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# Legal Education: A New Growth Vision: Part II—The Groundwork: Building a Customer Satisfying Innovation Ecosystem

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Hilary G. Escajeda\*

# Legal Education: A New Growth Vision

## Part II—The Groundwork: Building a Customer Satisfying Innovation Ecosystem

### ABSTRACT

*Financial sustainability awaits agile, future-focused legal education programs that deliver students with market-valued, cost-effective, and omni-channel knowledge and skills development solutions.*

*Shifting from an atom-based, traditional law school mindset to a platform-based, human-artificial intelligence (AI) integrated education system requires vision, planning, and drive. Bold and determined leaders will invent the future of legal education. To do this, they will (1) edit the law school's DNA to focus on delivering customer satisfactions (2) build vibrant multidisciplinary ecosystems focused on cultivating modern education services, (3) embrace emerging digital technologies, and (4) seize new marketplace opportunities to diversify revenue streams—thereby enhancing program solvency and relevance.*

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## SERIES OVERVIEW

In this second installment of the three-part *Legal Education: A New Growth Vision* series, this Article builds on the premise set forth in *Part I*, that the legal education industry faces a strategic inflection point (SIP) and must embrace the forces of creative destruction to survive in a constantly evolving marketplace. To counter the downward gravitational pulls of SIPs, forward-focused, innovative programs will embrace platforms and work toward human-artificial intelligence (AI) integration—thereby deflecting the downward trajectory.

This Article begins with a survey of an eroding law school landscape. To curb this erosion, it recommends that law schools focus on the basics, including: resolving customer friction points, delivering customer satisfactions, and modernizing education services by embracing the convergence of physical and digital education. This installment elaborates on these ideas and emphasizes some building blocks of an innovative, multidisciplinary ecosystem. It then examines resistance to these changes and introduces the importance of leadership when driving forward into the future.

The third and final installment published immediately following this Article marks a path forward and includes sample plans for human-AI convergence. *Part III* also includes Appendices I–III.

## I. INTRODUCTION: SATISFIED CUSTOMERS KEY TO SUSTAINABLE GROWTH

*It's easier to invent the future than to predict it.*

—Alan Kay, Computer Scientist<sup>1</sup>

In his book *Rise of the Robots: Technology and the Threat of a Jobless Future*, Martin Ford argues that higher education has “so far, been highly resistant to the kind of disruption that is already becoming evident in the broader economy.”<sup>2</sup> As discussed in *Legal Education: A New Growth Vision Part I*, creative destruction indiscriminately upsets and disorganizes enterprises of all sizes.<sup>3</sup> This means that organizations will confront both creative destruction and strategic inflection points (SIPs) over their lifetimes. Andrew S.

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1. *Alan Kay Quotable Quotes*, GOOD READS, <https://www.goodreads.com/quotes/7191798-it-s-easier-to-invent-the-future-than-to-predict-it> [http://perma.unl.edu/ASMG-E9PH].
  2. MARTIN FORD, *THE RISE OF THE ROBOTS: TECHNOLOGY AND THE THREAT OF A JOBLESS FUTURE* xvii (2015).
  3. PETER F. DRUCKER, *INNOVATION AND ENTREPRENEURSHIP: PRACTICE AND PRINCIPLES* 26 (1985).

Grove, former Intel CEO, explains that an SIP “is a time in the life of a business when its fundamentals are about to change” and involves the “perilous transition between the old and new ways of doing business.”<sup>4</sup> When responding to SIPs, survival-oriented leaders understand the nexus between change, innovation, and growth—a world in which “only the paranoid survive.”<sup>5</sup>

Change is hard, but it can be managed. Change requires new thinking, models, and approaches. Change begins with a clear-eyed assessment of the current facts and circumstances. It then progresses from the innovative attitudes and actions of survival-oriented leaders. Like the visionary Intel leadership team, future-focused law school entrepreneurs will respond nimbly to evolving customer needs and changing market conditions by creating and supporting high functioning innovation ecosystems. As such, these modern legal education programs will consistently scout and seize new revenue opportunities, thereby attaining financial sustainability.<sup>6</sup>

This three-part series relies on enterprise sustainability to inform its recommendations and asserts that innovation provides the smartest, strongest, and safest path forward. Ultimately, long-term law school solvency will turn on whether the program can reimagine its education service portfolio and reinvent its offerings, while simultaneously concentrating energies on the delivery of customer value and satisfaction. By focusing on customer satisfactions for a full spectrum of legal education consumers, law schools can identify opportunities, capture market share, and resolve customer friction points. Further, fixating on the delivery of customer satisfactions can (1) create education service opportunities that yield positive spillover effects for law student instruction, (2) develop diversified revenue streams from new service offerings, and (3) renew institutional relevance in an

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4. ANDREW S. GROVE, ONLY THE PARANOID SURVIVE: HOW TO EXPLOIT THE CRISIS POINTS THAT CHALLENGE EVERY COMPANY 3, 34 (1999).

5. *Id.*

6. RITA GUNTHER McGRATH & IAN C. MACMILLAN, DISCOVERY DRIVEN GROWTH 60 (2009) (“Scouting options are useful when you have a capability or technology that you think might have value to a set of customers, but you don’t really know for sure.”); see generally Oliver Bossert & Jürgen Laartz, *Perpetual Evolution—The Management Approach Required for Digital Transformation*, MCKINSEY & CO. (June 2017), <https://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/perpetual-evolution-the-management-approach-required-for-digital-transformation> [http://perma.unl.edu/SLR5-NHR9] (providing that the “perpetual evolution” transformation model emphasizes continuous improvement paired with flexible, adaptable, lightweight, and modular customer service, enterprise, and technology architectures); see also Chris Gagnon & Aaron De Smet, *8 Ways to Build a Future-Proof Organization*, MCKINSEY & CO. (June 4, 2018), <https://www.mckinsey.com/business-functions/organization/our-insights/the-organization-blog/8-ways-to-build-a-future-proof-organization> [http://perma.unl.edu/CM7X-TC4Q].

increasingly global and digital world. Smart, survival-oriented law schools will invent the future.

This Article, *Part II* of *Legal Education: A New Growth Vision*, lays the groundwork for building customer-oriented education ecosystems. Part I of this Article begins with an assessment of the current legal education landscape. Part II then focuses on the basics as a starting point to deliver customer-centric knowledge and skills development services. Finally, Part III introduces several innovation theories and provides an examination of human resistance to change. Part III then ends with a brief study of the legendary Intel leadership team as an example of how successful innovation requires a triumvirate consisting of a visionary, thinker-planner, and driver who work together to make the once “impossible possible.”<sup>7</sup>

Because innovative business strategies, models, and theories exhibit seasons of growth, bloom, and decay,<sup>8</sup> this Article offers a variety of perspectives to help prepare and amend the organizational soil for future “seed ideas” to germinate.<sup>9</sup> Just as some seeds bear bountiful harvests and others multiply into noxious weeds, education leaders must take action to shape institutional strategies and prevent root-bound, traditional mindsets from stifling innovation and adaptation.

To propagate and prune programs that will thrive in the human-digital age, education leaders must continually analyze, feed, and trim innovation strategies through variegated feedback comprised of empirical testing, customer interactions,<sup>10</sup> employee insights, and mar-

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7. ERIC SCHMIDT & JONATHAN ROSENBERG, *HOW GOOGLE WORKS* 11 (2014). Because the business histories of Google, Apple, and Amazon are still works in progress, this Article highlights some important attributes of Intel’s leadership team since these protagonists left a completed record to study, analyze, and (potentially) emulate.
  8. Gary P. Pisano, *You Need an Innovation Strategy*, HARV. BUS. REV. (June 2015), <https://hbr.org/2015/06/you-need-an-innovation-strategy> [<http://perma.unl.edu/3UFT-BQDD>]; see also Jill Lepore, *The Disruption Machine: What the Gospel of Innovation Gets Wrong*, NEW YORKER (June 23, 2014), [www.newyorker.com/magazine/2014/06/23/the-disruption-machine](http://www.newyorker.com/magazine/2014/06/23/the-disruption-machine) [<http://perma.unl.edu/5Y2F-WEDN>] (discussing that disruption is a reason why businesses fail, but not more than that); see also BHARAT ANAND, *THE CONTENT TRAP: A STRATEGIST’S GUIDE TO DIGITAL CHANGE* 331 (2016) (noting how the popular idea of “disruption theory” was largely “divorced from the original theory”).
  9. Martin L. Weitzman, *Recombinant Growth*, 113(2) Q.J. ECON. 333 (1998).
  10. *Redefining Competition: Insights from the Global C-suite Study*, IBM 2016 CEO C-SUITE STUDIES [hereinafter IBM 2016 CEO C-SUITE STUDIES] 8 (Jan. 2016), [http://www-01.ibm.com/common/ssi/cgi-bin/ssialias?subtype=xb&infotype=pm&htmlfid=GBE03719USEN&attachment=GBE03719USEN.PDF&cm\\_mc\\_uid=36788419335514540780823&cm\\_mc\\_sid\\_50200000=1454423499](http://www-01.ibm.com/common/ssi/cgi-bin/ssialias?subtype=xb&infotype=pm&htmlfid=GBE03719USEN&attachment=GBE03719USEN.PDF&cm_mc_uid=36788419335514540780823&cm_mc_sid_50200000=1454423499) [<http://perma.unl.edu/TWZ3-6PU7>] (“Creating online customer communities is one of the best ways of detecting what the markets really want.”).

ketplace realities.<sup>11</sup> Therefore, the models, processes, and theories described herein should be evaluated individually according to the specific needs, context, and connections of the community.<sup>12</sup>

## II. ASSESSING THE LAW SCHOOL LANDSCAPE

After considering myriad factors, *Legal Education: A New Growth Vision Part I* concluded that the legal education industry faces an SIP and argued that education service and business model innovation provide fruitful paths for future sustainability. *Part I* used a wide lens to snapshot the landscape and then articulate the issues presented. This *Part II* narrows the focus by offering ideas and processes that will prepare and amend the soil for change at individual law schools. Because change requires a frank assessment of the current landscape before taking action, four presumptions ground this examination: (1) law school is a business, (2) digital technologies will disrupt and reshape legal education, (3) law schools must battle and innovate to survive, and (4) programs that deliver customers with high-quality, convenient, cost-effective, valued, and technology integrated education solutions have the best odds of future success and solvency.

First, legal education is a business.<sup>13</sup> While some may not view legal education as a business, law schools are businesses. Simply put,

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11. See Evan Goldstein, *The Undoing of Disruption*, CHRONICLE HIGHER EDUC. (Sept. 15, 2015), [http://www.chronicle.com/article/The-Undoing-of-Disruption/233101/\[http://perma.unl.edu/5GMM-3YQ9\]](http://www.chronicle.com/article/The-Undoing-of-Disruption/233101/[http://perma.unl.edu/5GMM-3YQ9]). Goldstein refers to Dartmouth business Professor Andrew King's 2015 comment that "a theory is like a weed. Unless it is pruned back by empirical testing, it will grow to fill any void." *Id.*; see also Kirk Kardashian, *Deflating Disruption Theory: Andrew King Critiques Clayton Christensen's Theory of Disruptive Innovation*, DARTMOUTH TUCK SCH. BUS. (Sept. 15, 2015), [http://www.tuck.dartmouth.edu/news/articles/deflating-disruption-theory/\[http://perma.unl.edu/A7MD-TLG3\]](http://www.tuck.dartmouth.edu/news/articles/deflating-disruption-theory/[http://perma.unl.edu/A7MD-TLG3]) ("Instead, managers need to evaluate difficult problems from a number of different perspectives.").
  12. See ANAND, *supra* note 8, at xxv (asserting that the ability to "recognize, leverage, and manage connections separates [organizations] that succeed from those that fail."). He emphasizes the need to understand context and shape unique, interconnected content offerings for that particular context. *Id.* at 257. To do this, he recommends that leaders ask two basic questions to uncover fruitful future strategies: "Where will you play, and how will you win?" *Id.* at 231. Anand explains that these two questions "force you to think about, respectively, context and execution. They force you to think about advantage, not mimicking. They force you to think about what you bring to the table that's different." *Id.* at 232.
  13. TASK FORCE ON THE FUTURE OF LEGAL EDUC., A.B.A., REPORT AND RECOMMENDATIONS 14–15 (2014), [https://www.americanbar.org/content/dam/aba/administrative/professional\\_responsibility/report\\_and\\_recommendations\\_of\\_aba\\_task\\_force.pdf](https://www.americanbar.org/content/dam/aba/administrative/professional_responsibility/report_and_recommendations_of_aba_task_force.pdf) (discussing "The Business of Legal Education"). The Report states, "Law schools have long escaped pressure to adapt programs or practices to customer demands or to the pressures of business competition. Except during periods like the Depression and the Great Recession, curriculum, culture, and services have developed with little relation to market considerations." *Id.* at 15. The Task Force recommends that for law schools to become financially self-sus-

the tuition paid by students must equal or exceed the expenses incurred to deliver such educational services. If a law school operates at a deficit and depletes its reserves, it will be unable to pay its expenses (e.g., faculty, staff, insurance, utilities, etc.). Top twenty-ranked University of Minnesota Law School currently faces the unforgiving realities of balance sheets and income statements covered in red ink.<sup>14</sup> While the University of Minnesota Regents approved a two-year temporary subsidy in Summer 2018, the Regents directed the Law School to revamp its operations so that it can become a solvent, sustainable enterprise.<sup>15</sup> They recommended that the law school rethink its admissions, class sizes, and focus on maintaining a national rank.<sup>16</sup> While the forces of creative destruction presently and publically thrash Minnesota Law School, other schools across the United States face similar financial challenges, including several that currently wind down operations and have or will soon close.<sup>17</sup>

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taining, they must promptly re-engineer their tradition-bound (resistant to change) cultures to (1) serve the needs of “customers (students)” and the profession, and (2) nimbly respond to market-driven changes and unstable economic conditions. *Id.* at 15–16.

14. Paul Caron, *University of Minnesota Approves \$3.6 Million Subsidy for Law School; Regent Urges School to Drop Quest to Retain Top 20 Ranking Due to Projected \$100 Million 10-Year Subsidy*, TAXPROF BLOG (June 22, 2018), [http://tax-prof.typepad.com/taxprof\\_blog/2018/06/university-of-minnesota-approves-1-year-36-million-subsidy-for-law-school-one-regent-urges-school-to.html](http://tax-prof.typepad.com/taxprof_blog/2018/06/university-of-minnesota-approves-1-year-36-million-subsidy-for-law-school-one-regent-urges-school-to.html) [<http://perma.unl.edu/V7DU-Q73H>].
15. *Id.*
16. *Id.* But see Austen Macalus, *Rising Enrollment, Applications a Good Sign for Law School*, MN DAILY (Feb. 19, 2019), <https://www.mndaily.com/article/2019/02/n-rising-enrollment-applications-a-good-sign-for-law-school> <https://perma.unl.edu/YSL7-GJHA> (reporting that Minnesota Law School has made progress on its three-year plan to eliminate multi-million dollar deficits by 2021). According to Brian Burnette (senior VP of University finance and operations) and Law School Dean Garry Jenkins, the law school has increased enrollments, improved philanthropic donations, cut discretionary expenses, eliminated faculty and staff positions, reduced tenured faculty salaries, and limited raises. *Id.* However, the twenty-five percent drop in international students enrolling in the LL.M. program raises revenue stream concerns. *Id.*
17. See *Legal Education: A New Growth Vision Part I*, subsection II.C.1 (describing the closures of several law schools and the ongoing financial challenges at North-western and Vermont Law Schools); see, e.g., Mark A. Cohen, *When the Numbers Don't Add Up: Vermont Law School's Tenured Faculty Purge and What It Portends*, FORBES (July 18, 2018), <https://www.forbes.com/sites/markcohen/2018/07/18/when-the-numbers-dont-add-up-vermont-law-schools-tenured-faculty-purge-and-what-it-portends> [<http://perma.unl.edu/7V96-YMLS>] (describing the challenges at Vermont Law School and dismal state of law school economics, and then identifying growth opportunities); Bart Pfankuch, *University of South Dakota Law School Facing Challenges but Seeing Opportunities*, CAPJOURNAL.COM (May 18, 2018), [https://www.capjournal.com/news/university-of-south-dakota-law-school-facing-challenges-but-seeing/article\\_ac522b08-5a61-11e8-a323-3f8f955b6e62.html](https://www.capjournal.com/news/university-of-south-dakota-law-school-facing-challenges-but-seeing/article_ac522b08-5a61-11e8-a323-3f8f955b6e62.html) [<http://perma.unl.edu/8JU4-CXGE>] (“Applications are historically down. The balance sheet is barely in the black. More marginally qualified stu-



Second, digital technologies will fundamentally disrupt and reshape the business of legal education. As rapid digitization and globalization decouple geography as a reliable source of new students, traditional brick-and-mortar law schools will face increasing financial pressures. In this unstable legal education landscape, market forces will sort the winners and losers. While super elite programs such as Harvard and Yale Law Schools will continue to command premium tuition, non-elite programs must differentiate to survive. Since educational choices result in a lifetime of economic consequences, the market will ultimately determine law school relevance and sustainability as students (customers-purchasers) increasingly direct their time and limited financial resources to innovative law schools (providers-sellers) that deliver both tuition value and education designed for the digital, AI, and robot age.<sup>18</sup> The shift to students “as customers” represents the new normal. Law schools that refuse to recognize this market shift are easy marks for nimble, entrepreneurial, creative, and technologically-sophisticated competitors.

Third, in regions with multiple law schools competing for the same new students, the years ahead will be brutal for programs with traditional education offerings and ossified financial models.<sup>19</sup> For example, in Colorado, only thirty-three miles separate the University of

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dents have been admitted in recent years. And the school, which produces most of South Dakota’s lawyers, is on the watch list with its main accreditation agency.”); see generally Karen Sloan, *Future of Independent Law Schools Is in Peril*, LAW.COM (July 25, 2018), <https://www.law.com/2018/07/25/future-of-stand-alone-law-schools-is-in-peril/> [<http://perma.unl.edu/N455-P7MD>].

