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The Legal and Institutional Foundations of Silicon Valley's Technological Innovation: An Interdisciplinary Literature Review

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Abstract: This article reviews interdisciplinary literature to explain how state legislation and the practice of law in California influenced the success of Silicon Valley in creating a startup business culture involving the commercialization of technologies built on venture capital finance. Scholarship has identified four major factors in the rise of Silicon Valley: business culture, symbiotic institutional relations with research universities, California contract and employment law, and Silicon Valley law firm culture. Both law and institutional support have been central to the commercialization of scientific knowledge that is the hallmark of Silicon Valley. Silicon Valley companies have remained leaders in technological innovation for over sixty years, encompassing various technologies from semiconductors to personal computers to the Internet. This entrepreneurial approach to technology continues to this day as exemplified by the successful DoorDash and Airbnb IPOs launched in 2020. The paradigmatic Silicon Valley technology company consists of a small group of entrepreneurs building a start-up technology company funded by a venture capital fund. The venture capitalists (VC) maintain hands-on management of the company and receive seats on the board of director and preferred stock rights. If the business plan is successful, the company offers shares to the public through an initial public offering (IPO), or arranges additional funding from another VC fund. This Silicon Valley model is characterized by a tolerance for failure and high labor mobility. Technology company employees have the freedom to leave established companies to start their own ventures.

***Keywords*:** startups; covenants not to compete; entrepreneurs; technology companies; lawyering; commercialization of science; trade secrets

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Contents

I. Business Culture of Silicon Valley

Early studies of Silicon Valley emanating from social science and business management literature explained the success of Silicon Valley from a business culture perspective (Rao and Scaruffi, 2011, p. 3; Kenney, 2000, p. 5). Anna Lee Saxenian of the University of California Berkeley, who earned advanced degrees in political science and urban planning, was a pioneering scholar of technology firms in Silicon Valley. Saxenian defined Silicon Valley as a unique sociological network that promoted an open and sharing entrepreneurial culture (Saxenian, 1994, p. 2).

Silicon Valley's West Coast business culture has been described as a "regional network-based industrial system that promotes collective learning and flexible adjustment among specialized producers of related technologies" (Saxenian, 1994, p. 2). Strong interactions exist among Silicon Valley technology firms with managers and technologists frequently switching jobs and companies. High labor mobility among engineers generates knowledge spillovers and information sharing even among high-tech competitors (Gomulkiewicz, 2015, p. 264). This special business culture allows the best inventions to quickly attract experienced managerial talent and the most appropriate form of financing. Saxenian observed that Silicon Valley had been much more successful in generating valuable high-tech companies than rival technology clusters in other states, especially Massachusetts' Route 128 that lacked the dynamism of high worker mobility (Saxenian, 1994, pp. 2–3).

II. Government and Academic Institutional Support for Silicon Valley

In addition to a unique business culture, Silicon Valley benefited from a close nexus between government funding, local universities, and technology start-ups. Large government grants funded basic scientific research at universities, such as Stanford and the University of California Berkeley. Universities adopted policies that allowed ideas created in the laboratory and the classroom to reach entrepreneurs who were looking to commercialize new inventions. One of the most successful projects to serve as a bridge between university research and commercial applications was the Stanford Research Institute founded in 1946. The Stanford Research Institute has promoted innovations in various sciences and was instrumental in providing economic and environmental reports which led to the creation of Disneyland in Anaheim, California (Stanford Research Institute, n.d).

Given this extensive history of successful innovation, the question arises whether any specific legislative or regulatory regime explains the rise and success of Silicon Valley's technology sector. Curiously, traditional indicators from Law and Economics analysis are missing from Silicon Valley's story of success. Politicians and policy makers in California did not formulate a detailed industrial policy to promote Silicon Valley or attract entrepreneurs to the state. In fact, quite the opposite occurred. California passed strict environmental laws and legislation that provided strong worker protections. The state also failed to grant corporate tax breaks to attract industry (Saxenian, 1994, pp. 108–109). In short, tax policy and business organization laws were not altered to promote the region's technology companies.

