASA) of 1958, 85 P.L. 568, §102, 72 Stat. 426.
\textsuperscript{156} Id. §305(a).
\textsuperscript{157} Id. §305(c).
\textsuperscript{158} Id. §305(c).
government.\textsuperscript{159} It also provides an applicant the ability to challenge NASA’s decision of the ownership through the interference procedure at the USPTO.\textsuperscript{160}

The Act imposes an obligation on all applicants to file a statement explaining the circumstance under which the invention was made and the relationship of the invention to the performance of work under any contract of NASA when they file a patent application directing to NASA inventions.\textsuperscript{161} It imposes the USPTO to inform and give access to the application and statement to NASA and gives a right to request the USPTO to issue a patent directly to NASA.\textsuperscript{162} It is likely that many aeronautical and space activity related inventions fall into the category of inventions the disclosure of which is detrimental to national security. Thus, through the Secret Invention Act, the government has a right of disposition with respect to such invention with fair compensation to applicants.

3.  Applicability of the Ownership Transfer Mechanism to the Bayh-Dole Act

Unfortunately, the mechanisms to secure the ownership of federally funded inventions included in the AEA or NAS Act is an ill fit to the Bayh-Dole Act. These Acts impose a heavy burden on the USPTO to screen inventions and inform the government if any invention falls into the categories of invention defined by the Acts so that related federal agencies can determine if the government has any right in the ownership of invention which is included in applications pending in the USPTO.\textsuperscript{163} The Acts also require applicants to submit a statement surrounding the circumstance that the invention was made.\textsuperscript{164} This screening process is feasible at the USPTO only because

\textsuperscript{159} Id. §305(d).
\textsuperscript{160} Id.
\textsuperscript{161} Id. §305(c).
\textsuperscript{162} Id. §305(d).
\textsuperscript{163} AEA §152; NASA §305(c).
\textsuperscript{164} AEA §151(c); NASA §305(c)
the definition of categories of invention that the Acts apply is narrowly tailored and the number of applications directing to inventions falls within the categories is relatively small. Expanding the categories of inventions to cover all types of inventions that contractors engaged in R&D is impossible. Imposing contractor-applicants a duty to file a statement reporting inventive activities increases unnecessary administrative burden to both the USPTO and applicants. In short, the increased administrative burden makes it impossible for the Bayh-Dole Act to adopt the ownership transfer mechanism from AEA or NAS Act.

III. Ownership Transfer Mechanism under the German EIA

As Congress has already done in the past, a reasonable place to look for an ownership transfer mechanism is foreign employee invention systems, particularly the German EIA, which is a model for many Asian and European countries. This is particularly true with the Bayh-Dole Act because texts in the Act suggest that the Act assumes the ownership rules for employee inventions in the failed bills which were based on the German EIA. Overall, the mechanism to secure rights in the ownership of invention is very similar to the one in the Bayh-Dole Act, sharing the following five key features: (1) a duty to report;\(^ {165}\) (2) a right to claim the ownership of an invention resulting from the performance of employment or research contract;\(^ {166}\) (3) duty to file domestic and foreign patent applications;\(^ {167}\) (4) retaining the ownership of invention by the inventor if no one exercises the right to claim;\(^ {168}\) and (5) right of reasonable

\(^{165}\) German EIA §5
\(^{166}\) EIA §6
\(^{167}\) EIA §13 and §14
\(^{168}\) EIA §§8
compensation for a transfer of rights in the ownership of invention. Further, the fundamental ownership rules under German Patent Law are the same as the rules under U.S. Patent Law. Legislative histories of these Acts reveals a cornerstone event in one country followed by a similar event in the other jurisdiction, which suggests U.S. and German governments and legislators were keenly aware of a similar exercise they were engaging. Reflecting the risk adverse German culture that prefers written rules and detailed code of conduct, the German EIA resulting from this exercise has more details in procedures for transferring the ownership and mechanisms to protect interests for employees than the Bayh-Dole Act.

1. **Origin of Common Key Features: Possible Legislative Interaction**

The German EIA provides a comprehensive mechanism for an employer to secure all property rights in the ownership of invention made by employees. Due to the unique feature for compromising public interests based on employment and patent law, the German legislator enacted a law independent from German Patent Law including details for rights and obligations between employers and their employees and procedure to transfer rights in the ownership of invention from employee-inventors to their employers.