18. THE WORK AHEAD: MACHINES, SKILLS, AND U.S. LEADERSHIP IN THE TWENTY-FIRST CENTURY, COUNCIL ON FOREIGN RELATIONS 29 (2018) (“For most Americans, their educational choices will be the most economically consequential decision they make in their lives. They need to be empowered with the resources, information, and opportunities to make the best decisions possible.”); see also Bernard A. Burk et al., *Competitive Coping Strategies in the American Legal Academy: An Empirical Study*, 19 NEV. L.J. (forthcoming 2019) (manuscript at 8) (on file with author) (arguing that in the higher education marketplace, “law schools are sellers, and law students are buyers, of a specific service: legal education intended to eventuate in a JD degree.”). They add that in the law school economic marketplace, the “buyers care deeply about price and perceived value.” *Id.* But see Amy Y. Li, *Dollars and Sense: Student Price Sensitivity to Law School Tuition* (AccessLex Inst. Res. Paper No. 18-09), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3216204](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3216204) [<http://perma.unl.edu/L2GS-PCUK>] (“[Students are willing to] apply and enroll at law schools despite increases in tuition and fees. At private law schools and at law schools in third and fourth tiers, first-year students are even willing to pay higher net costs. This study reveals that there is in fact, a lack of price sensitivity in legal education.”).
19. Michael Simkovic, *Which Law Schools Could Merge?*, BRIAN LEITER’S LAW SCH. REP. (July 20, 2018), <http://leiterlawschool.typepad.com/leiter/2018/07/which-law-schools-could-merge-michael-simkovic.html> [<http://perma.unl.edu/D95H-E7PT>] (posting a general map of ABA approved law schools (with some schools missing)).

Colorado (Boulder) and University of Denver Law Schools. In Minnesota, the Minneapolis-Saint Paul area has three law schools.<sup>20</sup> Supporting this survival of the fittest theory, University of St. Thomas Law Professor Jerome Organ partially attributed Northwestern Law School's current financial challenges to the "fierce competition for highly qualified students among highly ranked law schools in the Midwest."<sup>21</sup>

Geographic concentration, therefore, compounds financial pressures and tests the "theory of business"—meaning assumptions or business model—used by each school to generate revenue.<sup>22</sup> According to Emory Law Professor Dorothy Brown, "The current business model is just not sustainable, which is why you see [law] schools losing money. Unfortunately every school is after the same students, which means we're in an arms race."<sup>23</sup> Professor Brown then predicted that top leaders at many U.S. universities will conclude that the market is oversaturated and make a bottom line financial decision to close their law schools.<sup>24</sup> In this harsh landscape, schools must battle for survival; the victor will enjoy the spoils. Minnesota Law School foretells peril for many schools.

Fourth, as posited in *Legal Education: A New Growth Vision Part I*, legal education programs serve a wide range of interconnected cus-

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20. Burl Gilyard, *The Legal Market Is Changing. Can Minnesota's Law School Adapt?*, MINN. POST (June 20, 2016), <https://www.minnpost.com/twin-cities-business/2016/06/legal-market-changing-can-minnesota-s-law-schools-adapt> [http://perma.unl.edu/EEJ9-Q8EZ] (University of Minnesota Law, Mitchell Hamline School of Law, and University of St. Thomas Law School).

21. Karen Sloan, *Northwestern Law Is Paring Back Amid Budget Woes. Are Other Elite Schools Next?*, LAW.COM (Nov. 8, 2018), <https://www.law.com/therecorder/2018/11/08/northwestern-law-is-paring-back-amid-budget-woes-are-other-elite-schools-next> [http://perma.unl.edu/4PXQ-XSDT].

22. Andrea Ovans, *What Is a Business Model?*, HARV. BUS. REV. (Jan. 23, 2015), <https://hbr.org/2015/01/what-is-a-business-model> [http://perma.unl.edu/8MDT-9B29] (quoting Joan Magretta) ("A good business model answers Peter Drucker's age-old questions, 'Who is the customer? And what does the customer value?' It also answers the fundamental questions every manager must ask: How do we make money in this business? What is the underlying economic logic that explains how we can deliver value to customers at an appropriate cost?"); see generally MARK W. JOHNSON, *REINVENT YOUR BUSINESS MODEL: HOW TO SEIZE THE WHITE SPACE FOR TRANSFORMATIVE GROWTH* (2018); Mark A. Cohen, *New Business Models – Not Technology – Will Transform the Legal Industry*, FORBES (Nov. 8, 2018), <https://www.forbes.com/sites/markcohen1/2018/11/08/new-business-models-not-technology-will-transform-the-legal-industry/#fc8a0e518ccf> [http://perma.unl.edu/ZEJ8-YV57].

23. Gilyard, *supra* note 20; see generally Amy N. Farley et al., *Law Student Success and Supports: Examining Bar Passage and Factors That Contribute to Student Performance*, U. CINCINNATI (May 2018), at 4 (noting the current law school "arms race" for higher rankings and the application – and matriculation – of prospective students" who can pass the bar exam).

24. Gilyard, *supra* note 20.

tomers including students, graduates, employers, and the professional community.<sup>25</sup> Entrepreneurial, survival-oriented law schools will therefore reinvent their business model to provide this full spectrum of customers with high-quality, convenient, cost-effective, context-based, and technology integrated knowledge and skill development services.<sup>26</sup> Despite some faculty distaste of the idea that students are customers, a customer focus is fully compatible with academic rigor because the proposed customer focus seeks to align student instruction with real-life practice demands, foster content-rich knowledge and skills development exchanges, and enhance overall program value. For leaders seeking to improve the bottom line, diversified income streams can provide the program with (1) flexibility to navigate market uncertainty and (2) economic wherewithal to capitalize on emerging service opportunities.

For law schools ready to change, the next steps require getting back to the basics, which involves customer-focused reinvention, em-

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25. Anticipating an argument that education is inherently different from other consumer relationships and, therefore, the “student as customer” analysis is patently wrong, please note the specific type of education discussed in this Article: professional legal education (not undergraduate education). Students attend professional schools to obtain doctrinal knowledge and technical skills for a career as a legal professional. See ANAND, *supra* note 8, at xxv (2016) (identifying three types of critical connections that form a “Connections Triad”). The Triad includes: “connections between users, connections between products, and connections across an organization’s activities.” *Id.* Forward-focused innovation strategies will identify and leverage these relational, functional, and organizational connections to provide customers with integrated, holistic solutions.

26. Mark A. Cohen, *What Are Law Schools Training Students For?*, FORBES (Nov 19, 2018), <https://www.forbes.com/sites/markcohen1/2018/11/19/what-are-law-schools-training-students-for/#5c13851864f2> [http://perma.unl.edu/YLC3-YGKQ] (“A far bigger—and more important step would be for the legal Academy to forge alignment with the marketplace. That would be a ‘win-win-win’ for students, law schools, and legal providers/consumers.”). Cohen explains,

Students would be exposed to the “real world” and the skills, opportunities, and direction it is taking. The Academy would acquire context, use-cases, and an understanding of consumer challenges and needs—a strong foundation from which to remodel legal education and training, address the “skills gap,” as well as to improve “student outcomes.”

*Id.* For some insights on teaching context in law school curriculum, see generally Eli Wald, *The Contextual Problem of Law Schools*, 32 NOTRE DAME J.L., ETHICS & PUB POL’Y 281, 297 (2018) (“Law schools have a conflicted existential identity because they have outdated and confused understandings of law and lawyering, which result in an outdated and confused approach to legal education.”). Wald emphasizes: “Law schools can no longer deny the importance of context. It matters immensely in the practice of law. The representation of clients, advice-giving, advocating, drafting, negotiating, indeed, the very exercise of professional judgment all take place in a context that shapes and informs lawyers’ decision-making.” *Id.* at 299. Some sources of the current legal education dysfunction include: (1) the traditional law school hierarchical culture that favors scholars over practitioners, and (2) “mutual disdain in which law schools and the practicing bar hold each other.” *Id.* at 294, 297, 315.

brace of the physical and digital convergence of education, identification and resolution of customer friction points, and modernization of legal education to deliver innovative customer satisfactions.

### III. GETTING BACK TO THE BASICS

Steve Jobs's remarkable turnaround of Apple illustrates the importance of focusing on the basics to build a future. Twenty-two years ago, Steve Jobs returned to Apple, Inc., the company he originally founded with Steve Wozniak in 1976.<sup>27</sup> After years of lackluster product sales and plummeting stock value, Apple's board of directors ousted CEO Gil Amelio and appointed Steve Jobs as interim CEO in July 1997.<sup>28</sup> To save Apple from the financial brink, Jobs led a radical restructuring of Apple's product lines and entered into strategic partnerships with Microsoft and Intel.<sup>29</sup> He famously articulated Apple's vision as recognizing "that technology alone is not enough—it's technology married with liberal arts, married with the humanities, that yields us the results that make our hearts sing."<sup>30</sup> Jobs's design philosophy and strategy manifested in his collaborations with Jony Ives to create elegant user interfaces (i.e., the ways in which a person interacts with the technology) based on what consumers wanted (or did not yet know they wanted) and could easily navigate.<sup>31</sup> Together, they designed and built products that combined simplicity and elegance to deliver superior customer experiences<sup>32</sup> and often seamlessly blended "high tech"

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27. *History of Apple Inc.*, WIKIPEDIA, [https://en.wikipedia.org/wiki/History\\_of\\_Apple\\_Inc.#1997.E2.80.932001:\\_Apple.27s\\_comeback](https://en.wikipedia.org/wiki/History_of_Apple_Inc.#1997.E2.80.932001:_Apple.27s_comeback) [http://perma.unl.edu/5GP9-5839].

28. *Id.*

29. *Id.*

30. Jonah Lehrer, *Steve Jobs: "Technology Alone Is Not Enough"*, NEW YORKER (Oct. 7, 2011), <https://www.newyorker.com/news/news-desk/steve-jobs-technology-alone-is-not-enough> [http://perma.unl.edu/4KR2-GHTH].

31. WALTER ISAACSON, *STEVE JOBS* 342–43 (2011); see ANDREW MCAFEE & ERIK BRYNJOLFSSON, *MACHINE PLATFORM CROWD: HARNESSING OUR DIGITAL FUTURE* 170 (2017) (discussing how Apple and other design-minded innovators "follow [the] advice often attributed to Einstein: 'Make things as simple as possible, but not simpler'"); see also Marc de Jong et al., *The Eight Essentials of Innovation*, MCKINSEY Q. (Apr. 2015), <https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/the-eight-essentials-of-innovation> [http://perma.unl.edu/7JSW-DSJE] (noting that while customers may not know exactly what they want, they can "certainly say what they *don't* like"). These customer insights provide the digital innovation team with valuable feedback to move more quickly to "a great end result." *Id.* See *Legal Education: A New Growth Vision Part III*, subsection II.B.1 for a discussion of digital innovation teams.

32. ISAACSON, *supra* note 31, at 343 (quoting Apple's first brochure which proclaimed: "Simplicity is the ultimate sophistication."); see also HENRY CHESBROUGH, *OPEN SERVICES INNOVATION: RETHINKING YOUR BUSINESS TO GROW AND COMPETE IN A NEW ERA* 19 (2011) (noting Steve Jobs and Apple's consistent vision to "deliver an outstanding customer experience").

with “high touch.”<sup>33</sup> Most importantly, Jobs always looked forward instead of backward.<sup>34</sup> His radical changes, design philosophies, entrepreneurial spirit, and technology foresight guided Apple’s innovation mission trajectories.

For leaders of legal education programs determined to go forward, it is essential to focus on the basics. Specifically, these questions must be answered: What do your customers want and value? How can technology inspire, improve, and transform the customer educational experience? How can we make our customers’ lives better? The answers to these questions coupled with entrepreneurial zeal will illuminate innovation pathways for reinventing legal education.<sup>35</sup>

### A. Customer-Focused Program Reinvention

Organizations responding to SIPs must define their core mission as an obsessive quest to provide customers with beneficial goods, products, or services. Determining and delivering what customers want, need, and appreciate (now and in the future) separates marketplace winners from losers. To determine what customers want and value involves asking and answering four basic questions: (1) What is your business? (2) Who are your customers? (3) What do your customers want? and (4) What is value and how do you add value?

#### 1. *What Is Your Business?*

The primary action item for law schools revamping their organization involves identifying their customer base. In “Marketing Myopia,” Harvard Business School Professor Theodore Levitt challenges business leaders to answer the question, “What business are you really in?”<sup>36</sup> Levitt frames this question based on his research of the management of once-dominant businesses that ultimately failed. His research concludes that management’s improper definition (and vision) of its business purpose, coupled with a changing marketplace, resulted

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33. JOHN NAISBITT, MEGATRENDS 52 (1984) (describing importance of “high tech/high touch” to human happiness).

34. Jobs adhered to hockey legend Wayne Gretzky’s maxim, “Skate where the puck’s going, not where it’s been.” ISAACSON, *supra* note 31, at 349; *see also* ERIC REIS, THE STARTUP WAY: HOW MODERN COMPANIES USE ENTREPRENEURIAL MANAGEMENT TO TRANSFORM CULTURE & DRIVE LONG-TERM GROWTH 80 (2017) (echoing Jobs’s commitment to Gretzky’s maxim by stating: “The only way to win in this world is to take more shots on goal. Try more radical things. Pay close attention to what works and what doesn’t. And double down on the winners.”).

35. ERIK BRYNJOLFSSON & ANDREW MCAFEE, THE SECOND MACHINE AGE: WORK, PROGRESS, AND PROSPERITY IN A TIME OF BRILLIANT TECHNOLOGIES 214–15 (2014) (“Entrepreneurship . . . is an innovation engine.”).

36. Theodore Levitt, *Marketing Myopia*, BEST OF HBR 1960, HARV. BUS. REV. at 138 (July–Aug. 2004).

in catastrophic failure.<sup>37</sup> According to Levitt, these businesses collapsed because of their leadership's shortsighted vision and disregard of customer needs.

The question "What business are you really in?" challenges leaders to reframe their orientation from a narrow product view to a wider customer focus.<sup>38</sup> Levitt emphasizes the absolutely essential business function of meeting customer needs and notes the crucial difference between selling and marketing. According to Levitt, "selling focuses on the needs of the seller, marketing on the needs of the buyer."<sup>39</sup> He concludes that successful enterprises must "create value-satisfying goods and services that consumers will want to buy."<sup>40</sup>

To illustrate his argument, Levitt gives two examples: railroads and movies. As to the first, Levitt attributes the decline in the passenger railroad business to leadership's failure to recognize the business that they actually were in: transportation.<sup>41</sup> Disruptive technologies such as cars, trucks, and planes captured market share because the railroads failed to deliver a needed and desired customer transportation solution.<sup>42</sup> Levitt then discusses how the initially myopic vision of Hollywood studio executives—fixated exclusively on movies—nearly missed the larger trends and opportunities in the entertainment busi-

37. *Id.* at 139.

38. See ANAND, *supra* note 8, at 115 (cautioning against having an "overly narrow lens" when evaluating complementary enterprise opportunities).

39. Levitt, *supra* note 36, at 143.

40. *Id.*

41. *Id.* at 138–39; see also *What Business Are You in?: Classic Advice from Theodore Levitt*, HARV. BUS. REV. (Oct. 2006), <https://hbr.org/2006/10/what-business-are-you-in-classic-advice-from-theodore-levitt> [<http://perma.unl.edu/C2PG-ZNHD>] (noting that in expanding markets, leaders do not need much creativity, but in tight markets, creativity is essential).

42. *Id.*; see Thorsten Koch & Josef Windsperger, *Seeing Through the Network: Competitive Advantage in the Digital Economy*, J. ORG. DESIGN 6:6 (2017), at 25 (noting German automobile manufacturers' response to changing customer preferences by shifting their business definition and model from car-makers to "mobilitätsermöglichlicher"—that is, "mobility enablers"); see IBM 2016 CEO C-SUITE STUDIES, *supra* note 10, at 4 (describing how "Ford and BMW are planning for an era of mobility solutions, in which few people actually own vehicles"); *Incumbents Strike Back: Insights from the Global C-suite Study*, IBM 2018 GLOBAL C-SUITE STUDY [hereinafter IBM 2018 GLOBAL C-SUITE STUDY] 1, 10–11 (Feb. 2018) (on file with author) ("BMW intends to 'out-Uber' Uber by owning a fleet of cars that can—based on daily demand—be optimized for different services. It can dispatch a car in its fleet, with a professional driver, for ride hailing or make it available to short-term, by-the-hour rental."); see also Jack Ewing, *BMW and Daimler, Once Rivals, Join Forces to Fend Off Silicon Valley*, N.Y. TIMES (Mar. 28, 2018), <https://www.nytimes.com/2018/03/28/business/daimler-bmw-car-sharing.html> [<http://perma.unl.edu/XE63-XHBW>] ("BMW and Daimler hope they will be in a better position to compete with companies like Zipcar . . . as well as bigger threats like Uber.").

ness (i.e., television, gaming, and other media content).<sup>43</sup> Unlike railroads, however, Hollywood's future-focused young leaders realized that their customer base included not just moviegoers, but all entertainment-seekers, and thus embraced new media such as television and other amusements.<sup>44</sup> This strategic shift resulted in five decades of Hollywood dominance.<sup>45</sup>

Leaders of legal education programs may reflexively answer Levitt's question with "the education business." But what exactly comprises the education business? Who seeks these services? Who benefits from them? And, what do various stakeholders think that modern law schools should be concerned about and focused on given their unique vantage points (e.g., trends, technologies, processes, services, business model transformations, market conditions, etc.)?<sup>46</sup> Direct engagement with customers and potential customers will help answer these questions. Leaders now must determine who to ask these business shaping questions.

## 2. *Who Are Your Customers?*

Because many leaders and faculty may prefer to elevate education from the gritty realities of business, the seller-customer dynamic may seem initially abhorrent. From an indebted student's vantage point, the traditional model of education focuses only on students as "cus-

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43. Levitt, *supra* note 36, at 138–39.

44. *Id.* (attributing Hollywood's resurgence to a "wave of new young writers, producers, and directors" that recognized the potential of television); *see also* McDonald R. Stewart & Elias G. Carayannis, *Dystechnia: A Model of Technology Deficiency and Implications for Entrepreneurial Opportunity*, *J. INNOVATION & ENTREPRENEURSHIP* 2:1, at 16 (2013), <https://innovation-entrepreneurship.springeropen.com/articles/10.1186/2192-5372-2-1> [http://perma.unl.edu/R6GW-URHY] (discussing Walt Disney's entrepreneurial spirit and "bet-the-farm risk" when imagining and developing Disneyland).

45. Levitt, *supra* note 36, at 138–39.

46. GROVE, *supra* note 4, at 23; *see also* Cohen, *supra* note 26 (asserting that law school success depends on "customer satisfaction—a positive experience, a satisfying outcome, and value"). Cohen then explains that there is "no one-size fits all answer" for law school enterprise sustainability and notes how each law school tier can serve different market segments. *Id.* For non-elite law schools, Cohen writes:

There is enormous opportunity to train students to better serve law's "retail" segment. Tens of millions of new legal consumers would enter the market if there were more new, efficient delivery models that better leverage lawyer time utilizing technology, process, data, metrics, and a client-centric business structure. So too are there opportunities for grads of non-elite schools trained in data analytics, project management, knowledge management, and a plethora of other "business of law" positions—many of which have yet to be created.