The federal government in Washington, DC also eschewed industrial policy legislation to specifically promote the rise of Silicon Valley. Federal taxation and securities legislation has occasionally been passed to help startups, but neither public laws nor regulations were enacted to benefit the California businesses in particular. The U.S. has a specialized appellate court for intellectual property litigation but it is based in Washington, DC and assumes responsibility for applying and interpreting the law in all fifty states, not just California. The United

States Court of Appeals for the Federal Circuit was created in 1982 in its current iteration and handles appeals related to international trade, trademarks, and patents (United States Court of Appeals for the Federal Circuit Brochure, 2019). The U.S. Congress did not create a specialized trial court for Silicon Valley to adjudicate intellectual property disputes.

III. California Legislation

Interestingly, once legal scholars turned their attention to understanding the dynamics of Silicon Valley start-up culture, the most important legislative determinant was not found in state intellectual property law, taxation, or business organization law. Rather, the legal catalyst for this technological busines innovation was found in a historical quirk of California employment contract law.

Building on the work of AnnaLee Saxenian, Professor Ronald Gilson identified California labor and contract law as the most promising legal explanatory factor in Silicon Valley's success (Gilson, 1999, p. 578). In his seminal article, Gilson demonstrated that almost unique among U.S. states, California did not enforce post-employment covenants-not-to-compete. Gilson did not identify strict protection of intellectual property rights as an important factor in the success of Silicon Valley companies (Gilson, 1999, pp. 621–622). The relevant statute Gilson identified is California Business and Professions Code Section 16600. The pertinent section from the statute reads: "Except as provided in this chapter, every contract by which anyone is restrained from engaging in a lawful profession, trade, or business of any kind is to that extent void."[1] The current language of the statute dates from legislation enacted in 1941.[2]

Relying on Section 16600, courts in California have generally not enforced noncompete clauses against departing employees.[3] Engineers and computer scientists have been free to start a new venture in direct competition with their former employer. As Gilson argued, high-

[1] Cal. Bus. & Prof. § 16600 (2021), Available at: https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=BPCandsectionNum=16600 [Accessed 01.08.2021].

[2] 1941 Cal. Stat. Ch. 526 page 1834.

[3] Edwards v. Arthur Anderson. 44 Cal. 4th 937, 955 (2008).

velocity employment creates an ecosystem in which "per firm benefit of innovation and growth will exceed the per firm cost of intellectual property dilution that results from the knowledge spillovers necessary to support the economy" (Gilson, 1999, p. 609). This virtuous cycle of redeployment of intellectual assets, managerial skills, and funding has been the backbone for the development of the Silicon Valley's busines culture.

One of the most important effects of California's noncompete law was the use of equity stakes to bind employees to the company and foster employee loyalty. Since managers could not compel employees to stay, they used equity stakes in the company to align the engineers' interests with company interests. In fact, the foundational event in the start of Silicon Valley business culture involved the mass movement of skilled engineers and the use of equity shares to create a new start-up. The original traitorous eight employees who left Shockley Electronics in 1957 received equity shares in Fairfield Electronics, founded with venture capital organized by Arthur Rock (Aran, 2018, pp. 1235, 1281). The Fairfield Electronics model became the template for many subsequent VC financed technology start-ups.

To counteract the impact of California's rejection of covenants-not-to-compete, many Silicon Valley companies engaged in coordinated efforts to suppress employee wages and anti-solicitation compacts not to hire away employees. These anti-competitive actions involved companies such as Intel, Apple, and Google (Lee, 2016, pp. 160, 161, 172). In 2014, a class action lawsuit settlement resulted in over 30 million dollars in damages being paid to the plaintiffs (Streitfeld, 2014, Section B, p. 1).