In Germany, an effort to clarify ownership and compensation started at the beginning of the 20th Century as the number of employee-inventors increased. This is also the time when the U.S. Congress started to examine the government’s rights to use inventions made by a private person, as well as, federal employees leading to the Bayh-

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169 EIA §9
Dole Act. During WWI, German employee-inventors were successful in developing a collective bargaining power leading to a first collective labor agreement in the chemical industry in 1920, which dealt with ownership and compensation for employee inventions. Other industry sectors followed this example. After several attempts to replace the collective labor agreements with a law, the key necessity for promoting technological advancement for warfare motivated the Minister of Armament to issue a regulation to handle employee inventions in 1942, during WWII. The 1942 regulation already included the key features of the ownership transfer mechanism in the current EIA. The regulation was revised in 1943 to add guidelines for calculating the amount of remuneration with a list of factors which should be taken into account for the calculation.

The same year, U.S. President Roosevelt requested the United States Attorney General to develop a uniform patent policy for federal employees and contractors. A report was published by the Attorney General a few years later in response to the President's request. The report recommended a mechanism to decide the ownership by classifying inventions developed by federal employees into three categories, which are somewhat similar to the categories of inventions under the German EIA.

As soon as it recovered from the aftermath of WWII, the German government resumed its effort to enact a law to allocate rights in the ownership of employee inventions.

171 O’Connor et al., at 4.
172 Reichstarifvertrag für die akademischgebildeten Angestellten der chemischen Industrie as of April 27, 1920; Supra note 170, Harhoff & Hoisl at 5
174 Supra note 170, Harhoff & Hoisl at 7.
175 Richtlinien für die Vergütung von Gefolgschaftserfindungen (Guidelines for Subordinate Inventions).
176 O’Connor et al., at 6.
invention and compensation.\textsuperscript{178} Although the first bill was introduced in 1952, the bill failed to be enacted into law due to lengthy discussions. After a few attempts, the current German EIA became effective in 1957 including all five key features.\textsuperscript{179} The Act was revised in 1959 to incorporate official guidelines for calculating the amount of remuneration.\textsuperscript{180}

It is also interesting to note that in 1963, only a few years after the completion of German EIA’s legislation procedure, the U.S. government published the Kennedy Patent Policy which is most influential to the current provisions in the Bayh-Dole Act, because it recommended all the key features in its current provisions.\textsuperscript{181} Although the Kennedy Patent Policy was never implemented in a government-wide patent policy, many federal agencies adopted their own policies incorporating a few or all of the key features.\textsuperscript{182} The key features survived a modification of the Kennedy Patent Policy by the Nixon Administration.\textsuperscript{183} Finally, they were codified when the Bayh-Dole Act was enacted in 1980.

Likewise, all five key features in the German EIA remained the same since its enactment in 1957. The EIA has been recently revised twice in 2002 and 2009, which did not significantly affect the key features.

\textsuperscript{178} Germany was divided into West Germany (Federal Republic of Germany) and East Germany (German Democratic Republic) over the period between 1949 and 1990. East Germany had its own employee invention system during the period.

\textsuperscript{179} Arbeitnehmererfindungsgesetz, ArbEG (Employees' Inventions Act). English Translation is available in Helmut Reitzle et al., Gesetzü filler Arbeitnehmererfindungen / Act of Employees' Inventions (2007).

\textsuperscript{180} Richtlinie für die Vergütungen von Arbeitnehmererfindungen im privaten Dienst (Guidelines for the Remuneration of Employees' Inventions in Private Employment), 20 July 1959.


\textsuperscript{182} O’Connor et al, at 11.

In parallel to the above exercise leading to the Bayh-Dole Act, the U.S Congress also examined a series of bills starting the 1970s\textsuperscript{184} followed by the last bill in 1982.\textsuperscript{185} Many provisions of these bills are a translation of the German EIA. These bills confirm U.S. Congress’ strong interests in the German EIA, which should have resulted in a clear influence on the overall structure of the Bayh-Dole Act.

2. **Ownership Rules under the German EIA**

   A) **Fundamental Rule: Inventors as Original Owners**

   Under German Patent Law, a right for patent is initially vested only in the sole inventor or co-inventors who have made a creative contribution for the invention.\textsuperscript{186} An employer cannot be an inventor or co-inventor unless he or she makes such contribution. Only a natural person can make such contribution, thus a legal entity cannot be an inventor.\textsuperscript{187} This fundamental rule is universal to all branches of intellectual property including copyright under the German legal system. There is no exception to the rule such as the “work for hire” doctrine under U.S. Copyright Law.