*Id.* Cohen emphasizes that because customer needs are fluid, non-elite law schools must become dynamic knowledge ecosystems that continuously adapt to the "needs of legal consumers, not their own." *Id.*

tomers”<sup>47</sup> (and may not even go that far). A more robust and modern definition should acknowledge that law school customers include employers and consumers of legal services. Another customer growth area includes community professionals who need to update their knowledge and skills to maintain licensure and respond to changing marketplace conditions.

Accordingly, entrepreneurial law schools should work to address holistically the needs of students, employers, legal services consumers, and community professionals when crafting a business model for the digital age. For instance, legal education programs with an updated business model can provide lifelong, convenient, cost-effective, digital, and unified knowledge and skills development solutions.<sup>48</sup> Some fertile areas of exploration include on-demand content models similar to Netflix, delivering market-valued “just-in-time” learning and curricula designed for the knowledge and skill needs of the present and future, not for the past.<sup>49</sup>

Entrepreneurial education leaders synthesizing the questions and answers above may reasonably conclude that (1) the business of law school education represents a too narrow market construct, whereas the “larger business of lifelong learning” provides an abundance of

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47. Sun ah Kim et al., *Case Study: Student Customized Creative Education Model Based on Open Innovation*, J. OF OPEN INNOVATION: TECH., MARKET & COMPLEXITY 3:6 (2017), at 3, <https://www.springeropen.com/track/pdf/10.1186/s40852-016-0051-y?site=jopeninnovation.springeropen.com> [http://perma.unl.edu/H8EZ-74XP] (reminding universities to “be aware the consumers are students, who are the center of education”).

48. This definition tracks how the automotive industry currently reframes its long-term mission and vision into being transportation enablers and solution providers. See Michael E. Porter, *What Is Strategy?*, HARV. BUS. REV. (Nov.–Dec. 1996), <https://hbr.org/1996/11/what-is-strategy> [http://perma.unl.edu/U8KF-4STU] (discussing “needs-based” and “access-based” strategic positioning). Porter also notes: “Positions built on systems of activities are far more sustainable than those built on individual activities.” *Id.*; see also ANAND, *supra* note 8, at 205 (explaining that “business strategy” involves “being different, and combining connected activities”).

49. Mark A. Cohen, *Legal Delivery at the Speed of Business – and Why It Matters*, FORBES (June 25, 2018), <https://www.forbes.com/sites/markcohen1/2018/06/25/legal-delivery-at-the-speed-of-business-and-why-it-matters/#5d6e8fcf5e53> [http://perma.unl.edu/2X8C-CPRG] (explaining that “[f]lipped classrooms, self-help tools, and webinars will reduce cost and foster agile, just-in-time learning”); John Donahoe & Jeff Weiner, *How Can Business Leaders Make the New World of Work Better for People?*, MCKINSEY GLOBAL INST. PODCAST (June 2018), <https://www.mckinsey.com/featured-insights/future-of-organizations-and-work/how-can-business-leaders-make-the-new-world-of-work-better-for-people> [http://perma.unl.edu/WK9S-DBEG] (recommending that universities create “just-in-time curriculum, and make sure that they’re training workforce for the jobs that are and will be, and not just the jobs that once were.”).



market opportunities;<sup>50</sup> (2) a broad spectrum of customers want and need lifelong learning education services; and (3) there is a clear market need that law schools are fully capable of serving, provided that the organization has the dexterity and willingness to adapt, change, and seize opportunities. Startup-minded leaders will also immediately recognize the revenue potential in adjacent markets and complementary services that may cross-pollinate and enhance law student instruction. Identifying potential market advantages and innovation pathways requires leaders to discern customer needs and wants.

### 3. *What Do Your Customers Want?*

Determining customer wants and needs requires careful listening and thoughtful inquiry. To provide a better education service experience, program leaders should start by clarifying what these specific customers are trying to do and achieve.<sup>51</sup> This process involves digging deep into the customer experience by evaluating all human and informational touchpoints so that program leaders can “see, hear, and feel the customers’ reality.”<sup>52</sup> It is necessary to (1) “get out of the building” and seek direct input and insights into their concerns, (2) identify how the program’s expertise, products, and services can address these concerns, and (3) co-create with customers solutions for these problems.<sup>53</sup> Specifically, leaders and faculty must invite com-

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50. JOSEPH E. AOUN, ROBOT-PROOF: HIGHER EDUCATION IN THE AGE OF ARTIFICIAL INTELLIGENCE 119 (2017); see also BRADLEY R. STAATS, NEVER STOP LEARNING: STAY RELEVANT, REINVENT YOURSELF, AND THRIVE 4 (2018) (“Learning is so vital today that we can think of ourselves as living in a *learning economy*. We can’t just be knowledge workers; we must also be learning workers.”).

51. See, e.g., Serena Advani et al., *Solving the Customer-Experience Puzzle: A Guidebook for Government Leaders*, MCKINSEY & CO. (May 2018), <https://www.mckinsey.com/industries/public-sector/our-insights/solving-the-customer-experience-puzzle-a-guidebook-for-government-leaders> [http://perma.unl.edu/QR77-W5XR]; see generally William D. Henderson, *Innovation Diffusion in the Legal Industry*, 122 DICK. L. REV. 395, 412–16 (2018) (stating that when designing, testing, and launching innovations, developers should: (1) adopt “the perspective of the end user”; (2) provide a solution that is better than what is currently available; (3) deliver a familiar and compatible service or product that diminishes “perceived uncertainty”; (4) eliminate unnecessary complexity in the user experience and interface; (5) offer potential customers limited time trials to experiment with the product or service; and (6) deliver results that can be observed by others within the social system).

52. Advani et al., *supra* note 51.

53. ERIC REIS, THE LEAN STARTUP: HOW TODAY’S ENTREPRENEURS USE CONTINUOUS INNOVATION TO CREATE RADICALLY SUCCESSFUL BUSINESSES 86 (2011) (citing Steve Blank). For example, when making strategic decisions, Toyota leaders firmly believe in the term “*genchi gembutsu*,” which means “go and see for yourself.” *Id.* This approach enables leaders to make decisions based on actual knowledge and experience. *Id.*; see ANAND, *supra* note 8, at 298 (quoting advertising pioneer and legend David Ogilvy) (“If you aren’t thinking about connecting with your audience, building trust when selling your products or services . . . you need

ments and critiques of current education services and then consider these customer ideas and suggestions when designing, testing, and iterating process improvements that transform the customer experience.<sup>54</sup> Because satisfaction often turns on how well reality intersects with expectations, programs should take great care to communicate realistic expectations of what the education program will deliver, while continuously improving so that the actual experience exceeds the customers' expectations.<sup>55</sup>

Customer wants and needs can also be gleaned by identifying larger trends occurring in other industries that “can be reduced to bits and bytes and transmitted digitally.”<sup>56</sup> Only by recognizing what customers want can education programs remain relevant. Importantly, the answer—or answers—to the question “What do our customers want?” constantly changes. For example, incumbent entertainment and media players must respond to customer viewing habits that look very different than those from the days of Blockbuster and VHS tapes.<sup>57</sup> These habits include the following:

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- to reexamine your motivations.”). Anand also emphasizes the importance of co-creation. *Id.*; see also Karen Sloan, *Law Dean Who Helped Texas School Shine Takes on ‘Innovation’ Role*, LAW.COM (July 12, 2018), <https://www.law.com/sites/almstaff/2017/07/12/law-dean-who-helped-texas-school-shine-takes-on-innovation-role/> [http://perma.unl.edu/YR82-5TDK] (describing the innovation work of Andrew Morriss at Texas A&M School of Law). For a related innovation approach, see David Hoyt & Robert I. Sutton, *What Design Thinking Is Doing for the San Francisco Opera*, HARV. BUS. REV. (June 3, 2016), <https://hbr.org/2016/06/what-design-thinking-is-doing-for-the-san-francisco-opera> [http://perma.unl.edu/6GQH-7Q2Z] (emphasizing the “importance of going out into the community”).
54. GROVE, *supra* note 4, at 22–23 (“The lesson is, we all need to expose ourselves to the winds of change. We need to expose ourselves to our customers, both the ones who are staying with us as well as those that we may lose by sticking to the past.”).
55. Advani et al., *supra* note 51.
56. JOSH LINKNER, *THE ROAD TO REINVENTION: HOW TO DRIVE DISRUPTION AND ACCELERATE TRANSFORMATION* 15 (2014) (“The lesson is clear: quickly adopting future trends rather than clinging to yesterday’s success is the only way to ensure long-term survival.”); see Robert G. Fichman et al., *Digital Innovation as a Fundamental and Powerful Concept in the Innovation Systems Curriculum*, 38 MIS Q. 329, 330, 339 (June 2014) (emphasizing the importance for leaders to trend spot and recognize an emerging technology as “the next big thing”); see also ANAND, *supra* note 8, at 299 (“Music, movies, radio, television programs, books, news, and advertisements are all examples of information goods—things that can be reduced to bits and bytes and transmitted digitally. So too is education—a product whose delivery remained unchanged for nearly three centuries. Until now.”). Anand later writes: “My main argument is that the central lessons from the digital transformation of content businesses like media and entertainment have much to add to the conversations around strategy taking place in institutions of higher education today.” *Id.*
57. See *Media and Entertainment Outlook 2017*, DELOITTE, <https://www2.deloitte.com/za/en/pages/technology-media-and-telecommunications/articles/media-and-entertainment-outlook-2017.html> [http://perma.unl.edu/GTT7-4HFV].

- Increase in content consumption via mobile devices instead of television<sup>58</sup>;
- Growth in on-demand access model (“binge-watching”) instead of traditional consumption model (i.e., live broadcast, syndication, box release, etc.)<sup>59</sup>;
- Preference for varying content length (e.g., millennials prefer content of six to ten minutes in length)<sup>60</sup>;
- Influx of content creators such as Netflix, Hulu, and Amazon;
- Personalized and targeted content often marketed and promoted via social media influencers<sup>61</sup>; and
- Demand for less costly offerings (e.g., skinny bundles and subscriptions for specific services like Netflix, Amazon, HBO GO®, and Hulu).<sup>62</sup>

These entertainment trends that seamlessly blend content with connection hold rich insights for legal education programs trying to address the needs of student-customers under age thirty, a huge source of revenue for J.D. programs.<sup>63</sup> Wise education entrepreneurs will therefore continually monitor the intersection of “edutainment”—a portmanteau defined by Merriam-Webster as “entertainment (as by games, films, or shows) that is designed to be educational.”<sup>64</sup> Dismissing edutainment as applicable only to Sesame Street-type programming,<sup>65</sup> not professional education, is shortsighted.<sup>66</sup> Creative combinations of doctrinal content with media innovations could effec-

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58. *Id.*

59. *Id.*; see also *Media & Entertainment Outlook 2017*, DELOITTE US, (Jan.6, 2017), <https://www.youtube.com/watch?v=QWAX5KFP3vc#action=share> [<http://perma.unl.edu/7CGV-R6XB>] (stating that people “want to get to the content that they specifically want”).

60. *Media & Entertainment Outlook 2017*, *supra* note 59.

61. *Id.*

62. *Id.*

63. See GROVE, *supra* note 4, at 65–66; NICHOLAS NEGROPONTE, BEING DIGITAL 204 (1995) (“[T]he dominant forces are not social or racial or economic but generational[.]”); ANAND, *supra* note 8, at 16 (“It is striking how many digital media managers still think of product appeal to individual customers rather than exploiting connections.”); see also Kim Dustman & Ann Gallagher, *Analysis of ABA Law School Applicants by Age Group: 2011–2015*, LSAC (Jan. 2017) (on file with author) (analyzing ABA law school applicants and finding that between 2011 and 2015 the “median age was 24, and the mean (average) was between 26 and 27”).

64. *Edutainment*, MERRIAM-WEBSTER, <https://www.merriam-webster.com/dictionary/edutainment> [<http://perma.unl.edu/7NYM-REGL>].

65. *Edutainment*, TECHTERMS, <https://techterms.com/definition/edutainment> [<http://perma.unl.edu/2QA3-627G>].

66. NEGROPONTE, *supra* note 63, at 204–05 (noting potential for games to teach strategy and planning); see also Zach Warren, *Game On: 6 Ways Attorneys Have Used Video Games in Their Practice*, LEGAL TECH NEWS (July 23, 2018), <https://www.law.com/legaltechnews/2018/07/23/game-on-6-ways-attorneys-have-used-video-games-in-their-practice/> [<http://perma.unl.edu/6ZWS-QWVT>] (describing how legal innovators use games to (1) train employees on conducting internal

tively engage young, tech-savvy student-consumers. Forward-looking education leaders would be wise to watch the media industry for important customer trends and begin laying the groundwork for pedagogically sound game-based and edutainment learning experiences<sup>67</sup>; especially those that could eventually include AI digital tutors and personalized learning.

For leaders of LL.M. programs inclined to focus on older student demographics, short-term market differentiation opportunities currently abound for programs that cater to experienced professionals seeking to refresh their knowledge and skills. However, as the population ages, this sweet-spot will erode. New crops of LL.M. candidates will expect omni-channel, platform-based human and digital education experiences. As a market hedge, shrewd leaders should implement a simultaneous two-sided strategy: catering to seasoned professionals, while developing nimble digital program capabilities adaptable for future flows of younger students. Pedagogical excellence is ageless, especially when it unites high-quality, data-validated, omni-channel, platform-based knowledge and skills development services that are also convenient and cost-effective. Last, because older students appreciate engaging content just as much as their younger cohort, embracing the edutainment trend noted above in current program offerings may be much more fruitful than long lectures and PowerPoint presentations.

#### 4. *What Is Value and How Do You Add Value?*

The business buzzword “value” seems squishy because neat definitions do not capture its complexity and elusiveness.<sup>68</sup> Value is per-

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investigations and HR compliance, (2) evaluable potential new hires, and (3) acquaint *pro se* litigants with court proceedings).

67. PEDRO DOMINGOS, *THE MASTER ALGORITHM: HOW THE QUEST FOR THE ULTIMATE LEARNING MACHINE WILL REMAKE OUR WORLD* 218–23 (2015) (discussing games and reinforcement learning); see, e.g., ANAND, *supra* note 8, at 326 (“In effect, we were designing a *process*—a process that might be thought of as guiding learners through a series of mysteries and puzzles, each time unlocking a new question for them to tackle on their own, interspersed with short videos of real-life managers or faculty, and followed by reflections, polls, or interactive exercises.”); MITCHELL KOWALSKI, *AVOIDING EXTINCTION: REIMAGINING LEGAL SERVICES FOR THE 21ST CENTURY* 87 (2012) (explaining that games provide users with interactive and fun ways to learn and retain information and also receive immediate feedback); see also *Samsung Italia: Next-Level Digital Learning for the Next Generation*, ACCENTURE DIGITAL (Apr. 2018), <https://www.accenture.com/us-en/success-samsung-italian-school-letsapp> [<http://perma.unl.edu/K3Q3-RV44>] (describing Samsung’s LetsApp, a digital learning platform featuring content modules that teach digital skills in the areas of app development, presentation skills, and digital marketing—without requiring users to possess coding skills).

68. James C. Anderson & James A. Narus, *Business Marketing: Understand What Customers Value*, HARV. BUS. REV. (Nov.–Dec. 1998), <https://hbr.org/1998/11/business-marketing-understand-what-customers-value> [<http://perma.unl.edu/Z4NC->

sonal; the definition of value, therefore, varies from person to person. Generally, when evaluating the purchase of products or services, customers consider and weigh the “perceived value against the asking price” based on their unique vantage points.<sup>69</sup> Peter Drucker’s classic observation is relevant here: “What the customer buys and considers value is never a product [or service]. It is always utility—that is, what a product [or service] does for him.”<sup>70</sup> Further, value-based purchase decisions often take into account the potential social, emotional, functional, financial, and life-changing aspects that may result.<sup>71</sup> Customer satisfaction often involves fulfilling multiple, fuzzy touch-points, some of which may include: social status or achievement; emotional benefits such as wellness, fun, and rewards; functional considerations such as information, time savings, hassle avoidance, and quality; and life-changing factors such as motivation, achievement,

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YL2R] (acknowledging the difficulty in defining and measuring value). They explain that “[v]alue in business markets is the worth in monetary terms of the technical, economic, service, and social benefits a customer company receives in exchange for the price it pays for a market offering.” *Id.* In their Article, Anderson and Narus outline the multi-step process for developing data-driven “customer value models.” *Id.* See generally Richard A. Matasar, *The Rise and Fall of American Legal Education*, 49 N.Y.L. SCH. L. REV. 465, 467–68, 476 (2005) (examining the basic questions “What is the value of a legal education?” and whether legal education “is worth its expense”). Matasar also considers: “[W]hat happens when costs exceed returns in the market? Will increasing prices and expenditures continue to sustain the vast majority of schools whose reputation never rises? What happens to such schools if their graduates never experience the increased opportunities that come to those who attend high-prestige schools? Can the model be sustained?” *Id.* at 478. Further, in 2004, Matasar presciently predicted the challenges legal education programs continue to face and anticipated potential enterprise solutions such as product diversification (distance learning, lifelong learning and unbundled education services), open innovation (partnerships, consortia, mergers/acquisitions), and most importantly, the creation of “better product[s].” *Id.* at 496–504.