In California, one of the few exceptions to the nonenforcement of noncompete clauses is the protection of trade secrets.[4] Other states, such as Massachusetts, that were competing with Silicon Valley in the 1970s, 1980s and 1990s did enforce these contractual clauses against departing employees. California state law helped shape the culture of employee mobility and job-hopping engineers in Silicon Valley. California courts

[4] Cal. Uniform Trade Secrets Act, Civ. Code §§ 3426–3426.11 (2021). Available at: https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=CIVanddivision=4.andtitle=5.andpart=1.andchapter=andarticle= [Accessed 01.08.2021].

have reinforced the impact of California's noncompete regime by not treating trade secrets exclusively as property of employers. Courts have focused on the relationship between employee and employer when applying the California Uniform Trade Secrets Act to specific litigation. California courts have stated the policy reasons for adopting a balancing of interests test in applying the trade secrets statute: "The decision to focus on relationships and not to treat trade secrets as ‚property' apparently reflects a policy choice by California authorities in which interests in promoting freer use of new ideas was elevated at least to some extent over interests in rewarding holders of economically significant secrets" (Feldman, 2003, pp. 634, 652). California courts are also less likely to invoke the doctrine of inevitable disclosure in trade secrets litigation.[5]

California's noncompete statute was not created to incentivize the development of high-tech firms. Rather it was an accident of history and comparative law methodology. The noncompete language originally appeared in legislation from the 1870s shortly after California joined the United States. In 1872, California Civil Code Section 6673 employed language almost identical to the current legislation: Every contract by which any one is restrained from exercising a lawful profession, trade, or business of any kind, otherwise than is provided by the next two sections, is to that extent void" (Haymond and Burch, 1874, pp. 502–503).

Gilson's meticulous legislative history research of California's current noncompete statute revealed that California legislators attempted to combine the common law tradition from the United States with the civil law tradition inherited from Mexico and Spain. David Dudley Field's proposed Civil Code for the state of New York influenced the drafters of California's original codes, despite the fact that New York never formally enacted Field's Civil Code (Gilson, 1999, pp. 614–619). This statutory relic of 19th century codification efforts would eventually serve as a catalyst for the commercialization of scientific discoveries many decades later in Silicon Valley.

[5] Bayer Corp. v. Roche Molecular Sys. Inc., 72 F. Supp. 2d 1111, 1120 (N.D. Cal. 1999).

Gilson's legal and historical analysis demonstrated that California' approach to noncompete clauses was instrumental in building up the business culture of social mobility of high-tech entrepreneurs. Gilson's research relied on analysis of case law and law and economics principles. Subsequent research by economists and other social scientists has tended to confirm Gilson and Saxenian's hypothesis that computer industry workers in California experienced higher rates of job hopping than employees of technology companies in other states (Starr, 2019 p. 814; Weiss, 2011, p. 2; Hyde, 2003, p. 27).

Since Gilson's groundbreaking article, scholars have used empirical methods to compare California with other successful high-tech regions in the United States. Curiously, only three states have non-compete statutes similar to California: Oklahoma,[6] Hawaii,[7] and North Dakota.[8] No appreciable upsurge in technology firms has been noted in those three states. Massachusetts amended its noncompete statute in 2018. The Massachusetts statute limited the enforceability under certain circumstances and added additional requirements, but it did not substantially change the law (Barnett and Sichelman, 2020, pp. 953, 961). Despite over half a century of Silicon Valley innovation, few states have modified their noncompete statutes to match California's legislation. Centers of high technology innovation have appeared in other states such as Washington, Texas, North Carolina, and Massachusetts without legislation promoting high labor mobility. This indicates that there is not a single approach for creating a legal regime that generates a robust high-tech industry.

North Carolina has developed a vibrant high technology sector in pharmaceuticals and biotechnology. Similar to Silicon Valley, the North Carolina biotech corridor developed around the major universities located in the state's research triangle center. In contrast to California, North Carolina's legislature has actively encouraged large, established corporations to invest in the state. Moreover, North Carolina courts have recognized the importance of enforcing noncompete agreements

[6] 15 Okla. Stat. § 217 (2021) (statute originally enacted in 1910.).

[7] Haw. Rev. Stat. Ann. § 480-4(d) (2021) (statute applicable to employees in technology businesses).

[8] N.D. Cent. Code § 9-08-06 (2021).

as a component to developing this technology sector in the state (Wood, 2000, p. 25).