   Like the U.S., an examination of inventorship is the starting point for deciding ownership. Patent law applies to determine who is/are the inventor(s). However, like U.S. Patent Law, it plays a very limited role in determining the ownership of invention before filing a patent application. In general, property and contract principles under Civil Codes govern an assignment of property rights including those in the ownership of invention.\textsuperscript{188} Regarding the ownership of property rights resulting from the performance of duty under an employment contract, German labor and employment law

\textsuperscript{185} Kastenmeier bill, H.R. 6635 (97th Congress, 1981- 82)
\textsuperscript{188} Kraßer, Patentrecht, 2009 (6th Edition), § 40, III
may provide a special rule governing a contract between employers and their employees reflecting public policy. 189 German Labor and Employment Law make clear that fruits of employees' labor belong to their employer. 190 This ownership rule conflicts with the patent law rule of inventors as original owners. To remove this conflict, while achieving the public policies involved in both patent law and labor and employment law, German legislators enacted a special law, the EIA, to govern an assignment of rights in the ownership of invention between employers and employees. 191

**B) Employers’ Rights in Employee Invention under the German EIA**

Under the German EIA, the patent law rule that inventors are original owners prevails over that of employment law. Thus, the German EIA rule is perfectly in-line with U.S. law in clarifying rights in the ownership of invention originally vested in employee-inventors. 192 However, it differs from the U.S. rule in guaranteeing employers a right to claim a transfer of the ownership of employees' inventions or an exclusive license for the inventions. 193 In other words, the German EIA limits the freedom of contract and makes any contract conflicting with a provision of EIA void. 194

Due to the mandatory rule reflecting strong public policies, EIA makes clear the scope of inventions that it governs. The scope covers any technical subject matter regardless of its patentability as long as it is made by an employee-inventor. 195 Under German Employment Law, an employee is a person who is bound by instructions on the grounds of an employment relationship and obliged in personal dependence on another,

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189 Kraßer, Patentrecht, 2009 (6th Edition), § 21, 1 a
190 BAG (Federal Labour Court) 1961 NJW 1509; Münchener Kommentar zum BGB (Civil Code Commentary), Müller-Glöge, 2009 (5th Edition), Section 611, Marginal No. 1073.
191 Supra note 11, Trimborn at 2; Reitzle, at 1.
193 EIA § 6.
194 EIA § 22.
195 EIA §1. Supra note 170, Harhoff & Hoisl.
the employer.\textsuperscript{196} The technical subject matter that EIA governs is classified into inventions and technical improvement proposals.\textsuperscript{197} Inventions are distinguished from technical improvement proposals with respect to whether it is qualified for protection under German Patent Law or utility model registration.\textsuperscript{198} Subject matter, which is not qualified for patentability falls into the category of proposals for technical improvements and not subject to various duties relating to patent applications.\textsuperscript{199}

Patentable inventions are further classified into two types: service inventions and free inventions.\textsuperscript{200} An invention made during a term of employment is a service invention if (1) it resulted from the employee’s tasks in the employer's business or public administration or (2) it is essentially based upon the experience or activities of the employer's business or public administration.\textsuperscript{201} Any other inventions that do not fall into the definition of service invention are free inventions.\textsuperscript{202}

With respect to a service invention, the EIA guarantees employers a right to claim ownership of all property rights in the invention.\textsuperscript{203} Before the 2009 Revision, an employer had to submit a document that meets certain formality requirements under the Civil Code.\textsuperscript{204} The revision eliminated the formality requirement and made it possible for employers to make a declaration by an e-mail or facsimile.\textsuperscript{205} Accordingly, transfer under the German EIA is not automatic, thus different from the U.S. AEA and NAS Act,

\textsuperscript{196} Supra note 11, Trimborn at 13.
\textsuperscript{197} EIA $\S$ 2, $\S$ 3.
\textsuperscript{198} EIA $\S$. 2.
\textsuperscript{199} EIA $\S$. 3.
\textsuperscript{200} EIA $\S$4(1)
\textsuperscript{201} EIA $\S$. 4(2).
\textsuperscript{202} EIA $\S$. 4(3).
\textsuperscript{203} EIA $\S$. 6(1).
\textsuperscript{204} German Civil Code, $\S$. 126b.
in which an assignment of rights in the ownership of invention is automatic in the operation of law. Like an assignment based on the “agree to assign” term in Stanford, an assignment is executed only when the inventor’s employer exercises its right of claiming ownership. This pre-2009 requirement of written instrument for executing an assignment is also similar to the practice that U.S. employers widely adopt by using the “agree to assign” term in pre-invention assignment contracts.

A failure to exercise the claiming right may have forfeited the employer’s right in the ownership of service invention under EIA. The German EIA lets employee-inventors retain rights in the ownership and gives freedom to assign the ownership to a third-party including the employer’s competitor if their employers do not exercise their claiming rights, within the “four months from the receipt of proper report.” To remedy this problem, the German EIA was revised in 2009 to introduce a presumption to assume employers’ exercise of their claiming right, unless they send out a declaration to negate their claim and release rights in the invention within four months from the receipt of report submitted by the employee. This assumption made the German EIA’s ownership transfer mechanism complete in protecting employers from loss of their rights in service inventions because of their negligent or ignorance of EIA provisions.