69. Eric Almquist et al., *The Elements of Value*, HARV. BUS. REV. (Sept. 2016), <https://hbr.org/2016/09/the-elements-of-value> [<https://perma.unl.edu/VA2X-Y55A>]; see also CLAYTON M. CHRISTENSEN, *THE INNOVATOR’S DILEMMA: THE REVOLUTIONARY BOOK THAT WILL CHANGE THE WAY YOU DO BUSINESS* 218–19 (2011) (describing a purchaser’s “buying hierarchy” as consisting of four elements: “functionality, reliability, convenience, and price”).
70. CHESBROUGH, *supra* note 32 (citing PETER DRUCKER, *MANAGEMENT: TASKS, RESPONSIBILITIES, PRACTICES* 57 (1999) [originally published in 1974]); see also REIS, *supra* note 34, at 68 (2017) (stating customers “only care if we make their lives better”); RICHARD S. TEDLOW, *DENIAL: WHY BUSINESSES FAIL TO LOOK FACTS IN THE FACE—AND WHAT TO DO ABOUT IT* 19 (2010) (“Any product or service is a combination of what the business provides and what the customer wants and expects.”).
71. Almquist, *supra* note 69; see generally JERRY Z. MULLER, *THE TYRANNY OF METRICS* 85–86 (2018) (describing how the Brookings Institution tries to calculate the “value added” which “means the increase in income provided by each college” so that students will know how well programs and schools prepare “students for remunerative careers”).

legacy, and group affiliation.<sup>72</sup> Given these complexities, delivering value requires thinking holistically and creatively.<sup>73</sup>

Creative combinations of ideas, technologies, and processes can generate value.<sup>74</sup> For example, value creation can appear in (1) the launch of new products and services, (2) the development of innovative solutions to vexing customer problems, and (3) the reinvention of product or service delivery.<sup>75</sup> Forward-focused leaders of profitable businesses know that value creation functions as the fourth table leg along with cost management, pricing, and customer loyalty.<sup>76</sup> Adding value requires leaders to prioritize value creation as an essential growth strategy and reinvent the organization's structure and functions so that it can continuously design and generate value.<sup>77</sup> Astute leaders will embed a "hunt for value"<sup>78</sup> ethos throughout its culture, which means that employees of all levels should survey and consult with customers to identify and resolve customer friction points (discussed *infra* in section III.C). Importantly, these dialogues can lead to customer co-creation of new, market-valued products and services that may further diversify revenues.

Organizations that continuously create and deliver value (1) differentiate their offerings from competitors, (2) meet client needs, (3) generate referrals, and (4) profit from loyal returning customers.<sup>79</sup> To do this, these organizations launch innovation growth factories to de-

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72. Almquist, *supra* note 69.

73. *Id.*

74. Jack Hughes, *What Value Creation Will Look Like in the Future*, HARV. BUS. REV. (May 17, 2013), <https://hbr.org/2013/05/what-value-creation-will-look-like-in-the-future> [<http://perma.unl.edu/K7QB-GDPG>].

75. *Id.*; see also Jong et al., *supra* note 31 (explaining that value innovation "requires actionable and differentiated insights—the kind that excite customers and bring new categories and markets into being"). To find these opportunities, entrepreneurs should scrutinize three areas: "[1] a valuable problem to solve, [2] a technology that enables a solution, and [3] a business model that generates money from it." *Id.*

76. Almquist, *supra* note 69.

77. Hughes, *supra* note 74. Hughes explains:

The value chain will supplant the supply chain. Supply chain management is about taking out cost and making process efficient, but, as we've said, this won't be enough; value chain management is about how to create value; how to coordinate the continuous innovations of creative contributors and how to make that process efficient for the consumer and the contributor.

*Id.*; see also Gino Chirio, *Growth Strategy: The 6 Ways to Grow a Company*, HARV. BUS. REV. (June 2018), <https://hbr.org/2018/06/the-6-ways-to-grow-a-company> [<http://perma.unl.edu/4X86-FRQ5>] (identifying six growth categories on which to focus: (1) new processes, (2) fresh experiences, (3) innovative features, (4) engaging more customers, (5) updating offerings, and [6] releasing new models).

78. Almquist, *supra* note 69.

79. *Id.*

velop new sources of value.<sup>80</sup> As discussed *infra* subsection IV.C.4, innovation growth factories<sup>81</sup> use prototypes and minimum viable products to design and iterate new customer-valued products and services. Thoughtful, holistic customer solutions provide abundant growth tracks for nimble, adaptive, and innovative organizations that consistently scout for and then seize opportunities to provide complementary services to customers in adjacent markets, especially if the adjacent or complimentary services offer customers with frictionless experiences.<sup>82</sup>

The Amazon Prime program illustrates this value creation and addition process and shows that customers will pay for value. In 2005, Amazon provided unlimited two-day shipping for an annual fee of \$79.<sup>83</sup> It then expanded the Prime subscription to include streaming media and other customer-valued platform digital services.<sup>84</sup> Significantly, each addition attracted new customers and enhanced Amazon's market status.<sup>85</sup> Nearly forty percent of the U.S. market uses Amazon Prime—making it “a juggernaut of customer value.”<sup>86</sup> Over time, Amazon's expansion of customer-valued services enabled it to raise steadily its annual subscription fee.<sup>87</sup> The important lesson Amazon Prime teaches us is that when customers clearly see the connection between price paid and value received, they will accept cost increases.

The issue of value and legal education presents both challenges and opportunities. As with any major purchase, prospective students, students, and graduates of legal education programs will individually arrive at their unique value of legal education based on the complex interplay of social, emotional, functional, and life-changing aspects described above. Student loan debt and questionable job prospects have

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80. RITA GUNTHER McGRATH, *THE END OF COMPETITIVE ADVANTAGE: HOW TO KEEP YOUR STRATEGY MOVING AS FAST AS YOUR BUSINESS* 111–15, 124 (2013); see generally *Reinventing Innovation: Five Findings to Guide Strategy Through Execution*, KEY INSIGHTS FROM PwC'S INNOVATION BENCHMARK (2017), <https://www.pwc.com/us/en/advisory-services/business-innovation/assets/2017-innovation-benchmark-findings.pdf> [<http://perma.unl.edu/32RL-GUEQ>].

81. McGRATH, *supra* note 80, at 124.

82. The business model transformations at UBER led by CEO, Dara Khosrowshahi, to become the “Amazon for transportation” bear watching in the years ahead (UberX, Pool, Express pool, Jump e-bikes, Business, Freight, Health, and Eats). See, e.g., Audio: Kara Swisher, *UBER CEO Dara Khosrowshahi (Live at Code 2018)*, RECODE DECODE (June 3, 2018), <https://art19.com/shows/recode-decode/episodes/0c064580-bab0-45ce-91c4-51a72a2a53f3> [<http://perma.unl.edu/2DZJ-9Q4Q>]; see generally UBER, <https://www.uber.com/> [<https://perma.unl.edu/6QMU-9L6Y>].

83. Almquist, *supra* note 69.

84. *Id.*

85. *Id.*

86. *Id.*

87. *Id.*

dampened the perceived value of legal education for prospective students and soured graduate opinions.<sup>88</sup> Again, because value is personal, it is difficult to define what exactly constitutes law school value. Some commentators rate “Best Value Law Schools” as those that offer students low debt and high employment success.<sup>89</sup> They point to programs at the University of Nebraska, Kentucky, Alabama, and Georgia as examples of value because at these schools: average student debt was less than \$100,000, the schools have strong bar passage rates, and graduates generally secure work as lawyers.<sup>90</sup>

Low debt and high employment, therefore, serve as two bright-line value objectives. As discussed in *Legal Education: A New Growth Vision Part III*, farsighted law school deans will laser focus on delivering this value when developing innovation mission trajectories,<sup>91</sup> implementing structured goal setting (transformation management) systems, and reinventing the economics of legal education.<sup>92</sup> As discussed

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88. See *Legal Education: A New Growth Vision Part I*, section IV.B for a discussion of these and other law applicant, student, and graduate concerns. *But see* Li, *supra* note 18, at 34 (finding “a lack of price sensitivity in legal education”).

89. *See, e.g.*, Mike Stetz, *Best Value Law Schools*, NAT’L JURIST: PRELAW 34–42 (Fall 2016) (on file with author).

90. *Id.* at 35; Kathryn Rubino, *The Law School That Provides the Best Return on Your Investment*, ABOVE THE LAW (Oct. 15, 2018), <https://abovethelaw.com/2018/10/the-law-school-that-provides-the-best-return-on-your-investment/> [<http://perma.unl.edu/PN46-PE43>] (identifying the University of Georgia Law as the “Best Value Law School in the country”); *see, e.g.*, Karen Sloan, *NYU Drops Med School Tuition. Will Law Schools Follow Suit?*, LAW.COM (Aug. 20, 2018), <https://www.law.com/2018/08/20/nyu-drops-med-school-tuition-will-law-schools-follow-suit/> [<http://perma.unl.edu/V64R-9GE9>] (quoting Kyle McEntee, executive director of Law School Transparency) (“[L]aw schools should [ ] focus on how to bring down their operating costs and pass those savings on to students.”). McEntee adds that law schools should develop a more sustainable business model that does not require annual tuition of nearly \$70,000. *Id.*; *see also* Mark A. Cohen, *Vermont Law School Redux: The Numbers Still Don’t Add Up*, LAW.COM (Aug. 6, 2018), <https://www.law.com/2018/08/06/vermont-law-school-redux-the-numbers-still-dont-add-up/> [<http://perma.unl.edu/UJ2D-XERZ>] (“The legal Academy must ‘do more with less.’ Vermont Law School—and others—must face the reality that their model of ever-escalating tuition, fancy new buildings, arcane new courses that fascinate their instructors but don’t add much value to students, and a faculty wholly unfamiliar with the marketplace are over.”).

91. Innovation mission trajectory (IMT): A fusion of modern innovation theories, an innovation mission trajectory encourages entrepreneurs to imagine the fantastic and improbable future and then design ways to implement those dreams. This process of ideation, innovation, and implementation occurs through open collaborations between multidisciplinary knowledge experts, technology professionals, and diverse entities that systematically and continuously experiment (e.g., prototypes and MVPs) to create, identify, and nurture seeds of inspiration. IMTs are designed to be flexible in conception and application but are always iterative and dynamic. *See* Appendix III, located in *Part III* of this Article series, for an expanded definition.

92. *See, e.g.*, Roy Strom, *What the Legal Industry Can Learn from SpaceX’s Success*, AM. LAW. (Jan. 26, 2018), <https://www.law.com/americanlawyer/sites/american>



next, the emerging opportunities resulting from the physical and digital convergence of education may reveal pathways for uncovering and delivering value for a broad range of legal education customers.

## B. Physical and Digital Convergence of Education

According to Levitt, when defining your business, management must focus on meeting consumer needs and delivering “customer satisfactions” in a form and manner that consumers want.<sup>93</sup> The twentieth century brick-and-mortar concept of a school no longer fully satisfies consumer desires in a world where 4G (and soon 5G) high-speed wireless service makes most activities involving data consumption possible almost anywhere.<sup>94</sup> Some students want an on-campus experience that includes face-to-face contact with faculty and peers. Other students seek an on-demand course of study that can fit in between busy work-family responsibilities.<sup>95</sup> For students who cannot

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lawyer/2018/01/26/the-law-firm-disrupted-what-spacexs-success-can-teach-the-legal-industry [http://perma.unl.edu/QY4N-ZZMM] (describing how Elon Musk completely reinvented rocket science to slash production costs). For example, the launch cost of SpaceX’s Heavy rocket is \$90 million each; the launch cost of a NASA (Boeing/Lockheed Martin) rocket is \$380 million each. *Id.* *Legal Education: A New Growth Vision Part III*, section II.A discusses innovation mission trajectories and subsection IV.B.3 introduces the Objectives and Key Results (OKR) transformation management system.

93. Levitt, *supra* note 36, at 146–47. Levitt also warns of management’s dangerous illusions by stating “management continues to be oriented to the product [or service] rather than the people who consume it.” *Id.* at 146. As a practical matter, education entrepreneurs should dig deep to examine the specific wants and needs of various customer sub-groups. For example, the knowledge and skill needs of new graduates entering the profession may be very different from seasoned (mid- and late-career) professionals seeking to upgrade their skills to adapt to changing market realities. These insights may illuminate innovation pathways for platform-based education of the future discussed in *Legal Education: A New Growth Vision Part III*, Part III.
94. *What Is 5G, and When Do I Get It?*, WIRED (Feb. 23, 2018), <https://www.wired.com/2017/02/what-is-5g-and-when-do-i-get-it/> [http://perma.unl.edu/4XB3-29SS] (stating that the U.S. mobile carriers plan to launch 5G service in 2020 after completion of massive infrastructure upgrades).
95. ROBERT K. TOUTKOUSHIAN & MICHAEL B. PAULSEN, ECONOMICS OF HIGHER EDUCATION: BACKGROUND, CONCEPTS, AND APPLICATIONS 305 (2016) (noting how age and family responsibilities influence student education choice). *See, e.g.*, Jackie B. Miller et al., *Student Choice, Instructor Flexibility: Moving Beyond the Blended Instructional Model*, ISSUES & TRENDS IN EDUC. TECH. (2013), <https://journals.uair.arizona.edu/index.php/itet/article/view/16464/16485> [http://perma.unl.edu/BY7E-3RX2] (discussing how course innovations can provide valuable educational choices for students); Frederick Melo, *Online Law School? Mitchell-Hamline’s Unique Program Will Graduate Its First Attorneys*, PIONEER PRESS (Nov. 23, 2017), <https://www.twincities.com/2017/11/23/online-law-school-mitchell-hamline-school-of-laws-first-in-the-country-hybrid-program-will-soon-graduate-its-first-attorneys/> [http://perma.unl.edu/EJX9-2Y7W]. Seton Hall Law School has a part-time law degree weekend program, with a published tuition of \$39,154 per year

attend on campus, information and communication technologies (ICTs) enable students from across the world to access previously unavailable educational content.<sup>96</sup> Choice represents the common link

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in 2018. *Part-Time Law Degree*, SETON HALL LAW, <https://law.shu.edu/part-time-jd-degree/> [<http://perma.unl.edu/VHH9-J5VV>]; see also Karen Sloan, *Touro Law Offers New York's First Hybrid JD*, N.Y. L.J. (Jan. 17, 2018), <https://www.law.com/newyorklawjournal/sites/newyorklawjournal/2018/01/17/touro-law-offers-new-yorks-first-hybrid-jd/> [<http://perma.unl.edu/964W-36JQ>] (stating Touro's FlexTime J.D. costs approximately \$40,320 per year). Under the hybrid format, students will take online classes year-round for two years and attend classes on campus every other Sunday. *Id.* In late 2017, the ABA granted Southwestern Law School a variance to "add an ABA-accredited hybrid-online J.D. program to its curriculum." *ABA Grants Southwestern a Rare and Coveted Blended Education Variance*, SWLAW BLOG (Nov. 17, 2017), <https://www.swlaw.edu/swlawblog/201711/aba-grants-southwestern-rare-and-coveted-blended-education-variance>. Also, in February 2018, the ABA granted Syracuse University School of law "a variance to offer a fully interactive juris doctor program. The online J.D. program will be the first in the nation to combine real-time and self-paced online classes, on-campus residential classes, and experiential learning opportunities." *College of Law Announces the Launch of the Nation's First Live Online J.D. Program*, SYRACUSE UNIV. (Feb. 14, 2018), [http://law.syr.edu/news\\_events/news/college-of-law-announces-the-launch-of-the-nations-first-live-online-j.d](http://law.syr.edu/news_events/news/college-of-law-announces-the-launch-of-the-nations-first-live-online-j.d) [<http://perma.unl.edu/KS37-7HY5>]; see also *ABA Accreditor for Law Schools Recommends Expanding Distance Learning Opportunities*, ABA NEWS (Feb. 12, 2018), [https://www.americanbar.org/news/abanews/aba-news-archives/2018/02/aba-accreditor\\_for.html](https://www.americanbar.org/news/abanews/aba-news-archives/2018/02/aba-accreditor_for.html) [<http://perma.unl.edu/K7UD-DH4B>] (describing proposed changes to ABA Standard 306, which would allow for one-third of J.D. course work to be completed online). For a cautious outlook on online legal education, see Doug Lederman, *Recent Developments in Legal Education Show Both Movement and Hurdles for Online Formats*, INSIDE HIGHER ED (Jan. 24, 2018), <https://www.insidehighered.com/digital-learning/article/2018/01/24/recent-developments-legal-education-show-both-movement-and> [<http://perma.unl.edu/H2Z9-UDTR>].

96. Information and Communications Technology (ICT) refers to "the technology used to handle telecommunications, broadcast media, intelligent building management systems, audiovisual processing and transmission systems, and network-based control and monitoring functions." *Information and Communications Technology (ICT)*, TECHOPEDIA, <https://www.techopedia.com/definition/24152/information-and-communications-technology-ict> [<http://perma.unl.edu/3YCK-8QDP>]. The scope of ICT is broader than just "information technology" (IT) and describes "the convergence of several technologies and the use of common transmission lines carrying very diverse data and communication types and formats." *Id.* For a remarkably durable view of the power and limitations of the Internet, see Michael E. Porter, *Strategy and the Internet*, HARV. BUS. REV. (Mar. 2001), <https://hbr.org/2001/03/strategy-and-the-internet> [<http://perma.unl.edu/V4YZ-GGZP>] (stating that the Internet is "an enabling technology—a powerful set of tools that can be used, wisely or unwisely, in almost any industry and as part of almost any strategy"). Porter explains that "[t]he openness of the Internet, combined with advances in software architecture, development tools, and modularity, makes it much easier for companies to design and implement applications." *Id.* Porter presciently predicted in 2001: "The internet per se will rarely be a competitive advantage. Many of the companies that succeed will be ones that use the Internet as a complement to traditional ways of competing, not those that set their Internet initiatives apart from their established operations." *Id.* He adds that established organizations "will be most successful when they deploy Internet

running through this list of student wants and needs. Students want access to high-quality education that fits with their schedule, budget, and geographic preferences.