Scholars have noted the difference between Internet startups in Silicon Valley and the biotechnology companies nurtured in North Carolina (Ibrahim, 2010; Wood, 2000). Pharmaceutical companies are capital intensive and require long periods of product development, vigorous intellectual property protection for patents and trade secrets, and are highly regulated by state and federal governments. Few Silicon Valley startups face these similar constraints. New molecules and genetic procedures do not suffer from rapid product obsolescence that are endemic to the world of computer and Internet startups.

Washington is another state that was created technology giants such as Microsoft and Amazon without adopting California's legislative and judicial approach to noncompete clauses and trade secrets. Nonetheless, research indicates that Washington companies rarely enforce noncompete contracts and employees breach the noncompete clauses selectively (Gomulkiewicz, 2015, p. 272). For instance, Amazon and Microsoft filed only one case each in court over a ten-year period to enforce a noncompete clause against a departing employee (Gomulkiewicz, 2015, p. 278). Various rationales have been given for the lack of enforcement by Washington based technology companies: exorbitant costs of litigation, fear of disclosing trade secrets and counter claim risk from former employees, and reputational risk (Gomulkiewicz, 2015, pp. 280–284). Robert Gomulkiewicz argues that in Washington's technology sector, "noncompete contracts do not regularly prevent spillovers of useful information but do periodically protect critical trade secrets" (Gomulkiewicz, 2015, p. 257). Washington state illustrates the importance of deploying law and society techniques to analyzing the impact of a legal regime. Simply identifying black letter law and leading case precedents rarely provides a complete picture of how a statute or regulation is actually influencing business decisions

IV. Silicon Valley Law Firm Culture

Legal scholars have also pointed to the unique legal culture of Silicon Valley law firms as a significant component in the success of Silicon Valley model. The key insight has been creating law firm partnerships that focus on lawyers as transaction cost engineers

(Gilson, 1984, p. 239). Attorneys provide more than just legal advice and pointing out legal pitfalls. Attorneys help clients complete value enhancing deals that would not have been concluded but for the role of the attorneys (Coyle and Green, 2017, pp. 1403, 1411). The concept of attorneys as transaction cost engineers was eagerly embraced by west coast law firms. Startup law required law firms to create standardized forms for raising money and establishing new companies; provide nonlegal advice to entrepreneurs; serve as reputational intermediaries; and devise novel billing schemes. Silicon Valley lawyers play more of a sociological networking function between VCs and entrepreneurs than serving traditional economic goals of protecting intellectual property and litigating disputes (Suchman and Cahill, 1996, p. 679).

"Unlike a typical corporate acquisition agreement which involves a one-time transaction, a venture capital financing agreement creates a long-term relational contract between the parties and many of the most important terms of the contract may be implicit in parties' relations and understandings rather than explicitly dealt with through detailed contractual provisions" (Bernstein, 1995, pp. 239, 253). In fact, Silicon Valley lawyers have been instrumental in developing the National Venture Capital Association Model Legal Documents for venture financial transactions.[9] Startup lawyers understand their fate rests with the economic success of their region, so it is in their self-interest to help build an entrepreneurial friendly environment.

Lawyers working with start-ups often find themselves needing to provide clients with nonlegal advice. Software engineers are often unaware of issues involved in generating a business plan and starting a company. Attorney Larry Sonsini pioneered building a law firm that represented entrepreneurs and startups first, rather than focusing on banks and established corporations (Rao and Scaruffi, 2011, p. 304). A legal practice dependent on assisting startups requires law firms to help build the company over time and stay with the company through the IPO. Silicon Valley law firms have developed based on the need to offer business and financial advice to clients in addition to traditional legal services.