The EIA further protects employers’ rights in making void any transactions of ownership of service invention prior to exercise of claiming rights once an employer exercises its claiming right if the transactions affect the employer’s right. After the

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208 EIA § 6.
209 EIA §6(2).
210 EIA § 7(2).
2009 revision, any prior transaction has become void when the four months for sending a declaration to release a service invention expires.\textsuperscript{211} When an employee submits a report, his employer has two months to request supplementing information in the report.\textsuperscript{212} Upon the expiration of two months, a report is deemed to be complete, which triggers the four month period for sending a declaration to release the invention. Without timely declaration of release, all property rights in the ownership of service invention transfer to the employer.\textsuperscript{213}

Although the Bayh-Dole Act adopts the same key feature, a default rule and a claiming right, the Bayh-Dole Act lacks any mechanism to secure transfer of rights in the ownership of invention between contractors and their employees. Although the Act provides contractors a claiming right with respect to their employer-federal funding agency, it provides no express right to claim the ownership of invention made by their employee-inventors. Whether the contractors can secure the ownership of such inventions depends on the state contract law and special legislations that limit the enforceability of pre-invention assignment despite their duty to transfer rights in such inventions to the federal funding agency if they do not exercise their right to elect title under the current default rule.

Under the German EIA, the complete ownership transfer mechanism functions only with respect to service inventions. To distinguish free inventions from service inventions on which the mechanism functions, EIA imposes a duty on employees to prepare a report on all inventions as soon as employees complete inventions unless such inventions are obviously unrelated to employers’ business.\textsuperscript{214} Once an employer

\textsuperscript{211} EIA § 6(2).
\textsuperscript{212} EIA § 5(3).
\textsuperscript{213} EIA § 7.
\textsuperscript{214} EIA § 5(1) and § 18(1)(3).
decides that an invention constitutes a service invention, the report prepared by its employee must include information sufficient to understand the technical problem, its solution, and how the invention was made. To meet this duty, German inventors are required to keep record, similar to a record necessary for establishing the first-to-invent priority under the U.S. Patent System.

If an employee decides that an invention is a free invention, his employer does not need to prepare a detailed report showing inventive activities. However, the report must always include sufficient information for the employers to confirm that the nature of invention is outside the definition of a service invention. Accordingly, the German EIA incorporates a mechanism to clarify the scope of inventions that is governed by the mandatory ownership transfer mechanism from employees to employers.

The Bayh-Dole Act also imposes a duty on contractors to disclose each subject invention to the federal funding agency within a reasonable time. However, the scope of inventions under the duty of disclosure is not clear from the definition of subject invention. The Stanford Court interpreted the scope of subject invention to include those owned by or belonging to the contractor. This follows that contractors fall out of the duty disclosure boundaries if they fail to secure the ownership of federally funded inventions for lack of written assignment or enforceability of such assignment due to the state contract policy. Moreover, the Bayh-Dole Act does not impose any duty of disclosure on employee-inventors of contractors and solely relies on contracts.

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\footnotesize{215 EIA § 5(1).
216 EIA § 18(1).
217 Stanford, 180 L. Ed. 2d at 13.
219 Infra, Part 1, 2 c).}
between the inventors and contractors.\textsuperscript{220} Because state law also controls these contracts, it is unclear whether these contracts are enforceable with respect to the same scope of inventions for all contractors’ technical employees who have a chance to be involved in federally funded research activities.

Under the German EIA, the transfer of rights through an exercise of claiming right also results in a variety of obligations on employers. First, EIA imposes a duty on employers to pay a reasonable remuneration by providing employees a right for compensation that resulted from the transfer of invention ownership to the employers.\textsuperscript{221} However, an employee cannot enforce his right unless his employer starts practicing the invention.\textsuperscript{222} EIA requires employers to take into account multiple factors for calculating the compensation.\textsuperscript{223} Due to the complexity of taking into account multiple factors, the EIA suggests to consult with the guidelines for calculating the amount of remuneration.\textsuperscript{224}

Second, the EIA imposes a duty on employers to file a German patent or utility model application without delay.\textsuperscript{225} Employers are not released from this duty unless their employee-inventors agree not to file a patent application or protect the invention as trade secret.\textsuperscript{226} However, employers can choose the latter option only if they inform their employee-inventor their decision of trade secret protection while acknowledging patentability of the disclosed invention under German patent or utility model law.\textsuperscript{227} If