From an economic and program development standpoint, the on-line, lifelong learner cohort deserves special attention because it offers a substantial revenue growth trajectory in a space that remains largely untapped.<sup>97</sup> Innovative law schools serving in-person and on-line students can easily scale up capacity to serve additional online students and deliver to them a substantially equivalent, personalized (i.e., high tech, high touch) education experience as compared with the students in the physical classroom.<sup>98</sup> Value-focused programs that deliver superior quality, cost-effective on-campus and online education will likely enjoy full classrooms.<sup>99</sup>

### C. Friction Audits and Resolving “Pain Points”

Teaching students the right mix of doctrinal knowledge and technical skills requires program leaders to have continuous discussions with alumni, employers, and community practitioners to learn what

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technology to reconfigure traditional activities or when they find new combinations of Internet and traditional approaches.” *Id.*

97. *See generally* PRESIDENT’S COUNCIL OF SCI. & TECH., EXEC. OFFICE OF THE PRESIDENT 6 (Sept. 2014), [https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/PCAST/PCAST\\_worforce\\_edIT\\_Oct-2014.pdf](https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/PCAST/PCAST_worforce_edIT_Oct-2014.pdf) [<http://perma.unl.edu/UAQ8-UKY9>] (describing “worker-trainer-employer” ecosystem market opportunities).
98. REIS, *supra* note 53, at 195 (describing how the School of One teachers provide students with “playlists” of their learning tasks for that day that are based on the student’s learning needs, readiness, and style, which are then followed by individual tutoring and digital assessments). Captured data provides opportunities for analysis and digital curriculum expansion. *Id.* at 196; *see also* IBM 2018 GLOBAL C-SUITE STUDY, *supra* note 42, at 12–13 (warning of the “daunting complexity” of designing and delivering “irresistible personalized experiences”). Joerg Niessing and Robert Schwartz explain that because designing personalized customer experiences requires “deep understanding of what makes individuals human,” there are often substantial disconnects between what providers think customers want and what customers actually want. *Id.* To identify and cure these disconnects, data collection and analysis through AI/cognitive computing may help identify new and currently unmet customer needs. *Id.* at 13, 15. Also, applying design thinking approaches may provide some insights since that process involves approaching “problems with a sense of empathy for their customers, which helps them explore and consider the right questions” as well as to develop trust. *Id.* at 14–15, 17. Forward-focused organizations continuously collaborate with customers to co-create new services and products, resolve pain points, and develop mutual trust. *Id.* at 15–18; *see generally* Video, *The Explainer: Design Thinking*, HARV. BUS. REV. (Aug. 25, 2015), <https://hbr.org/video/4443548301001/the-explainer-design-thinking> [<http://perma.unl.edu/8H7C-3TA8>].
99. Part IV of this Article introduces some innovation building blocks that can be used to identify and deliver customer value.

gives them “agita”—in other words, stress or aggravation.<sup>100</sup> Levitt’s observation from more than fifty years ago is just as prescient today: “One of the surest signs of a bad or declining relationship is the absence of complaints from the customer.”<sup>101</sup> No communication means the customer is either (1) not being contacted or (2) not invested enough in the relationship to be candid.<sup>102</sup> Once silence becomes the norm, the relationship may be permanently damaged.<sup>103</sup> Constructive criticism by students, employers, and community professionals, on the other hand, gives program leadership and faculty concrete, real-time insights into what does and does not work in the education services relationship. Complaints provide opportunities for corrective actions, service improvements, and if applicable, relationship repair. Once customer needs have been determined, law schools can design responsive products and services, thereby enhancing the program reputation and perceived value.

Danger lurks when students frustrated with faculty deliverables (e.g., responsiveness, relevance, technology competence, etc.) give up and simply bide their time in order to receive their diploma. These students are not positive ambassadors for the program and may prove toxic if they publicize their dissatisfaction. Similarly, program-employer relationship breakdowns become evident when previously reliable employers for graduates show ambivalence. Trying to recover these employer relationships demands sustained efforts and attention. Earlier fractures may make the relationship fragile until trust in the quality of education services has been restored. For program leaders, relationship development and management requires consistent efforts to engage with employers and discover their wants and needs.<sup>104</sup> While the daily program management and teaching responsibilities demand a tremendous amount of a program leader’s focus and attention, failure to cultivate and nurture deeply human connections between students, alumni, and employers can erode any goodwill between the parties.<sup>105</sup> The simple fact is that unless program leaders

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100. GREG SATELL, *MAPPING INNOVATION: A PLAYBOOK FOR NAVIGATING A DISRUPTIVE AGE* 189 (2017); *see also* REIS, *supra* note 34, at 175 (describing how a GE Fastworks team successfully collaborated directly with the customer on the development of multiple iterations of a new product that met the customer’s needs with a significantly faster production and delivery timeline).

101. Theodore Levitt, *After the Sale Is Over . . .*, HARV. BUS. REV. (Sept. 1983), <https://hbr.org/1983/09/after-the-sale-is-over> [http://perma.unl.edu/JR6C-7VWG].

102. *Id.*

103. *Id.* Levitt emphasizes the importance of investing in customer relationships since they represent an organization’s “most precious asset.” *Id.*

104. *Id.*

105. *Id.* Levitt writes that “relationship management” requires thoughtful and continuous “maintenance, investment, improvement, and even replacement programs.” *Id.* Customer Resource Management (CRM) systems may streamline and organize these interactions.

and faculty get outside the ivory tower to meet with and listen to community practitioners, the curriculum runs the risk of becoming stagnant and paralyzed—prompting potential employers to seek new graduates and education services elsewhere.<sup>106</sup>

Thus, any successful organizational revamp must be willing to address areas of customer dissatisfaction—referred to hereinafter as “pain points”<sup>107</sup>—head-on. To determine pain points, organizations may find it useful to complete a “friction audit” that examines educational systems and processes throughout the customer journey.<sup>108</sup> Some points to examine include initial customer interactions with the program; subsequent correspondence and communications; billing processes; fees and costs; digital platform functionality; course experiences; faculty knowledge, engagement, and responsiveness; examinations and competency assessments; course/program counseling and assistance; graduation requirements; and transition to alumni status.<sup>109</sup> When performing this “friction audit,” it is critically important to remember that customers are “interested in getting their own needs

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106. *Id.*

107. W. CHAN KIM & RENEE MAUBORGNE, *BLUE OCEAN STRATEGY: HOW TO CREATE UNCONTESTED MARKET SPACE AND MAKE THE COMPETITION IRRELEVANT* 69 (2005).

108. LINKNER, *supra* note 56, at 83 (“*Do a friction audit.* Carefully examine each step of your processes and the way you do business to find all of the sticking points. Where are the bottlenecks? What steps could be shortened? Where are the costs that could be removed through a better model? Find the pain points, and you’ll know where to direct your creativity.”); see McGRATH & MACMILLAN, *supra* note 6, at 112 (“[T]o understand your impact on the customers’ experiences, you need to think through their total interaction with your solution, from awareness to selection, payment, financing, usage, service, and eventually disposal of the product or discontinuation of the relationship.”); see generally Alfonso Pulido et al., *The Three Cs of Customer Satisfaction: Consistency, Consistency, Consistency*, MCKINSEY & CO. (Mar. 2014), <https://www.mckinsey.com/industries/retail/our-insights/the-three-cs-of-customer-satisfaction-consistency-consistency-consistency> [http://perma.unl.edu/L49L-7BT9] (“[C]ompanies must continually work to provide customers with superior service, with each area of the business having clear policies, rules, and supporting mechanisms to ensure consistency during each interaction.”); Brian Gregg et al., *The Most Perfect Union: Unlocking the Next Wave of Growth by Unifying Creativity and Analytics*, MCKINSEY & CO. (June 2018), <https://www.mckinsey.com/business-functions/marketing-and-sales/our-insights/the-most-perfect-union> [http://perma.unl.edu/66AU-Q8BS] (noting how “data analytics can uncover customer intentions, triggers, and interest that reveal subtle pain points and unmet needs”).

109. KIM & MAUBORGNE, *supra* note 107, at 69 (asking the following questions: “What is the context in which your product or service is used? What happens, before, during, and after? Can you identify the pain points? How can you eliminate these pain points through a complementary product or service offering?”); see, e.g., *Pre-law Students Want More Experiential Learning, Fewer Years*, NAT’L JURIST: PRE-LAW (Feb. 12, 2014), <http://www.nationaljurist.com/prelaw/pre-law-students-want-more-experiential-learning-fewer-years> [http://perma.unl.edu/6QEZ-6WP7].

met and their own jobs done.”<sup>110</sup> As paying customers, they expect seamless solutions, not excuses.

Once pain points have been identified, education entrepreneurs can collaborate with customers and develop solutions that eliminate friction and support positive and satisfying customer interactions. Another important task to be completed involves guiding customer expectations—intellectual, logical, and emotional—at the outset of the relationship.<sup>111</sup> By delivering what has been promised and eliminating surprises, it is more likely customers will view the experience favorably.

### 1. *Friction Audit: Students*

For students, an initial friction audit reveals that they pay tuition in order to gain the knowledge and skills necessary for a professional career.<sup>112</sup> Because of the substantial costs, students want to know that the tuition they pay (and the student debt they incur) for legal education will prepare them for the modern and ever-changing world of work.<sup>113</sup> Unsurprisingly, students do not like large, unexpected tuition increases that affect their ability to organize their personal fi-

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110. McGRATH & MACMILLAN, *supra* note 6, at 113.

111. LINKNER, *supra* note 56, at 120–21; *see* KIM & MAUBORGNE, *supra* note 107, at 69–70 (stating when organizations are “willing to challenge the functional-emotional orientation of their industry, they often find new market space”). For example, because some people experience tremendous stress and anxiety when they incur debt, education programs can help assuage these student concerns by teaching concrete and marketable professional skills so that students have confidence in the soundness of their education investment. *See* LSSSE 2017 *Annual Survey: Preferences and Expectations for Future Legal Employment*, at 4, <http://lssse.indiana.edu/wp-content/uploads/2015/12/LSSSE-AnnualSurvey2018-FINAL.pdf> [<http://perma.unl.edu/GN5P-FQKJ>] (“The 2017 LSSSE Annual Report provides a good reminder that ‘the premise of law school is to prepare students for legal careers and other professional pursuits,’ and therefore the academy must concern itself with student expectations, and the disparities between those expectations and actual employment and salary outcomes.”). The report concludes by suggesting that law schools engage with students to support their career preferences and guide expectations at every stage of the “matriculation process—from admission to post-graduation.” *Id.* at 15.

112. Alfred S. Konefsky & Barry Sullivan, *Essay: In This, the Winter of Our Discontent: Legal Practice, Legal Education, and the Culture of Distrust*, 62 *BUFF. L. REV.* 659, 687 (2014) (stating that students are “willing to go deeply into debt to acquire a degree from the most highly ranked school to which they can secure admission”).

113. Gillian Hadfield, *Law Schools Are Letting Down Their Students and Society—Here Are Three Steps They Can Take to Fix Things*, QUARTZ MEDIA (Sept. 20, 2017), <https://qz.com/1082266/law-schools-are-letting-down-their-students-and-society-here-are-three-steps-they-can-take-to-fix-things/> [<http://perma.unl.edu/CHM7-7SPU>] (suggesting that law schools should improve diversity, implement new methods, and actively engage with the real world).

nances during their course of study.<sup>114</sup> Students also do not appreciate technology glitches in learning management systems or exam software, or cloud computing outages.<sup>115</sup> They do not appreciate opaque grading processes which leave them in the dark as to how their final grade was determined, especially when grades often determine employment prospects.<sup>116</sup> However, students express satisfaction with video content that allows them to review, rewind, and re-watch as necessary.<sup>117</sup> They value instant feedback on quizzes and other digital assessments.<sup>118</sup> A number of students are frustrated with the traditional, time-limited single final exam assessment of their subject matter comprehension because the artificial time and format constraints do not adequately capture their understanding and abilities.<sup>119</sup>

Some distance-learners appreciate opportunities to engage with their peers and faculty through student-led discussions and live “tax chat” during lectures.<sup>120</sup> Other distance-learners express frustration when only some faculty effectively use learning management systems for student engagement and projects, while other faculty reject online students’ requests to use the available technologies.<sup>121</sup> Faculty refusal to provide distance-learners with substantially equivalent learning experiences reinforces some distance-learners’ perception that they have been relegated to secondary status, despite paying full tuition.<sup>122</sup> Because of the newness of online learning, an emerging opportunity for positive education program differentiation involves the issue of on-line student engagement. The important social aspects of education are often overlooked because they happen naturally when students arrive to class early, chat with peers, and form study groups. While providing online students with opportunities for social interactions and peer engagement requires program leaders and faculty to tap into

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114. The insights in this section were collected via student feedback provided directly to author.

115. *Id.*; Staci Zaretsky, *T14 Law School Adopts Exam Software for Finals That Students Can't Even Use*, ABOVE THE LAW (Oct. 18, 2018), <https://abovethelaw.com/2018/10/t14-law-school-adopts-exam-software-for-finals-that-students-cant-even-use/> [<http://perma.unl.edu/X8TU-U9G3>] (describing Georgetown Law’s preventable “tech screw-up” and explaining that the Exam4 software does not support the latest updates of MacOS or Windows, which means that students will be unable to complete their exams on their laptops).

116. Student feedback provided directly to author.

117. *Id.* Students specifically requested speed controls when viewing the video MVPs. The short video MVPs represented the first phase of the author’s move to flipped learning format for select tax content. *See* discussion *infra* subsection IV.C.4 about MVPs.

118. Student feedback provided directly to author.

119. *Id.*

120. *Id.*

121. *Id.*

122. *Id.*

their imaginations and apply special care, these efforts may yield high dividends in student engagement and satisfaction.<sup>123</sup>

Maintaining a balance between students as customers and students as protégés is essential to assessing student friction points. In addition to doctrinal knowledge, modern legal education curriculum seeks to germinate the skills and attitudes of creativity, curiosity, ingenuity, entrepreneurship, and adaptability.<sup>124</sup> Because preparing students for future employment in demanding professional fields challenges students to grow and stretch their abilities, they may feel uncomfortable at times. In the education context, the student as protégé means that the learning and training objectives remain paramount. The “customer is always right” mindset of retail does not override valid pedagogical methods to transfer and develop doctrinal knowledge and skills competence.<sup>125</sup> A successful program that can back up its pedagogical methods with validating analytics is under no obligation to kowtow to every student complaint. Like in post-surgical reha-

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123. According to Harvard Business School Professor, Bharat Anand, who chairs the HBX digital learning initiative, effective modern education requires both providing quality content and fostering genuine human connections. *See* Audio: Sarah Green Carmichael, *How Focusing on Content Leads the Media Astray*, HBR IDEACAST (Nov. 23, 2016) (interview with Bharat Anand), <https://hbr.org/ideacast/2016/11/how-focusing-on-content-leads-the-media-astray> [http://perma.unl.edu/J6XU-ELEF]. While the HBX initiative is still in its early development stages, Professor Anand and his team purposefully designed multiple student engagement opportunities. *Id.* For example, the first image on the HBX learning platform is a digital map that shows the global locations of all of the students in the class. *Id.* An unexpected benefit of the map was that students arranged social events to meet each other. *Id.* HBX also digitized the Professor’s “cold call” through random pop-ups appearing on the student’s computer which require the student to respond to the Professor’s question within a specific time limit measured by a ticking timer on their screen. *Id.* The platform then shares the student’s photo and recorded answer with the rest of the class. *Id.* Professor Anand further explains how graded online discussions serve as a means for positive student engagement and interactions because students can help each other with specific problems and class content. *Id.*; *see also* ANAND, *supra* note 8, at 321 (noting that the HBX design team originally envisioned 97% content creation and 3% social learning, but ultimately they revised the course structure to reflect 3% content and 97% peer/social learning interactions). Succinctly put, “think social first, product later.” *Id.* at 291; *see generally* Jim Hutchinson, *Online Discussions as a Vehicle for Active Learning*, AIMS COMMUNITY C. SIGNATURE MAG. 25–27 (2017) (describing how online learners may experience isolation and yearn to be part of a learning community); Miller et al., *supra* note 95 (“Providing ways for students to feel socially connected with their classmates becomes particularly important . . . where some students are not physically present in the classroom.”).
124. *See, e.g.*, Kim et al., *supra* note 47, at 8 (discussing open innovation, creativity, and entrepreneurship in higher education curriculum).
125. As discussed in *Legal Education: A New Growth Vision Part III*, section III.B, data should be collected and analyzed to determine the effectiveness of teaching and learning methods. Effective teaching and learning practices should be determined and ineffective methods should be discarded.



bilitation, which frequently involves exercises designed to regain strength and mobility, patients can refuse to perform the prescribed workouts, but then bear responsibility for subpar results. When students enroll in professional education programs to learn specific doctrinal knowledge and skills, they can certainly dislike or refuse to comply with pedagogically sound teaching and learning methods—but they ultimately shoulder responsibility for the outcomes.

## 2. *Friction Audit: Employers, Practitioners, and Community Professionals*

Employers and practitioners in the professional community comprise other important customer relationships. An employer-practitioner friction audit shows that they want to hire well-trained graduates who can competently and immediately perform billable work.<sup>126</sup> A pain point for employers is that new graduates often have theoretical knowledge but few practical skills.<sup>127</sup> Employers, therefore, want graduates who can produce enough billable work in the first weeks of their employment to justify their overhead expense.

Regular dialogues with employers and community professionals provide opportunities for program leaders to obtain information about the knowledge and skills valued in the marketplace.<sup>128</sup> These exchanges can provide the basis for co-creating new education products and services.<sup>129</sup> An additional important benefit of these customer exchanges is that employers and community professionals may become invested in the success of the education program, and as a result actively support the program's goals of education excellence and market relevance. Over time, these dynamic and constructive collaborations—incorporated into both physical classroom and digital education experiences—will foster customer-satisfying and market-differentiated education services.<sup>130</sup>

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126. Partners of Denver-area professional firms have provided this feedback to author.

127. *Id.*

128. CHESBROUGH, *supra* note 32, at 54–57 (discussing the importance of paying attention to the tacit needs of customers to gain unique insights and differentiate one's services in the market place). Chesbrough illustrates the powerful potential insights provided in customer data by describing how Walmart uses data when stocking stores before hurricanes. *Id.* at 56–57. Predictably, Walmart's historical data showed that stores need flashlights and batteries. *Id.* at 56. Surprisingly, the data revealed significantly increased customer demand for strawberry Pop-Tarts and beer! *Id.* at 56–57.

129. Henry Chesbrough, *Bringing Open Innovation to Services*, 52 MIT SLOAN MGMT. REV. 86 (Winter 2011) (describing an “iterative process” between service providers and customers where they “co-create the service”).

130. CHESBROUGH, *supra* note 32, at 54–57 (noting how FedEx, Walmart, Amazon, and Lego use knowledge (digital and in person) about customer preferences, wants, and desires to design and deliver products and services). Once digital innovation

Another friction point to resolve includes providing members of professional communities with reasonably priced, convenient (e.g., on-demand) access to content-rich, platform-based continuing education opportunities.<sup>131</sup> Program differentiation opportunities blossom when leaders, faculty, and staff focus their energies on cultivating personalized customer interactions and value-creating engagements. Ultimately, successful alignment of customer needs and expectations with education program deliverables can generate loyal customers who share their positive experiences with others—thereby resulting in referrals.<sup>132</sup>

#### D. Modernizing Legal Education to Deliver Customer Satisfaction

As explained in *Legal Education: A New Growth Vision Part I*, to navigate through SIPs, leaders must seek different perspectives, embrace experimentation, and take forward action. Recognizing the non-viability of the status quo represents a first step that must be followed by connecting with customers to determine what they actually want from legal education services.<sup>133</sup> With this information, entrepre-

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teams get up and running, it is anticipated that timely and responsive education products can be developed for beta testing and refinement which will address the concerns that business leaders have about education programs teaching outdated content. See *Leading Through Connections: Insights from the Global Chief Executive Officer Study*, IBM 2012 CEO C-SUITE STUDIES 21 (May 2012), <https://www-01.ibm.com/common/ssi/cgi-bin/ssialias?htmlfid=GBE03486USEN> [<http://perma.unl.edu/NK4C-QTVE>] (noting an unreasonable lag time between course design and delivery).