Silicon Valley attorneys also assume an important role for VCs and entrepreneurs as "reputational intermediaries" to screen clients and

[9] Available at: https://nvca.org/model-legal-documents [Accessed 01.08.2021].

vouch for clients before investors (Coyle and Green, 2017, pp. 1416–1420). The lawyers direct new clients to the appropriate venture capital firm. The law firms thereby reduce uncertainty in the sector by sending inventors to the right investor (Suchman and Cahill, 1996, p. 698). Attorneys educate clients in community norms and focus on long term relationships that are not zero sum. Deal making in Silicon Valley is about aligning interests and fostering community norms in clients, not just extracting concessions and being overly adversarial. Rather than standing aloof from their clients' operations as prescribed by conventional legal ethics, Silicon Valley law firms will "absorb elements of uncertainty into the law firm's own operations if this will facilitate an endangered deal" (Suchman and Cahill, 1996, p. 691). Attorneys socialize entrepreneurs in the conventions of the local investor community and screen out clients that challenge community norms (Suchman and Cahill, 1996, pp. 698–699).

To accommodate the needs of fledging startups, Silicon Valley law firms needed to adopt novel billing schemes for clients outside of the traditional billable hour invoice. Law firms would take equity in a startup in lieu of cash payments for legal services (Coyle and Green, 2017, p. 1426). Law firms differ bills until the startup goes public or is sold to another venture capital firm. These innovative billing schemes allowed cash strapped entrepreneurs to focus funds on building their core businesses rather than paying attorneys for routine legal matters.

Silicon Valley entrepreneurs have preferences for high-risk, high-reward investments and a tolerance for failure and bankruptcy. Many foreign governments wish to nurture technology companies, but are not eager to introduce to their countries the type of financial and employment disruption that characterize venture capital markets. Other countries have also been successful at promoting technology sectors, but few have recreated the statutory framework and law firm culture and high-risk VC financing environment of Silicon Valley. In Germany, company work councils resist efforts by management to institute performance related pay and equity stakes on an individual basis. Germany has not relaxed worker protections or incentivized labor mobility (Casper, 2007, p. 3). Few German companies have had lucrative IPOs and most German regions have not matched the dynamism of Silicon Valley. German

law requires employers to compensate employees and demonstrate the need to protect a legitimate business interest if they wish to enforce a noncompete clause.[10]

This review of Silicon Valley startup sector illustrates the importance of not relying exclusively on top-down regimes to spur innovation sectors. The Silicon Valley's model cannot be adopted wholesale into countries with different legal and business traditions. Nonetheless, the history of Silicon Valley provides lessons for policy makers wishing to replicate a commercially vibrant high technology industry. Law and the innovations in the practice of law will serve as crucial catalysts for technology-centered economies regardless of the specific regulatory regime adopted.

References

1. Aran, Y., (2018). Beyond Covenants Not to Compete: Equilibrium in High-Tech Startup Labor Markets. *Stanford Law Review*, 70, pp. 1235–1294. Available at: https://ssrn.com/abstract=3111045 [Accessed 01.08.2021].

2. Barnett, J.M. and Sichelman, T., (2020). The Case for Noncompetes. *University of Chicago Law Review*, 87, pp. 953–1049. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3516397 [Accessed 01.08.2021].

3. Bernstein, L., (1995). The Silicon Valley Lawyer as Transaction Cost Engineer? *University of Oregon Law Review*, 74, pp. 239–255.

4. Casper, S., (2007). *Creating Silicon Valley in Europe: Public Policy Towards New Technology Industries*. Oxford University Press.

5. Coyle, J.F. and Green, J.M., (2017). Startup Lawyering 2.0. *North Carolina Law Review*. 95(5), art. 3.31 pp. 1403–1432. Available at: https://scholarship.law.unc.edu/nclr/vol95/iss5/3 [Accessed 01.08.2021].

6. Feldman, Y., (2003). Experimental Approach to the Study of Normative Failures: Divulging of Trade Secrets by Silicon Valley Employees. *University of Illinois Journal of Law, Technology & Policy*, pp. 105–180. Available at: http://illinoisjltp.com/journal/wp-content/uploads/2013/10/feldman.pdf [Accessed 01.08.2021].

[10] German Commercial Code (Handelsgesetzbuch) § 74. Available at: http://www.gesetze-im-internet.de/englisch_hgb/ [Accessed 01.08.2021] (In Germ.).

7. Gilson, R.J., (1984). Value Creation by Business Lawyers: Legal Skills and Asset Pricing. *Yale Law Journal,* 94, pp. 239–313. Available at: https://scholarship.law.columbia.edu/cgi/viewcontent.cgi?article=1956&context=faculty_scholarship [Accessed 01.08.2021].