\textsuperscript{220} 37 C.F.R. §401.14(f)(2). A model patent contract included in Bayh-Dole Implementation Regulations includes a clause to require contractors to impose a duty on its employees except for clerical and nontechnical employees for disclosing their inventions.
\textsuperscript{221} EIA §. 9(1).
\textsuperscript{222} Supra note 11, Reitzle et al, at 9.
\textsuperscript{223} EIA §. 9(2).
\textsuperscript{224} EIA §. 11.
\textsuperscript{225} EIA §. 13(1). English translation of the guidelines are included in supra note 11, Reitzle et al, 45seq.
\textsuperscript{226} EIA §. 13(2).
\textsuperscript{227} EIA §. 17(1).
an employer fails to file a patent application within a reasonable time, EIA authorizes employees to file an application under the name of the employer at the expenses of the employer. However, the Act does not give an option to return the ownership to employees so they can file an application in their own name even if their employers fail to file an application.

Third, the EIA provides a right for employers to file foreign applications based on the ownership of the invention transferred through the claiming of their rights in employee invention. However, the right functions to impose a duty on employers to file foreign applications because their employees can request a release to allow them to file foreign application by their own, if the employers are not interested in filing foreign applications. Employers must inform their release early enough so employees can file a foreign application within the priority period under the Paris Convention. Although it is very unlikely that employees are interested in securing patents in foreign countries where their employers are not interested in exploiting the invention, if an employee-inventor files and secures a patent in a foreign country, she may assign such rights or grant licenses to any person including the employer's competitors. For equity purposes, the EIA provides a compulsory license for the employer if its employee obtains a patent on the employee’s invention in foreign countries.

Fourth, the EIA imposes a duty on employers for communicating with employee-inventor about patent prosecution. This communication is particularly

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228 EIA § 13(3).
229 Supra note 11, Bartenbach at 700.
230 EIA § 14(1)(2).
231 EIA § 14(2).
233 EIA § 14(3).
234 EIA § 15.
critical if the employer decides to abandon a patent application or patent right, which gives rise to employees’ right for continuing the patent application or maintaining the patent right. To avoid this cumbersome duty, employers in major German companies often offer a lump-sum payment to their employees to compensate a waiver of the communication right.

The Bayh-Dole Act imposes similar obligations on contractors when contractors elect to retain rights in the ownership of federally funded inventions. However, the Bayh-Dole Act does not include a mechanism to effectively enforce these obligations. For example, the Act requires non-profit organization contractors to compensate through royalties sharing with their employee-inventors. The Act provides no method of calculation or sanction for violation. Because the Act gives a broad discretion to contractors-employers, it is very difficult for inventors to dispute the share of royalties. The Act also requires contractors to file domestic and foreign patent applications prior to any statutory bar date. The Act provides sanction for a violation for failing to meet this requirement but the sanction is to simply return the ownership of invention to the federal agency so that the Agency can file a patent application.

Bayh-Dole regulations require election 60 days prior to the date of the statutory bar period; however, it does not require notice to the agency with respect to a patent application. Without any notice, it is very unlikely that the federal agency discovers the contractor’s failure to file a patent application well in advance and prepare to file a patent application on its own prior to a statutory bar date. Even if the federal agency

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235 EIA § 16.
236 Supra note 11, Trimborn at 31-32. In general, German companies pay 50 to 300 Euro for buying out the rights of foreign patent applications and the rights of patent prosecution communication.
238 35 U.S.C. §202(c)(3)
239 Id.
discovers the violation, it is unlikely that the agency files a patent application because federal agencies are very reluctant to interfere with contractors’ technology transfer activities.  

Finally, the Act does not provide any duty on either the federal government or contractors to communicate with inventors about a patent filing or prosecution of their inventions. There is no mechanism for inventors to exercise their right and request retaining the ownership of invention provided in the Act. If a patent application is not filed, inventors are deprived of their rights for compensating the transfer of invention ownership even if contractors elect to retain title of their inventions.

In contrast, the German EIA incorporates a mechanism to protect employees’ compensation rights by allowing them to file a domestic and foreign patent application in a timely fashion if their employers fail to file a patent application. Since these rights of compensation are supported by employers’ ownership of exclusive right to practice the invention, employees do not have any compensation right unless a patent application is filed. The German EIA further protects employees’ compensation rights by giving them opportunities to continue prosecution and maintain patents if their employers decide to abandon a patent application or patent right. Employees lose their rights of compensation if a patent application does not result in a patent grant or a granted patent is invalidated. The German EIA is based on a clear principle that without compensation, the ownership should return to the employee because there is no longer justification for employers to retain the ownership.