131. See *Legal Education: A New Growth Vision Part III*, section III.A for an introduction to digital knowledge platforms. See also Business School Dean Scott DeRue's comments and insights about Michigan's Alumni Advantage which provides graduates "tuition-free access to anything in our portfolio." Nickisch, *The Future of MBA Education*, HBR IDEACAST (Feb. 14, 2018), <https://hbr.org/ideacast/2018/02/the-future-of-mba-education> [<http://perma.unl.edu/9DGN-VX6S>] (interview with Scott DeRue, Dean of the University of Michigan Ross School of Business) (stating that modern professionals must be committed to "lifelong learning").
132. CHESBROUGH, *supra* note 32, at 58–59 (explaining the benefits of visualizing and blueprinting "customer experience points"); see also REIS, *supra* note 53, at 207 ("Sustainable growth is characterized by one simple rule: *New customers from the actions of past customers.*"). He then describes four ways in which past customers drive "sustainable growth": (1) "Word of mouth," (2) "As a side effect of product usage," (3) "Through funded advertising," and (4) "Through repeat purchase or use." *Id.* at 207–08. The digital platform knowledge and platform-referral business models discussed herein will focus on three of the four above-described drivers, hopefully reducing the need to fund advertising budgets.
133. CHESBROUGH, *supra* note 32, at 61–62 (discussing the importance of creating "more powerful, more valuable" customer experiences); see also LINKNER, *supra* note 56, at 56–57 (describing how software companies reinvent their products by actively seeking customer feedback; designing responsive solutions to customer challenges; imagining new possibilities; and aggressively brainstorming ways to push through boundaries).

neurally-oriented leaders can begin germinating a vision of the future, which ultimately grows into the organization's innovation mission trajectories.<sup>134</sup> A modernization checklist includes direct engagement with students, graduates, employers, and professional community members; diversity of thought, experience, and perspectives (e.g., entrepreneurial mindsets, business orientation, and socio-economic insights); updated business models; re-engineered knowledge and skill transfer development methods; thoughtful, connected, and holistic design; technology curiosity and adaptability; a culture of innovation; and flexible frameworks that support employee freedom, initiative, and action.<sup>135</sup> Critically, the process of “embedding a customer-orientation” into an education program “cannot be a side project or siloed activity.”<sup>136</sup> Customer focus requires shared aspirations united with employee accountability (i.e., from dean's office to adjunct faculty).

The process of rewriting the education program's DNA<sup>137</sup> begins once leaders correctly define the business, make customer satisfaction the core mission, and embrace business model innovation—which initially includes the referral model discussed in *Legal Education: A New Growth Vision Part I* and eventually the platform and open business models introduced in *Part III*. Professor Levitt warns that “building an effective customer-oriented company involves far more than good intentions or promotional tricks; it involves profound matters of human organization and leadership.”<sup>138</sup> In order to produce satisfied customers, the entire law school enterprise must be empowered to

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134. Chesbrough, *supra* note 129, at 87 (explaining the importance of supporting fresh initiatives (between inside and outside collaborators) that improve current services, expanding thoughtfully and systematically high-quality established services, incubating novel seed projects, and constructing platforms); *see also* ANAND, *supra* note 8, at 203–05 (discussing the importance of holistic connections which include relational, functional, and organizational). Innovation mission trajectories are discussed in *Legal Education: A New Growth Vision Part III*, section II.A. See Appendix III, located in *Part III* of this Article series, for an expanded definition.

135. *See generally* McGRATH, *supra* note 80, at 45–46 (emphasizing that in flexible and adaptive organizations, “innovation is the norm, not the exception” and everyone is expected to think continuously of new ideas, approaches, and solutions); *see also* Ranjay Gulati, *Structure That's Not Stifling*, HARV. BUS. REV. (May–June 2018), <https://hbr.org/2018/05/structure-thats-not-stifling> [http://perma.unl.edu/N587-BSVZ] (explaining that “freedom” includes “trusting employees to think and act independently [o]n behalf of the organization”). Gulati also differentiates that the degree of freedom and ability to take risks depends on the enterprise. *Id.* For example, an employee mistake at Netflix may cost money but will not “endanger people's health”; in contrast, Alaska Airlines employees have less individual decision-making authority given union and safety rules. *Id.*

136. Advani et al., *supra* note 51.

137. CLAYTON M. CHRISTENSEN & HENRY J. EYRING, *THE DISRUPTIVE UNIVERSITY: CHANGING THE DNA OF HIGHER EDUCATION FROM THE INSIDE OUT* 20–21 (2011).

138. Levitt, *supra* note 36, at 148–49.

view itself as a “customer-creating and customer-satisfying organism.”<sup>139</sup> Leaders must, therefore, relentlessly drive forward the mission of creating customer “value satisfactions” “into every nook and cranny of the organization.”<sup>140</sup>

Law schools that fail to envision the future and adapt to the changing landscape will likely face the brutal reality of “market accountability”—which means customers (i.e., students, employers, and community practitioners) will seek knowledge and skill development programs and services elsewhere.<sup>141</sup> Put even more sharply, if a program delivers unsatisfactory knowledge and skills development services, unhappily captive students may finish their course of study but manifest their dissatisfaction in negative (potentially viral) public reviews and grumbling to professional peers.<sup>142</sup> These unhappy customers will then affirmatively choose to purchase future education services from other providers.

To summarize, this “Back to Basics” section focused on how to reinvent legal education programs by asking the fundamental questions to correctly define the business, identify customers, and discern customer wants and needs. Because information and communication

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139. *Id.* The Baldrige Performance Excellence Program may have some helpful frameworks and resources. See *Baldrige by Sector: Education*, NAT'L INST. STANDARDS & TECH., <https://www.nist.gov/baldrige/self-assessing/baldrige-sector/education> [<http://perma.unl.edu/9EQQ-8JSP>] (last updated Feb. 1, 2018).
140. Levitt, *supra* note 36, at 149; see also ANAND, *supra* note 8, at 234 (noting that the ability to understand customer worldviews and perspectives is essential for determining what differentiated products and services should be offered to customers). Such strategic insights allow an organization to identify, prioritize, and align its unique strengths, talents, and capabilities in ways that can deliver customers with satisfying education content and interactions. *Id.* at 234, 242.
141. LINKNER, *supra* note 56, at 52, 107–08; see generally Joseph C. Burke, *The Many Faces of Accountability* in ACHIEVING ACCOUNTABILITY, in HIGHER EDUCATION (Joseph C. Burke ed., 2004) (discussing academic accountability and need for balance between “public, academic, and market concerns”), at 1, 3, 24; see also John Ebersole, *A Discussion on Higher Education Accountability*, FORBES (Feb. 23, 2015), <https://www.forbes.com/sites/johnebersole/2015/02/23/a-discussion-on-higher-education-accountability/#1dd40ae37717> [<http://perma.unl.edu/FE74-4FJT>] (asserting that academic institutions must improve their assessment of learning outcomes but rejecting the increase of regulations).
142. Michael Diamond, *Viral Power: Negative Social Media Bad for Business*, USA TODAY (Jan. 10, 2015), <https://www.usatoday.com/story/money/business/2015/01/10/viral-power-negative-social-media-bad-for-business/21570851/> [<http://perma.unl.edu/UGD3-UV33>]; see also DOMINGOS, *supra* note 67, at 231 (describing use of algorithms to identify influential digital community members who can “set off a wave of word of mouth” within communities via their customer reviews). Recall the damning 2018 Gallup-Purdue study discussed in *Legal Education: A New Growth Vision Part I*, subsection IV.B.2 (finding that only 23% of law graduates felt that their education was a worthwhile investment). See Zac Auter, *Few MBA, Law Grads Say Their Degree Prepared Them Well*, GALLUP (Feb. 16, 2018), <http://news.gallup.com/poll/227039/few-mba-law-grads-say-degree-prepared.aspx> [<http://perma.unl.edu/J4NX-RYN8>].

technologies (ICTs) enable physical and digital convergence of education, modern legal education programs must develop an inspired vision, empower its faculty and staff to eliminate customer friction points, deliver pedagogical excellence, harmonize high tech with high touch in faculty-student interactions, and nurture and challenge the minds of the future.

#### IV. BUILDING AN INNOVATION ECOSYSTEM

In the face of an unsustainable status quo and an increasingly digitized world, addressing the SIP facing legal education requires new ways of thinking, problem-solving, and doing. Bringing together unique approaches or technologies to solve real problems is known broadly as innovation.<sup>143</sup> Innovation, like the related concept of invention, begins with ideation: the process by which individuals and organizations—with regular input from customers—form ideas and concepts that look fruitful.<sup>144</sup> Ideation, innovation, and invention are inherently active.<sup>145</sup> Instead of a fixed destination, ideation, innovation, and invention involve fluid and dynamic processes that aim to answer questions and solve problems.<sup>146</sup> According to Google’s Eric Schmidt, “For something to be innovative, it needs to be new, surprising, and radically useful.”<sup>147</sup>

143. Paul Michelman, *Opening Up Your Innovation*, HBR IDEACAST (Aug. 31, 2006) (interviewing Henry Chesbrough), <https://hbr.org/ideacast/2006/08/harvard-business-ideacast-10-o> [<http://perma.unl.edu/TBA4-3PG9>]. Invention involves creation or discovery of something novel which was previously unknown. *Id.*

144. See McGRATH, *supra* note 80, at 105 (describing “ideation”). McGrath states: The goal of the ideation process is to identify a pipeline of promising ideas that a company might consider as vectors for their innovation effort. It encompasses the processes of analyzing trends, connecting innovations to the corporate strategy, scoping potential market opportunities, and eventually defining areas in which a company may want to participate. Effective innovation begins with a clear definition of where it should be focused.

*Id.* at 105; see also *Reinventing Innovation*, *supra* note 80, at 2 (describing how successful innovators include “customers into the innovation process at the ideation phase”). These organizations also employ “design thinking and user-driven requirements” throughout the ideation, design, testing, iteration, and launch of new products and services. *Id.* at 3.

145. Note, however, that an individual, enterprise, or organization can be innovative without being inventive (or vice versa). See Michelman, *supra* note 143.

146. Dirk Meissner & Maxim Kotsemir, *Conceptualizing the Innovation Process Toward the ‘Active Innovation Paradigm’—Trends and Outlook*, 5 J. INNOVATION & ENTREPRENEURSHIP 1, 13–14 (2016) (on file with author); see also Deborah Dougherty, *Bridging Social Constraint and Social Action to Design Organizations for Innovation*, 29 ORG. STUD. at 415, 418 (2008), <http://journals.sagepub.com/doi/abs/10.1177/0170840607088021> [<http://perma.unl.edu/T5SE-F3XD>] (discussing fluidity as involving “ongoing” and “dynamic” adaptations and “flows of activities”).

147. SCHMIDT & ROSENBERG, *supra* note 7, at 206.

In the context of legal education and services, innovator, attorney, and consultant Mark A. Cohen explains that innovation involves four elements: “(1) it is a process; (2) where ideas are turned into solutions; (3) that add value; and (4) from the customer perspective.”<sup>148</sup> For law schools, innovation requires significant mindset shifts from a traditional, academic-centric model to a dynamic, customer-centric model. Instead of selling J.D. degrees, a customer-centric model involves designing and delivering de novo customer-valued knowledge and skills development solutions tailored for a wide range of buyers.

This Part begins by explaining ecosystems, followed by an introduction of several theories of innovation, such as recombinant, disruptive, value, and open innovation.<sup>149</sup> It continues with a discussion of the differences between breakthrough and incremental innovations. Next, it examines the basic interplay between physical and digital building blocks, Moore’s law that guides digital growth, and how information and communications technologies (ICTs) bring both spheres together to create new space for experimentation and innovation. This Part will illustrate how algorithms can shine light onto digital data and metrics, and introduce useful methodologies for putting digital innovation into practice, including prototypes and minimum viable products. It then closes with a discussion of human resistance to innovation.

When contemplating the challenges of reinventing legal education, the words of Bill Gates provide some perspective. Gates says, “We always overestimate the change that will occur in the next two years and underestimate the change that will occur in the next ten. Don’t let yourself be lulled into inaction.”<sup>150</sup> Because sitting still is perilous, law schools should start moving immediately to develop agility, gain traction, and generate sustained, forward momentum.

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148. Mark A. Cohen, *Too Many Legal Awards – Too Little Customer Satisfaction*, FORBES (July 2, 2018), <https://www.forbes.com/sites/markcohen1/2018/07/02/too-many-legal-awards-too-little-customer-satisfaction> [http://perma.unl.edu/J49X-WQ6W] (quoting Nick Skillicorn, blogger and consultant) (stating that innovation is “[t]urning an idea into a solution that adds value from a customer’s perspective”).

149. In terms of reading and synthesizing the materials in this Part, a butterfly approach of landing on what seems interesting and returning later to other elements may help prevent interdisciplinary jargon exhaustion, given the bounty of economics, business, and innovation references.

150. SATELL, *supra* note 100, at 187. Satell also notes that there is no innovation “silver bullet.” *Id.* Rather, innovation springs from “a confluence of factors” and the insights and efforts of “dozens of people” who nurture a glimmering idea into a viable product, service or process. *Id.*

### A. Ecosystems: An Explainer

Ecosystems represent disruptive threats, innovation opportunities, and market expansion strategies. In January 2018, Accenture Strategy surveyed 1,252 C-level executives to “understand their ecosystem strategies, capabilities, leadership and investment.”<sup>151</sup> Seventy-six percent (76%) of the business leaders surveyed anticipate that ecosystems will fundamentally transform business models in the next five years.<sup>152</sup> Accenture defines an ecosystem as:

[T]he network of cross-industry players who work together to define, build and execute market-creating customer and consumer solutions. An ecosystem is defined by the depth and breadth of potential collaboration among a set of players: each can deliver a piece of the consumer solution, or contribute a necessary capability.<sup>153</sup>

For customers, ecosystems offer comprehensive, integrated solutions and value that a single entity cannot individually provide.<sup>154</sup> Ecosystems also enable law schools to expand program offerings, serve customers in complementary and adjacent markets, and diversify revenue sources.<sup>155</sup>

Digital ecosystems are built on platforms, which are “a group of technologies that are used as a base upon which other applications, processes, or technologies are developed.”<sup>156</sup> Platforms thus enable

151. Michael Lyman et al., *Cornerstone of Future Growth*, ACCENTURE STRATEGY 16 (2018), [https://www.accenture.com/t20180511T201522Z\\_w\\_us-en/acnmedia/PDF-77/Accenture-Strategy-Ecosystems-Exec-Summary-May2018-POV.pdf#zoom=50](https://www.accenture.com/t20180511T201522Z_w_us-en/acnmedia/PDF-77/Accenture-Strategy-Ecosystems-Exec-Summary-May2018-POV.pdf#zoom=50) [<http://perma.unl.edu/NH4U-23CQ>].

152. *Id.* at 3.

153. *Id.*

154. *Id.* at 8; see *Operating Models for the Future of Consumption*, WORLD ECONOMIC FORUM/ACCENTURE 12 (Jan. 2018), [https://www.accenture.com/t20180228T040007Z\\_w\\_us-en/acnmedia/PDF-72/Accenture-Strategy-WEF-Operating-Models-Future-Consumption-Full-Report.pdf#zoom=50](https://www.accenture.com/t20180228T040007Z_w_us-en/acnmedia/PDF-72/Accenture-Strategy-WEF-Operating-Models-Future-Consumption-Full-Report.pdf#zoom=50) [<http://perma.unl.edu/6DBE-JVW3>] (“Platforms are one type of ecosystem. While every company will be part of an ecosystem, some may have only peripheral involvement in platforms.”); see generally Tanguy Catlin et al., *Insurance Beyond Digital: The Rise of Ecosystems and Platforms*, MCKINSEY & Co. (Jan. 2018), <https://www.mckinsey.com/industries/financial-services/our-insights/insurance-beyond-digital-the-rise-of-ecosystems-and-platforms> [<http://perma.unl.edu/A4SH-LW4F>] (“[An ecosystem] is an interconnected set of services that allows users to fulfill a variety of needs in one integrated experience.”). Ecosystems can provide three types of value: (1) serve as frictionless customer gateways, (2) harness network effects, and (3) “integrate data across a series of services.” *Id.*

155. Catlin et al., *supra* note 154 (discussing how ecosystem partners can combine their respective knowledge, expertise, and data to provide customers with new services).