8. Gilson, R.J., (1999). The Legal Infrastructure of High Technology Industrial Districts: Silicon Valley, Route 128, and Covenants Not to Compete. *New York University Law Review*, 74(3), pp. 575–629. Available at: https://www.nyulawreview.org/issues/volume-74-number-3/the-legal-infrastructure-of-high-technology-industrial-districts-silicon-valley-route-128-and-covenants-not-to-compete/ [Accessed 01.08.2021].

9. Gomulkiewicz, R.W., (2015). Leaky Covenants-Not-to-Compete as the Legal Infrastructure for Innovation. *University of California, Davis, Law Review*, 49(1), pp. 251–304. Available at: https://lawreview.law.ucdavis.edu/issues/49/1/Articles/49-1_Gomulkiewicz.pdf [Accessed 01.08.2021].

10. Haymond, C. and Burch, J.C., (1874). *Civil Code of the State of California*. A.L. Bancroft & Co.

11. Hyde, A., (2003). *Working in Silicon Valley: Economic and Legal Analysis of a High-Velocity Labor Market*. M. E. Sharpe.

12. Ibrahim, D.M., (2010). Financing the Next Silicon Valley. *Washington University Law Review*, 87(4), pp. 717–762. Available at: https://openscholarship.wustl.edu/cgi/viewcontent.cgi?article=1094&context=law_lawreview [Accessed 01.08.2021].

13. Kenney, M., (2000). *Understanding Silicon Valley: The Anatomy of an Entrepreneurial Region*. Stanford University Press.

14. Lee, N., (2016). Techtopus: A Critical Analysis of the Silicon Valley Wage-Fixing Scandal. *The Manchester Review of Law, Crime & Ethics*, 5, pp. 160–178. Available at: http://hummedia.manchester.ac.uk/schools/law/main/research/student-review/student-law-review-vol5-final-web.pdf [Accessed 01.08.2021].

15. Rao, A. and Scaruffi, P., (2011). *A History of Silicon Valley: the Greatest Creation of Wealth in the history of the Planet: a Moral Tale*. Omniware Group.

16. Saxenian, A.L., (1994). *Regional Advantage: Culture and Competition in Silicon Valley and Route 128*. Harvard University Press.

17. Stanford Research Institute. 70 Years of SRI Innovation. Available at: https://www.sri.com/blog-archive/70-years-of-sri-innovation [Accessed 01.08.2021].

18. Starr, E., (2019). Consider This: Training, Wages, and the Enforceability of Covenants Not To Compete. *Industrial and Labor Relations Review,* 72, pp. 783–817. Available at: https://doi.org/10.1177/0019793919826060 [Accessed 01.08.2021].

19. Streitfeld, A., (2014). Tech Giants Settle Antitrust Hiring Suit. *New York Times*. April 24. Available at: https://www.nytimes.com/2014/04/25/technology/settlement-silicon-valley-antitrust-case.html [Accessed 01.08.2021].

20. Suchman, M.C. and Cahill, M.L., (1996). The Hired Gun as Facilitator: Lawyers and the Suppression of Business Disputes in Silicon Valley. *Law & Social Inquiry*, 21(3), pp. 679–712, doi:10.1111/j.1747-4469.1996.tb00093.x.

21. United States Court of Appeals for the Federal Circuit Brochure, (2019). Available at: http://www.cafc.uscourts.gov/sites/default/files/the-court/June_2019_Jurisdiction.pdf [Accessed 01.08.2021].

22. Weiss, D.M., (2011). *Entrepreneurial Employees*. SSRN Working Paper. Available at: https://ssrn.com/abstract=1868646 [Accessed 01.08.2021].

23. Wood, J., (2000). A Comparison of the Enforceability of Covenants Not to Compete and Recent Economic Histories of Four High Technology Regions. *Virginia Journal of Law and Technology,* 5(3), p. 14, p. 25 para. 28. Available at: https://www.vjolt.org/volume-5 [Accessed 01.08.2021].

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