242 35 U.S.C. §202(d)
243 EIA §. 14(1)(2).
244 EIA §. 16.
The Bayh-Dole Act provides none of these mechanisms to guarantee an inventors’ right for compensation. Since many NPO contractors’ technology transfer offices are under-staffed, many inventors are frustrated with the delay in filing a patent application and loss of right to obtain a patent. Moreover, Stanford forces these contractors to adopt a practice to use contract terms to trigger an assignment as soon as an invention is complete. Such practice substantially increases a number of inventions that the contractors secure through pre-invention assignments. It is impossible for contractors to file applications for all inventions. The federal agency obtains the ownership in many of these inventions because contractors either refrain from electing to retain the title or violate the duty of timely filing. It is very unlikely that the agency file a patent application for such inventions prior to a statutory bar date.

IV. Finding the Missing Part of the Puzzle: Making the Bayh-Dole Act Complete

1. Adoption of Ownership Transfer Mechanism under the German EIA

Unlike the ownership transfer mechanism under AEA and NAS Act, adoption of the ownership transfer mechanism under the German EIA does not increase administrative burden at the USPTO or applicants. The mechanism is well fit to the Bayh-Dole Act because it was once examined by Congress for adoption in the 1970s and 1980s and the German EIA and Bayh-Dole share common features for ownership allocation. It is unlikely that the U.S. industry and legal community oppose introduction of the ownership transfer mechanism because the introduction of the mechanism was not a reason that the past bills failed to pass Congress. The bills did not

pass because of opposition to a duty on employers to pay a mandatory compensation.\textsuperscript{246} Industry representatives criticized the mandatory compensation to be unfair to employers and impossible to administrate.\textsuperscript{247}

Adopting the ownership transfer mechanism in the Bayh-Dole Act is relatively simple and easy. The current Bayh-Dole provision for contractor’s right to retain title of federally funded inventions\textsuperscript{248} reads very similar to the provision for employers’ claiming right under the German EIA.\textsuperscript{249} Thus, the Bayh-Dole Act can be revised to clarify that an employee-inventor's rights in the ownership of any subject invention automatically transfers to the employer-contractor when the contractor elects to retain title in the invention under the current disposition of rights provision.\textsuperscript{250} Currently the Act requires contractors sending a written election notice only to the federal funding agency.\textsuperscript{251} This written notice executes a contractor's right to retain title of a subject invention when the federal agency receives the notice unless one of the exceptions allows the agency to receive title of the invention.\textsuperscript{252} The current provision can be revised to require contractors sending the same notice to the employee-inventor to execute a transfer of the ownership of the subject invention upon the receipt of notice by the employee-inventor.

To clarify the effect of election, Congress may recycle a provision in the employee invention bills modeled after the German EIA and prevent inventors from

\textsuperscript{246} Supra note 30, Jay Dratler Jr., at 184 n. 204.
\textsuperscript{247} Id.
\textsuperscript{248} 35 U.S.C. §202(a) - Each nonprofit organization or small business firm may, within a reasonable time after disclosure as required by paragraph (c)(1) of this section, elect to retain title to any subject invention...
\textsuperscript{249} EIA §6 - (1) The employer can claim the right to a service invention on an unrestricted or restricted basis. (2) The claiming of right occurs by written declaration to the employee. The declaration shall be submitted as soon as possible, and no later than four months from the receipt of the proper report.
\textsuperscript{250} 35 U.S.C. §202(a).
\textsuperscript{251} 35 U.S.C. §202(c) (2).
\textsuperscript{252} 35 U.S.C. §201(a).
assigning their inventions to a third-party. Such provision will make clear that a contractor’s right to elect to retain title of federally funded inventions cannot be terminated unilaterally by an inventor through a separate agreement to assign the ownership of his invention to a third-party during the statutory two year period in which contractors are required to elect title of the inventions. This will give the priority to contractors’ election rights to any other rights arising from private contracts and prevent inventors from assigning their inventions to a third-party. Once the statutory time period expires without a contractor’s exercise of election right, inventors should retain ownership of the invention and be free to assign the ownership to a third-party for commercialization. Although the current Bayh-Dole Act provides inventors a right to request the federal agency for retention of the ownership of their invention, such request must be granted unless the agency itself files a patent application within a reasonable time and prosecute the application for commercialization.