156. *Platform*, TECHOPEDIA, <https://www.techopedia.com/definition/3411/platform> [<http://perma.unl.edu/67LM-GDU3>]. For example, a laptop running a Windows or Mac OS X operating system is a computing platform. *Id.*; see also *Operating Models for the Future of Consumption*, *supra* note 154, at 12 (identifying three types of platforms: (1) “Marketplace Platforms hosting buyers and sellers,” (2) “Internal Company Platforms that support multiple business models,” and (3) “Business-

the creation of digital ecosystems that bring together people, institutions, businesses, and other social groups to connect, create, and exchange value.<sup>157</sup> Successful digital ecosystems unite diverse partners with complementary skills and expertise to create new market opportunities.<sup>158</sup> Further, this collaborative structure enables individual participants to focus on their core competencies while other partners with better capabilities and expertise focus on other inter-related ecosystem components.<sup>159</sup>

Digital ecosystem power stems from the decomposition of traditions and conventions, and the creative destruction and construction generated when the physical and digital realms intersect.<sup>160</sup> Digital ecosystems thrive in reciprocal, open environments rather than behind proprietary, closed structures because participants can work together to create customer value by cultivating “win-win propositions for the network of organizations on their platforms.”<sup>161</sup> For example, John Deere’s new platform business model currently reinvents the 180-year-old tractor, combine, and harvester equipment manufac-

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to-Business Platforms on which ecosystem partners trade capabilities (e.g. borrowing or monetizing another’s existing capabilities and assets, such as manufacturing or regulatory management.”). Further, “platforms are enabled by technology and data, and based on network effects that enhance the value of the platform as the number of participants increases.” *Id.*

157. DAVID S. EVANS & RICHARD SCHMALENSSEE, MATCHMAKERS: THE NEW ECONOMICS OF MULTISIDED PLATFORMS 103 (2016); see generally James C. Anderson & James A. Narus, *Business Marketing: Understand What Customers Value*, HARV. BUS. REV. (Nov.–Dec. 1998), <https://hbr.org/1998/11/business-marketing-understand-what-customers-value> [<http://perma.unl.edu/DX57-RNJU>] (acknowledging the difficulty in defining and measuring value). *Legal Education: A New Growth Vision Part II*, subsection III.A.4 examines value in legal education.
158. Michael Lyman et al., *Cornerstone of Future Growth: Ecosystems*, ACCENTURE STRATEGY, at 8 (May 11, 2018), <https://www.accenture.com/us-en/insights/strategy/cornerstone-future-growth-ecosystems> [<http://perma.unl.edu/Q6R9-XSXC>]. When considering digital ecosystems, partners must ensure user privacy and security, enter into agreements regarding data control and use, and take precautions to protect intellectual property. *Id.*; see also *Plotting the Platform Payoff: Insights from the Global C-suite Study*, IBM 2018 GLOBAL CEO C-SUITE STUDIES, 1 (May 2018), <https://www.ibm.com/services/insights/c-suite-study/ceo> [<http://perma.unl.edu/R68E-RHT3>] [hereinafter *Plotting the Platform Payoff*] (describing how a “growing number [of CEOs] are embracing radically different models. Instead of going it alone, they’re innovating with partners on new business platforms in new ecosystems.”).
159. Lyman et al., *supra* note 158.
160. *Plotting the Platform Payoff*, *supra* note 158, at 4–5. The IBM study explains, “Platforms comprise the digital and, at times, physical structures through which an interaction between economic agents can occur, whether it be communication engagement, collaboration or a transaction.” *Id.* at 18.
161. *Id.* at 4. The IBM report also notes that “not every organization can—or should—be a platform owner, some must carve out new value as essential platform participants.” *Id.*



turer.<sup>162</sup> Deere's new farming solutions integrate the company's mechanical excellence with complementary digital resources such as customized metrological data and soil assessments, GPS and autonomous driving technologies, and planting equipment analytics—all working together so that farmers can manage costs and maximize yield.<sup>163</sup> Further, Deere's flexible, forward-focused platform strategies anticipate continuous adaptation to new technologies in this emerging marketspace.<sup>164</sup>

As will be discussed *infra* subsection IV.B.4, digital ecosystems thrive in organizations that embrace open innovation and open business models that include both friends and “frenemies.”<sup>165</sup> Cultivating healthy ecosystems requires care, tending, and feeding—much in the same way that successful enterprise innovations grow from tiny seed ideas into blooming and fruiting products and services.

## B. Theories of Innovation

Innovation involves a fluid process with uncertain results<sup>166</sup> and frequently combines ideas, systems, and technologies in unexpected ways that create value.<sup>167</sup> As such, successful ideation and innovation flourish when contributors can reveal their budding thoughts in an environment that celebrates unorthodox thinking without fear of judg-

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162. *Id.* at 9; see John Carpenter, “The Old John Deere’ Makes Way for New Tech with Precision Farming Platforms,” *FORBES* (Mar. 13, 2017), <https://www.forbes.com/sites/johncarpenter1/2017/03/13/the-old-john-deere-makes-way-for-new-tech-with-precision-farming-platforms/> [http://perma.unl.edu/JA2V-X47Q].

163. *Id.* (“Good farmers know when to fertilize, when to plant, when to spray, and when to harvest, meaning they get more of whatever they plant. And they don’t waste water, fertilizer, fuel or time.”).

164. *Id.*; *Plotting the Platform Payoff*, *supra* note 158, at 9.

165. *Plotting the Platform Payoff*, *supra* note 158, at 12–13 (noting how “Reinventors”—those organizations that outperform in operating efficiency and revenue growth/profitability—frequently collaborate with their competitors, “a relationship sometimes called ‘frenemies’” to create new products and services). *Legal Education: A New Growth Vision Part III*, subsection III.A.4 also examines platform design options (open versus closed).

166. CALESTOUS JUMA, *INNOVATION AND ITS ENEMIES: WHY PEOPLE RESIST NEW TECHNOLOGIES* 28 (2016).

167. Andy Daecher & Thomas Galizia, *Ambient Computing: Putting the Internet of Things to Work*, *DELOITTE INSIGHTS* (Jan. 29, 2015), <https://dupress.deloitte.com/dup-us-en/focus/tech-trends/2015/tech-trends-2015-ambient-computing.html> [http://perma.unl.edu/Q34D-BYCV]. Daecher and Galizia observe that “[i]nnovation comes from bringing together the parts to do something of value differently—seeing, understanding, and reacting to the world around them on their own or alongside their human counterparts.” *Id.*; see generally Feng Zhu & Nathan Furr, *Products to Platforms: Making the Leap*, *HARV. BUS. REV.* (Apr. 2016), <https://hbr.org/2016/04/products-to-platforms-making-the-leap> [http://perma.unl.edu/F3D4-ZRYE].

ment.<sup>168</sup> Innovative leaders recognize that “oddball ideas” can generate creative leaps because divergent thinking often forms the roots of breakthrough innovations.<sup>169</sup> Curiosity, openness, and multidisciplinary perspectives form the nutrient-rich soil from which innovative economic, organizational, technological, and/or social solutions can sprout.<sup>170</sup>

Innovative leaders are those who challenge orthodoxies, make systemic changes to processes and methods, and show ongoing commitment to compounding progress<sup>171</sup>—all while focusing on customer satisfaction. They also have thinking processes and mindsets that question assumptions and the status quo; seek diverse inputs into possible solutions and disconfirmation of assumptions; favor rapid and “roughly right” forward action; are driven by discoveries and options; focus on external threats and opportunities; promote continuous shifts to achieve innovation mission trajectories; and work to recover quickly from setbacks.<sup>172</sup> For example, in his letter to Amazon shareholders in April 2017, Jeff Bezos emphasized the benefits of “high velocity”

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168. LINKNER, *supra* note 56, at 32–33 (stating “those game-changing ‘tenth ideas’ will never surface if you respond with harsh judgment and dismissive critique to the first, second, or third time a bad idea comes around”). Linkner also suggests that leaders ask some gently probing questions of contributors which allow their budding ideas to emerge: (1) “Would you please elaborate?” (2) “What was the thinking that led you to that conclusion?” (3) “Where do you see this headed?” (4) “Is there something else you could add to make it even better?” *Id.* He adds that a dialogue such as this may lead to unexpected valuable discoveries. *Id.*
169. LINKNER, *supra* note 56, at 140 (reminding leaders that “early idea sparks are not meant to be fully defensible and ready for prime time, but they are the seeds of future solid ideas”).
170. *See generally* Meissner & Kotsemir, *supra* note 146; Benedict Sheppard et al., *More Than a Feeling: Ten Design Practices to Deliver Business Value*, MCKINSEY & Co. (Dec. 2017), <https://www.mckinsey.com/business-functions/mckinsey-design/our-insights/more-than-a-feeling-ten-design-practices-to-deliver-business-value> [<http://perma.unl.edu/SA94-HWHA>] (explaining how design thinking involves: collaborations between team members with cross-functional and multidisciplinary expertise in a workshop environment; organizational commitment to “continuous design”; data and analytics informing decision-making; rapid and regular prototyping; customer satisfaction focus, and building bold, brave products and services over incremental improvements). Using this process, Disney “reinvent[ed] the vacation experience” to reduce guest wait times for rides and restaurants. *Id.*
171. Gary Hamel, *The Why, What, and How of Management Innovation*, HARV. BUS. REV. (Feb. 2006), <https://hbr.org/2006/02/the-why-what-and-how-of-management-innovation> [<http://perma.unl.edu/66DL-D2YQ>].
172. MCGRATH, *supra* note 80, at 136 (“Table 6-1: The new strategy playbook: mindset”); *see also* MCGRATH & MACMILLAN, *supra* note 6, at 224 (“In a new business, you can’t and won’t be right. So being right should never be a goal in and of itself.”). McGrath and MacMillan explain, “When things are supposed to be uncertain, the ability to predict accurately probably means that they weren’t uncertain. And hitting your predictions every time probably means you are only doing the incremental things, not pursuing true breakthroughs.” *Id.*

decision-making.<sup>173</sup> He explained “being wrong may be less costly than you think, whereas being slow is going to be expensive for sure.”<sup>174</sup> Further, as a practical matter, course adjustments are generally smoother at speed than from a hard stop.

To “invent the future,”<sup>175</sup> visionary leaders must exhibit persistence, audacity, and an ability to improvise and innovate on the move—and be prepared to fight and claw to the goal line if necessary.<sup>176</sup> Ultimately, because successful innovations depend on the complex interplay of “unorthodox thinking” and social acceptance, leaders must take charge and push forward to the future.<sup>177</sup> Theories about achieving innovation success abound; a few of the hardest and most fruitful theories follow.

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173. Gagnon & De Smet, *supra* note 6.

174. *Id.*

175. Chunka Mui, *7 Steps for Inventing the Future*, FORBES (Apr. 4, 2017), <https://www.forbes.com/sites/chunkamui/2017/04/04/7-steps-for-inventing-the-future/#16536add33bf> [<http://perma.unl.edu/2LMK-X6C4>] (alluding to computer visionary Adam Kay’s pronouncement that “the best way to create the future is to invent it,” and providing Kay’s seven steps for creating the future: “(1) [s]mell out a need, (2) [a]pply favorable exponentials, (3) [p]roject the need 30 years out and imagine what might be possible in the contest of exponential curves, (4) [c]reate a 30-year vision, (5) [p]ull the 30-year vision back into a more concrete 10 to 15-year vision, (6) [c]ompute in the future, and (7) [c]rawl your way there”).

176. LESLIE BERLIN, *TROUBLEMAKERS: SILICON VALLEY’S COMING OF AGE* xii, xvi (2017) (describing key characteristics of innovators: persistence, audacity, and determination to press forward without instructions, maps, or blueprints—“[t]hey made it up as they went along”). While only a few names of successful business leaders have been mentioned in this Article, there are many others who deserve recognition (e.g., Sandra Kurtzig and Fawn Alvarez profiled in BERLIN, *supra*). Other outstanding female innovator-leaders include Geisha Williams (PG&E Corp.), Susan Wojcicki (YouTube), Indra Nooyi (Pepsi Co.), Mary Barra (GM), Oprah Winfrey, Meg Whitman (Hewlett Packard), Sheryl Sandberg (Facebook), and Marissa Mayer (Yahoo). *These Are the Women CEOs Leading Fortune 500 Companies*, FORTUNE (June 7, 2017), <http://fortune.com/2017/06/07/fortune-500-women-ceos/> [<http://perma.unl.edu/8P4Z-KECC>]; Ellen McGirt, *Fortune’s Most Powerful Women 2017: The First Latina CEO*, FORTUNE (Sept. 21, 2017), <http://fortune.com/2017/09/21/fortunes-most-powerful-women-2017-the-first-latina-ceo/> [<http://perma.unl.edu/4C3M-2DJV>].

177. JUMA, *supra* note 166, at 170 (noting the relationship between social forces and the adoption of new technologies); *see also* Meissner & Kotsemir, *supra* note 146, at 3 (discussing the role of unorthodox thinking in innovation); *see generally* Henderson, *supra* note 51, at 402 (describing sociologist Everett Rogers’s “Diffusion Curve” and explaining “that the diffusion of innovation is a *process* that occurs through a social system”). Rogers identifies the following five “adopter” segments: “(1) innovators, (2) early adopters, (3) early majority, (4) late majority, and (5) laggards.” *Id.* He notes that because the adoption of new innovations is more of a social process of imitation than a mental process of analytical reasoning, “most lawyers, law professors, and law students ‘won’t change until they see others successfully change first.’” *Id.* at 403. He also observes that “[t]he most established, influential, and prestigious portions of the legal profession—large law firms, the federal judiciary, legal academia, and the ABA—tend to be tradition-bound and skeptical of change that does not initiate with them.” *Id.* at 421.

### 1. *Recombinant (Combinatorial) Innovation*

Recombinant innovation, articulated in economist Paul Romer's "new growth theory," posits that economic growth occurs when individuals add to and rearrange raw materials and existing knowledge in ways that generate more value.<sup>178</sup> Grounding Romer's idea to nature, economist Martin Weitzman compared the process of creating new solutions by rearranging established ideas to the process of plant hybridization, which involves cross-pollinating different plants, fostering seed growth, and growing distinct variations.<sup>179</sup> The building blocks of innovation stem from a continuous recombinant (or combinatorial<sup>180</sup>) process of cross-pollination (e.g., applying resources to "research effort"<sup>181</sup>) to grow new "seed ideas."<sup>182</sup> This process creates a virtuous innovation life-cycle as seed ideas cross-pollinate in different combinations, eventually leading to "an almost incomprehensibly vast universe of ever-branching possibilities."<sup>183</sup> Amazon's Jeff Bezos also uses the term "seeds" to describe how Amazon invests in learning.<sup>184</sup> Like Weitzman, he understands that these "seeds" represent investments in the future that may take considerable time to mature and yield returns.<sup>185</sup>

Digital innovation represents "recombinant innovation in its purest form" because each advance serves as an elementary unit for

178. Paul M. Romer, *Endogenous Technological Change*, 98 J. POL. ECON. 71, 72–75 (1990). Google's chief economist, Hal Varian, calls this process "combinatorial innovation." See HAL R. VARIAN ET AL., RAFFAELE MATTIOLI LECTURES: THE ECONOMICS OF INFORMATION TECHNOLOGY 5 (2004) (identifying the provenance of this theory by identifying influential thought-leaders Joseph A. Schumpeter [1934], S. Colum Gilfillan [1935], Abbott Usher [1954], Stuart Kauffman [1995], and Martin Weitzman [1998]); *Hal Varian on How the Web Challenges Managers*, MCKINSEY & Co. (Jan. 2009), <https://www.mckinsey.com/industries/high-tech/our-insights/hal-varian-on-how-the-web-challenges-managers> [http://perma.unl.edu/35MX-V3SD].

179. Weitzman, *supra* note 9, at 336.

180. VARIAN ET AL., *supra* note 178, at 7; *Hal Varian on How the Web Challenges Managers*, MCKINSEY & Co. (Jan. 2009), <https://www.mckinsey.com/industries/high-tech/our-insights/hal-varian-on-how-the-web-challenges-managers> [http://perma.unl.edu/VS3J-7QBG] (explaining that given the power of the Internet and related technologies, "we're in the middle of a period that I refer to as a period of 'combinatorial innovation.' So if you look historically, you'll find periods in history where there would be the availability of a different component parts that innovators could combine or recombine to create new inventions. In the 1800s, it was interchangeable parts. In 1920, it was electronics. In the 1970s, it was integrated circuits.").

181. Weitzman, *supra* note 9, at 345 ("'[R]esearch effort' corresponds to the greenhouse-service nursery part that raises new cultivars out of seeds.").

182. *Id.* (using the phrase "germinal ideas" also); see Brynjolfsson & McAfee, *supra* note 35, at 82.

183. Weitzman, *supra* note 9, at 357.

184. McGRATH & MACMILLAN, *supra* note 6, at 55.

185. *Id.*

future innovations.<sup>186</sup> Much like Johannes Gutenberg's 1440 printing press,<sup>187</sup> ICTs have not only profoundly changed the creation, mixing, and distribution of ideas and information, but they provide the foundation for future innovations.<sup>188</sup> Digital ubiquity and near-zero cost of transmission and storage means that ICTs provide creators with unlimited possibilities for combining and recombining ideas.<sup>189</sup> Technology entrepreneurs further shape these digital building blocks into economic opportunities.<sup>190</sup> Like Weitzman's observation about plant hybridization, digital progress accumulates infinitely. In the words of Brynjolfsson and McAfee, "the digital world doesn't respect any boundaries."<sup>191</sup>

## 2. *Disruptive Innovation*

Unlike sustaining innovations (which involve marginal improvements in products, services, and processes) and some types of recombinant innovation (which can work within a system as it currently exists to find new ways of doing things), disruptive innovation boldly

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186. BRYNJOLFSSON & MCAFEE, *supra* note 35, at 81.

187. JUMA, *supra* note 166, at 76–81 ("The printing press is considered by numerous historians and scholars as the most transformational technology of modern time."). *Id.* at 76. Interestingly, because universities moved quickly to embrace printing press technologies, universities became the "locus of knowledge generation and conservation." *Id.* at 80. Also, cities with printing presses were more likely to become Protestant, which weakened the role of the Catholic Church in society. *Id.*; see also BRYNJOLFSSON & MCAFEE, *supra* note 35, at 76–77, wherein they discuss the ongoing debate as to whether ICT, like the printing press, has reached the status of a "General Purpose Technology" (GPT). Economic historian, Gavin Wright, defines GPTs as "deep new ideas or techniques that have the potential for important impacts on many sectors of the economy." *Id.* Currently, some economic scholars debate whether ICT satisfy the necessary economic significance test required for GPTs. *Id.* at 77. While Brynjolfsson and McAfee argue that ICTs are already GPTs, economic data will ultimately finalize ICT classification. *Id.*

188. BRYNJOLFSSON & MCAFEE, *supra* note 35, at 80.

189. *Id.* at 79–801; see Michael Barber et al., *An Avalanche Is Coming: Higher Education and the Revolution Ahead*, INST. FOR PUB. POL'Y RES. 38 (Mar. 2013), [http://med.stanford.edu/smili/support/FINAL%20Avalanche%20Paper%20110313%20\(2\).pdf](http://med.stanford.edu/smili/support/FINAL%20Avalanche%20Paper%20110313%20(2).pdf) [<http://perma.unl.edu/53TM-DAHJ>] ("The ubiquity of information and the near-zero cost of storing and transmitting means that universities no longer own the monopoly over the expression of ideas in courses.").

190. Stewart & Carayannis, *supra* note 44, at 13 (describing "innumerable yet elusive opportunities for technology entrepreneurship"); see also REIS, *supra* note 34, at 67 (explaining that in the tech industry, "small teams put a huge premium on reusing existing technology and assembling products out of preexisting components").