To have the mechanism effectively function, the Bayh-Dole Act should be revised to clarify the scope of subject invention in which the ownership is transferred by the contractor’s election. The Stanford majority’s interpretation on the definition of subject invention excluding inventions that contractors failed to secure because of a contract drafting trap or limitation on state legislation undermines the Act’s basic objective for implementing a uniform federal policy and conflicts with Congress’ intent to incorporate a mandatory compensation provision into the Bayh-Dole Act in the case

253 H. R. 15512 §412(b)(c) (“Any disposition of a service invention by an employee prior to the time of the declaration of a claim by the employer which impair the employer’s rights under this section is invalid to the extent that it impairs such rights.”) This provision corresponds to EIA §7.
254 35 U.S.C. §202(c) (2). Justice Breyer believes that the current Bayh-Dole Act also guarantees the priority of contractors’ election right over any rights arising from private contracts. Stanford, 180 L. Ed. 2d at 17.
of non-profit organizations.\textsuperscript{256} It is likely that Congress included the mandatory compensation despite the strong criticism which was a major reason for the failed bills because it viewed necessary to justify their taking of invention ownership through contractors from inventors. The definition of subject inventions must be revised to include all inventions made by contractors’ employees so that contractors can secure the ownership of such inventions through the ownership transfer mechanism.

Moreover, Congress can use the mandatory compensation provision to endorse contractors securing ownership of inventions made by inventors outside the employment relationship. Congress may have assumed a pre-invention assignment between contractors and their employees including faculty members and students who do not fall into the category of hired-to-invent and provided the mandatory compensation for justifying their taking regardless of the common law. However, it may not have expected today’s research environment where researchers inter-flow beyond the rational notion of legal entity and interact with students.\textsuperscript{257} Obviously, the \textit{Stanford} Court rejects such a broad scope of inventions to be governed by the Bayh-Dole Act in excluding from “subject invention” an invention which was conceived and reduced to practice when the inventor has not become an employee of a contractor or when the inventor received an insignificant amount of federal funding toward the conception.\textsuperscript{258} However, such restrictive interpretation of subject invention will exclude many of inventions which the federal government funded and should be under the Bayh-Dole conditions and restrictions to promote special public interests for commercialization. To reflect the research environment in the academic-industry

\textsuperscript{256} 35 U.S.C. §202(c)(7).
\textsuperscript{257} \textit{Supra} note 136, Reder at 17. In academic-industry collaborations, employee status of researchers is often unclear because many of them work as consultants, temporary staffs, interns and contract workers.
\textsuperscript{258} \textit{Stanford}, 180 L. Ed. 2d at 16.
collaboration, Congress should consider applying the Bayh-Dole Act to any inventions resulting from the performance of work under a funding agreement and the Bayh-Dole Act by revising the definition of subject invention to include any invention made by any inventor regardless of employment status with a contractor as long as the invention resulted from the performance of work under a funding agreement.

To make sure that such inventions are subjected to the ownership transfer mechanism, the Act must require any inventors involved in federally funded research to disclose their inventions.\(^{259}\) It is not sufficient to impose such duty through a contract between contractors and inventors because inventors may not be an employee. Further, the state contract may prevent enforcement of disclosure duty to non-employees.

The Stanford Court has indicated a concern over lack of procedure for protecting rights of inventors and third-parties that have been involved in the federally funded research but did not receive funds from a federal agency.\(^{260}\) To address a similar concern over a dispute between inventors and their employers with respect to the scope of inventions that employers can claim transfer of the ownership, the past employee invention bills incorporated arbitration at the USPTO and Judicial Review.\(^{261}\) The Bayh-Dole Act may be revised to include these procedures to protect interests of inventors and third-parties. Regarding employers of visiting researchers who engaged federally funded research and thus the ownership of invention resulting from the research was transferred to contractors, the common law rules guarantee a shop right.

\(^{259}\) It can use provisions from the past bills with respect to the content and procedures for disclosing subject inventions. H. R. 15512 §411(a) (“An employee who has made a service invention must give written notice of the service invention to his employer without undue delay…..”). However, the definition of employee must be expanded to reflect today’s research environment at universities.

\(^{260}\) Stanford, 180 L. Ed. 2d at 16.

\(^{261}\) H. R. 15512 §§437, 438.
which will give the employers a bargaining power to negotiate with the contractors for an exclusive license.

2. **Adoption of Compensation Right Protection Mechanism under the German EIA**

The Bayh-Dole Act should also be revised to adopt a mechanism to protect employee-inventor’s rights for compensation under the German EIA by allowing the employee-inventors to file a patent application if their employer-contractor fail to file a patent application. Guaranteeing compensation to employee-inventor is essential for securing the ownership of all federally funded inventions. Since subject invention should be redefined to include all inventions made by any researchers who engage in the research with federal funding, the scope of subject inventions under the new definition is much broader than the scope of inventions that the Stanford Court suggests\(^\text{262}\) or the scope of inventions that the common law and the state contract law, which allow automatic transfer of ownership of invention upon the completion of invention regardless of the express assignment agreement.\(^\text{263}\) The Bayh-Dole Act’s strong federal policy for promoting important public interests justifies such taking regardless of inventors’ employment status,\(^\text{264}\) while the Fifth Amendment requires the federal government to compensate inventors.\(^\text{265}\) Accordingly, the Act provides inventors a right of compensation when the ownership of invention is transferred to their employer-contractors.

\(^{262}\) Stanford, 180 L. Ed. 2d at 16.

\(^{263}\) Infra, Part 1, 2.

\(^{264}\) Justice Breyer emphasized important public interests the Bayh Dole Act aims to promote. Stanford, 180 L. Ed. 2d at 19 (Breyer, J., Dissenting).

\(^{265}\) U.S. Const. amend. V.
However, the current Bayh-Dole Act is incomplete because it lacks a mechanism to protect inventors’ right of compensation. The Act allows inventors to exercise their rights of compensation only if contractors license their employee-inventor’s inventions and receive royalty revenues.\textsuperscript{266} If contractors elect to retain title in invention but fail to file a patent application, employees’ rights of compensation is effectively eliminated. Without compensation, neither the federal agency nor employer-contractor have justification for receiving the ownership of invention from inventors who do not have a chance to bargain for the ownership of invention and fail to receive salaries reflecting the compensation.

Thus, the Bayh-Dole Act should be revised to impose a duty on contractors to send a notice to the federal agency, as well as, the employee-inventor when a patent application is filed with the USPTO. As provided in the German EIA,\textsuperscript{267} if an employee does not receive a notice of patent application within a reasonable time after the notice of electing to retain title of invention, the employee should be able to file a patent application on behalf of the contractor. A similar mechanism should be also incorporated with respect to foreign patent applications.

Contractors may have concern over cost for reimbursing inventors for filing. However, such cost would be marginal: the cost of a provisional application if they abandon the patent application before any action is taken to give rise additional costs. For allowing the employee-inventor to continue the patent prosecution, the Bayh-Dole Act should be revised to give the ownership of invention back to inventor if neither the federal agency nor the contractor is interested in prosecuting patents, as provided in the

\textsuperscript{266} 35 U.S.C. §201(c) (7) (B).
\textsuperscript{267} EIA §13.
German EIA.\textsuperscript{268} The ownership should be returned to the employee-inventor if the contractor wants to abandon the patent. Once the patent prosecution or patent is abandoned, the government and contractors lose justification for retaining the ownership of invention because employee-inventor’s rights of compensation are eliminated. Thus, if inventors are interested in pursuing patent prosecution and commercialization of their inventions on their own, the ownership of invention should be returned to employee-inventor, although the government should retain rights to use the invention and “March-in Rights” once the employees obtain patents as provided in the current provision.\textsuperscript{269} If inventors are willing to invest their time and money to succeed commercializing the invention, this mechanism contributes to the goal of the Bayh-Dole Act instead of wasting all efforts and investment already made by the government and contractors.

\textbf{Conclusion}

While the \textit{Stanford} Court’s interpretation of the Bayh-Dole Act is technically correct it is, as the dissent points out, inconsistent with the Act’s basic purpose. \textit{Stanford} highlights a serious flaw in the current Act. Under the current system, Stanford could not have avoided the result had the inventor executed an assignment contract with the private firm prior to its own assignment contract. U.S. Courts should have given the priority the private firm. As illustrated in \textit{Stanford}, it is difficult for universities to argue that it was a bona fide purchaser if the private firm is a research partner and universities are aware of the collaboration. The Act should adopt a

\textsuperscript{268} EIA §16.
\textsuperscript{269} 35 U.S.C. §202(d).
mechanism for contractors to secure ownership of federally funded inventions from the German EIA.

Such mechanisms will avoid the results that Congress did not intend, i.e., many federally funded inventions fall outside the scope of the Bayh-Dole Act for contractors’ failure to secure the ownership of such invention because contractors can secure the ownership of federally funded inventions automatically from inventors when they elect to retain title. The mechanism effectively prevents inventors from lawfully assigning the ownership of federally funded inventions to a third-party. The Bayh-Dole Act should also be revised to protect inventors’ rights for compensation so that the government can take the ownership of federally funded inventions for its contractors with just compensation.

Moreover, the Act should be revised to clarify the scope of subject invention to include any invention resulting from federally funded research regardless of the inventor’s employment status with the contractors. In today’s academic-industry collaborative research environment, researchers move from one institution to another with informal employment status. Unless the government can reach out to those inventions made by inventors without any formal employment contract, it cannot implement a uniform policy for federally funded inventions. Strong public interests involved in the Bayh-Dole Act should justify the government to reach out to all inventors involved in federally funded research while guaranteeing compensation with the inventors through royalty sharing.