191. BRYNJOLFSSON & MCAFEE, *supra* note 35, at 81. The effects of AI and IA and resulting technological unemployment have been noted only briefly in this Article. If unmitigated, as Brynjolfsson and McAfee as well as the Susskinds predict, these issues will demand serious study by theologians, policymakers, and society in general in the years ahead.

challenges the status quo.<sup>192</sup> First introduced in 1997 by Harvard Business Professor Clayton M. Christensen, “disruptive innovation” represents major, massive, and unforeseen technological breakthroughs that require organizations “to radically rethink their existence.”<sup>193</sup>

Disruption takes root in situations where customers have “no access to the existing offerings because they are too expensive, inconvenient, or complicated to use.”<sup>194</sup> As a result, for customers, the “alternative to innovation is nothing at all.”<sup>195</sup> Many disruptors start out by offering an inexpensive, but often inferior, product compared to incumbents.<sup>196</sup> Through the rapid and continuous process of iteration and refinement, however, these upstarts sometimes redefine and dominate the industry.<sup>197</sup> After disruptors improve their quality and performance, incumbents face significant challenges—especially if the disruptor offers more convenient or more affordable access.<sup>198</sup> Once customers migrate to a disruptor, an incumbent’s position becomes even more perilous because of the difficulty of catching up with a competitor who has harnessed technology radically different than that which the incumbent possesses.<sup>199</sup>

When Christensen first posited his theories, business and popular culture enthusiastically responded—leading to an abundance of “dis-

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192. *Disruptive Technology/Innovation*, ECONOMIST (May 11, 2009), [www.economist.com/node/13636558#print](http://www.economist.com/node/13636558#print) [<http://perma.unl.edu/B298-Z7FP>]; see also *The Explainer: Disruptive Innovation*, HARV. BUS. REV. (Oct. 23, 2013), <https://hbr.org/video/2688242135001/the-explainer-disruptive-innovation> [<http://perma.unl.edu/TXG6-7Q9N>] (explaining disruptive innovation).

193. *Id.* Note that the term “disruptive innovation” applies to both technology and business model innovation. JUMA, *supra* note 166, at 18. Fichman et al. assert that “Moore’s Law can be seen as a fundamental enabler of many instances of disruptive innovation . . . and creative destruction.” Fichman et al., *supra* note 56, at 333. Moore’s Law is discussed *infra* in subsection IV.C.1. For example, online learning represents current and ongoing education disruptions. CHRISTENSEN & EYRING, *supra* note 137, at 18. Disruptive digital platform and business models include Netflix, Amazon, Uber/Lyft, and Airbnb. Pisano, *supra* note 8, at 8.

194. Michele R. Pistone & Michael B. Horn, *Disrupting Law School: How Disruptive Innovation Will Revolutionize the Legal World*, CLAYTON CHRISTENSEN INST. 2 (2016).

195. *Id.*

196. JUMA, *supra* note 166, at 18.

197. *Id.* at 19. Juma writes that disruptive technologies also “reorder the socioeconomic terrain by coevolving with new institutional arrangements and organizational structures. It is this wider societal transformation that generates tensions between innovation and incumbency.” *Id.*

198. Pistone & Horn, *supra* note 194, at 4. The rise and fall of NYSE-traded Borders Group (book seller) provides a striking example of a bricks-and-mortar incumbent being overtaken by a tiny digital upstart. *Id.* Borders filed for bankruptcy in 2011. *Id.* The business post-mortem revealed that management’s “crucial error” occurred when it outsourced its online operations to Amazon.com. *Id.*

199. *Id.*

ruption consultants, disruption conferences, and disruption seminars.”<sup>200</sup> More than twenty years after Christensen coined the phrase, “disruptive” business models and technologies continue to threaten the superiority of incumbent institutions.<sup>201</sup> To compete against these disruptors, established organizations must engage in an ongoing process of renewal and regeneration—sometimes called self-disruption.<sup>202</sup> To self-disrupt, leaders must examine every segment of current operations and decide which segments should be expanded, reduced or eliminated.<sup>203</sup> Leaders must then support the process of change and innovation by seeing beyond clunky early ideas, prototypes, and minimum viable products (described *infra* subsection IV.C.4).

Last, as a practical matter, Christensen strongly recommends that leaders committed to self-disruption fund and support an independent spin off organization.<sup>204</sup> This separation will allow original ideas to seed and take root without being encumbered by the larger organization’s preconceptions, processes, and traditions.<sup>205</sup> He further explains that because “innovations are fraught with difficulties and uncertainties,” these spin off organizations must be given the time, room, and resources to fail on a “small scale,” and therefore accelerate the speed of learning.<sup>206</sup> It is worth noting that there are differing perspectives as to whether a spin off organization or pilot program working in “innovation garages” yields better innovation results.<sup>207</sup> Regardless of the route chosen, innovation thought leaders emphasize that cutting ties from traditional ways of thinking represents a critical step toward the future.

### 3. Value Innovation

Value innovation often intertwines variants of recombinant and disruptive innovation in ways that intentionally seek to redefine

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200. See Lepore, *supra* note 8.

201. See generally CHRISTENSEN, *supra* note 69; CLAYTON M. CHRISTENSEN, THE INNOVATOR’S DILEMMA: WHEN NEW TECHNOLOGIES CAUSE GREAT FIRMS TO FAIL (2016).

202. SATELL, *supra* note 100, at 136.

203. *Id.* To facilitate education service innovations, as a practical matter, it may be prudent to adopt modular course designs that will allow for the revision, update, or removal of modules that do not meet learning objectives. See GEOFFREY G. PARKER ET AL., PLATFORM REVOLUTION: HOW NETWORKED MARKETS ARE TRANSFORMING THE ECONOMY AND HOW TO MAKE THEM WORK FOR YOU 221 (2016) (discussing advantages of modular design).

204. CHRISTENSEN, *supra* note 69, at 249–52.

205. *Id.* at 249–52.

206. *Id.* at 250–51; see also McGRATH & MACMILLAN, *supra* note 6, at 220 (recommending the launch of a product development or “venturing group” that has separate funding and management).

207. See *Legal Education: A New Growth Vision Part III*, subsection II.B.2 (discussing pilot projects); Jong et al., *supra* note 31.

problems and reorient strategies.<sup>208</sup> The value innovation process involves the following: (1) identifying and articulating an organization's "prevailing strategic logic";<sup>209</sup> (2) challenging the "prevailing strategic logic" by considering industry assumptions, approaches to customers, capabilities, assets, and service and product offerings;<sup>210</sup> (3) questioning all aspects of standard industry operating practices, including what tasks, products, or services should be eliminated, reduced or improved;<sup>211</sup> and (4) envisioning what novel products or services should be created to create new value curves and opportunities.<sup>212</sup> Value innovation strategy "embraces the entire system" of an enterprise to make a forward "leap in value."<sup>213</sup> It rejects conventional thinking about what a product or service is supposed to look like. Instead, it provides customers with a completely different experience—often at substantial cost savings—by eliminating superfluous features or processes rooted in standard industry operations.<sup>214</sup>

Circuses, of all industries, provide a telling example of value innovation. In May 2017, after 146 years in business, the Ringling Brothers Circus ceased operations because the traditional circus model failed to attract enough ticket buyers to sustain its business model.<sup>215</sup> According to the *New York Times*:

The circus—with its 500-person crew, 100 animals and mile-long trains, which moved around the trapeze and its artists, the high wire and its tight-

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208. KIM & MAUBORGNE, *supra* note 107, at 212 (explaining how opportunities arise from redefining problems); *see also* Pisano, *supra* note 8 (explaining that to create "value," organizations "must think through what complementary assets, capabilities, products, or services could prevent customers from defecting to rivals" and thus "keep their own position in the ecosystem strong").

209. W. Chan Kim & Renee Mauborgne, *Value Innovation: The Strategic Logic of High Growth*, HARV. BUS. REV. (July–Aug. 2004), <https://hbr.org/2004/07/value-innovation-the-strategic-logic-of-high-growth> [http://perma.unl.edu/A5YK-447E]. Kim and Mauborgne explain that conventional and value innovation approaches differ in the way challenges are perceived and in the type of logic used to find solutions. *Id.* For instance, under "conventional logic," the conditions of and assumptions for an industry are fixed; but under value innovation logic, they are optional or malleable. *Id.* The strategic focus under conventional logic is "to beat the competition;" under value innovation logic, competition is not the benchmark. *Id.* Rather, the focus is on pursuing a quantum leap in value to dominate the market. *Id.* With respect to the products and services offered, conventional logic seeks to maximize the value of current offerings. *Id.* In contrast, value innovators focus on providing an entirely novel total customer solution. *Id.* Kim and Mauborgne also include an Exhibit with a breakdown of these categories. *Id.*

210. *Id.*

211. *Id.*

212. *Id.*

213. KIM & MAUBORGNE, *supra* note 107, at 17.

214. Kim & Mauborgne, *supra* note 209.

215. Sarah Maslin Nir & Nate Schweber, *After 146 Years, Ringling Brothers Circus Takes Its Final Bow*, N.Y. TIMES (May 21, 2017), [https://www.nytimes.com/2017/05/21/nyregion/ringling-brothers-circus-takes-final-bow.html?\\_r=0](https://www.nytimes.com/2017/05/21/nyregion/ringling-brothers-circus-takes-final-bow.html?_r=0) [http://perma.unl.edu/8KE2-UZ8L].



rope walkers, the motorcycles and the daredevils—had become infeasible in an age in which video games and cellphone screens compete to provide childhood wonder.<sup>216</sup>

Meanwhile, as Ringling Brothers faltered, a circus concept known as Cirque du Soleil soared to new heights and became a billion-dollar entertainment giant.<sup>217</sup> Founded in 1986, Cirque du Soleil redefined the traditional circus business model by stylishly synthesizing theater, circus, and visual artistry in performances targeting adult audiences.<sup>218</sup> To reduce costs, it eliminated expensive animal acts and did not rely on “star performers” to attract crowds.<sup>219</sup> While both concepts were ostensibly “the circus,” Cirque du Soleil’s value innovation process identified and eliminated the pitfalls of the traditional circus—i.e., huge overhead costs and a bloated physical footprint—while retaining the wonderment that attracts people to the circus in the first place, thereby creating an experiential event unlike anything else available.

Value innovation concentrates on delivering total customer solutions,<sup>220</sup> not being “first to market.”<sup>221</sup> Because such an ambitious goal necessarily involves a more time-intensive process, value innovation may butt heads with Grove’s “first mover” recommendation.<sup>222</sup> Despite this difference in timing, however, both approaches call organizations to machete through the entangled vines of traditions and the status quo so that crisp, forward action can take root.

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216. *Id.*

217. Kim Gittleston, *How Cirque du Soleil Became a Billion Dollar Business*, BBC NEWS (Dec. 12, 2013), <http://www.bbc.com/news/business-25311503>; Inder Sidhu, *Profiles in Doing Both: Why Cirque du Soleil Isn't Clowning Around About Business Models*, FORBES (Nov. 12, 2010), <https://www.forbes.com/forbes/welcome/?toURL=https://www.forbes.com/sites/indersidhu/2010/11/12/profiles-in-doing-both-why-cirque-du-soleil-isnt-clowning-around-about-business-models/> [<http://perma.unl.edu/V5GM-J2YS>]; *Cirque du Soleil*, BLUE OCEAN MOVES, <https://www.blueoceanstrategy.com/bos-moves/cirque-du-soleil/> [<http://perma.unl.edu/JKC8-A9YL>].

218. Gittleston, *supra* note 217.

219. *See The Explainer: Blue Ocean Strategy*, HARV. BUS. REV. (Jan. 11, 2017), <https://hbr.org/video/5278216527001/the-explainer-blue-ocean-strategy> [<http://perma.unl.edu/F5WB-JS6S>] (describing how Cirque du Soleil’s value innovations (i.e., differentiating its entertainment offerings) made the traditional circus competition irrelevant).

220. Kim & Mauborgne, *Value Innovation*, *supra* note 209.

221. *Id.*

222. As discussed in *Legal Education: A New Growth Vision Part I*, section III.B, Grove advocates for immediate and forceful action to respond to changing business forces and market conditions. Among innovation and management scholars, there is debate about the benefits of being a first or later mover. There is, however, consensus that being a late mover is often disastrous. *See* CHRISTENSEN, *supra* note 201, at 122 (noting the ongoing leader versus follower debate). Christensen writes: “You can always tell who the pioneers were . . . . They’re the ones with the arrows in their backs.” *Id.*

For education leaders considering value innovation, collecting student and program data is a productive and crucial initial action item. Analysis of this data may reveal which of the current services offered could be decreased, eliminated, or increased, making room for other services or processes to take their place. Combining this information with the four-step value innovation process described above may assist in developing innovation mission trajectories.

#### 4. *Open Innovation*

“Open innovation” is a systematic process by which ideas can be exchanged and created between different people in different organizations.<sup>223</sup> Whereas “closed innovation”—a vertically-integrated business paradigm that only values internal ideas<sup>224</sup>—represents the old guard, open innovation recognizes that a single individual, organization, or company does not have the in-house knowledge and capability to consistently come up with “new intelligent combinations of existing and emerging technologies.”<sup>225</sup> Instead, it seeks input and cooperation from external sources to advance and achieve specific goals. Open innovation manifests in different ways, including through collaborations between select groups with a particular interest or expertise, or by crowdsourcing, wherein the public is invited to help solve problems.<sup>226</sup> Organizations that invite collaborations with outsiders—including “complementors,” competitors, and “frenemies”<sup>227</sup>—can stimulate the

223. Martin Curley, *The Evolution of Open Innovation*, J. INNOVATION MGMT. 9, 9 (2015). Henry Chesbrough first articulated the concept in 2003. *Id.*; see also IBM 2018 GLOBAL C-SUITE STUDY, *supra* note 42, at 9 (discussing how Reinventors often partner and share assets and people with organizations in their value chain).

224. Henry W. Chesbrough, *A Better Way to Innovate*, HARV. BUS. REV. (July 2003), <https://hbr.org/2003/07/a-better-way-to-innovate> [http://perma.unl.edu/27VV-MKH7].

225. Curley, *supra* note 223, at 10, 13; see also Jong et al., *supra* note 31 (“In the space of only a few years, companies in nearly every sector have conceded that innovation requires external collaborators. Flows of talent and knowledge increasingly transcend company and geographic boundaries.”). The authors then explain how open innovation enables not only ideas and insights to be shared but also such collaborations can turbo-charge product/service development and launch through cost sharing and access to partner networks. *Id.*

226. See Pisano, *supra* note 8 (“[C]rowdsourcing tends to work best for highly modular systems, in which different problem solvers can focus on specific components without worrying about others.”). Open-source software projects bring together volunteer-contributors to develop a product or system (e.g., Linux). *Id.* The chances of finding novel solutions increase when diverse contributors collaborate in solving problems or challenges. *Id.*

227. See GROVE, *supra* note 4, at 28–29 (“[C]omplementors often have the same interests as your business and travel the same road.”); CHESBROUGH, *supra* note 32, at 90 (spelling complementors as “complementers”). Adam N. Brandenburger and Barry J. Nalebuff’s 1997 book *Co-opetition* proposed the term “complementors” to refer to organizations that sell products that enhance the value of another firm’s

organic, cost-efficient, and rapid development and launch of cutting-edge products and services by combining the participants' unique knowledge, technologies, and competencies.<sup>228</sup>

The related concept of open business model innovation likewise fosters collaborations with outside parties to create and capture value.<sup>229</sup> The value-add, however, is specifically geared towards improving, expanding, and modernizing the organization's operational model.<sup>230</sup> Open business models can be used to reduce costs and generate additional revenue by monetizing access to users and technologies.<sup>231</sup> For example, Amazon's shopping platform, which allows third-party merchants to sell their products on Amazon's website, illustrates an open business model.<sup>232</sup> Amazon collects data on every transaction that occurs on its platform, allowing it to analyze past customer purchases and offer recommendations for additional products that may be of interest to a particular consumer.<sup>233</sup> Providing outside vendors with access to platforms can result in greater utilization and activity, which in turn supports rapid platform refinements to improve

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products." See J. Scott Armstrong & Terry Clark, *Review of Barry J. Nalebuff and Adam N. Brandenburger*, Co-opetition 1. Revolutionary Mindset that Redefines Competition and Co-operation 2. The Game Theory Strategy That's Changing the Game of Business, 61:2 J. MARKETING 92–95 (April 1997). "Complementors can collaborate to enhance the value of their products to customers." *Id.* at 92. Some examples include hardware and software company collaborations and fast-food franchises partnering with gas stations. *Id.*; see also Porter, *supra* note 96 (describing "complements" as those "products that are used in tandem with another industry's product"); *Plotting the Platform Payoff*, *supra* note 158, at 12–13 (discussing benefits of collaborating with competitors—or "frenemies"—when creating new products and services).

228. Michelman, *supra* note 143.

229. See Henry Chesbrough & Marcel Bogers, *Explicating Open Innovation: Clarifying an Emerging Paradigm for Understanding Innovation*, in *NEW FRONTIERS* 17–18 (Henry Chesbrough et al. eds., 2014) ("The business model, which may be implicit or explicit, that puts the distributed innovation process into the organizational realm as it describes not only how value is created within the value network but also how it is captured by the involved organization(s).").

230. Win Vanhaverbeke & Henry Chesbrough, *A Classification of Open Innovation and Open Business Models*, in *NEW FRONTIERS IN OPEN INNOVATION* 52 (Henry Chesbrough et al., eds., 2014).

231. *Id.* at 53 (discussing monetization opportunities such as licensing agreements and spin-off activities).

232. CHESBROUGH, *supra* note 32, at 84.

233. *Id.*; see also *Cognitive Catalysts: Reinventing Enterprises with Experiences and Artificial Intelligence*, IBM GLOBAL C-SUITE STUDY 1 (Sept. 2017), [https://www-01.ibm.com/common/ssi/cgi-bin/ssialias?htmlfid=GBE03877USEN& \[http://perma.unl.edu/CFV8-9DHS\]](https://www-01.ibm.com/common/ssi/cgi-bin/ssialias?htmlfid=GBE03877USEN&[http://perma.unl.edu/CFV8-9DHS]) (explaining that leading organizations "recognize that each interaction and each new node in their network is a fresh source of data—a new point in a pattern"). Successful cognitive enterprises, therefore, run on data. *Id.* at 7.

customer experiences and value-creating exchanges.<sup>234</sup> In addition, Amazon's sophisticated data collection methods, efficient transaction processing, logistics and technology infrastructure, cloud-based business initiatives, and increasingly capable AI applications further strengthen the immense power of its platform-based, open business model.<sup>235</sup>

Legal education entrepreneurs reflecting on how Amazon integrated third party vendors onto its platform may begin germinating neoteric ideas on how to serve a full spectrum of education customers. For example, combining open innovation and open business models could cure employee and employer friction points such as (1) employers' need for practical solutions to find qualified, competent human talent (*see supra* subsection III.C.2), and (2) employees' need for access to high-quality, cost-effective, convenient, just in time, education solutions that make them competitive in the workplace (*see supra* subsec-

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234. CHESBROUGH, *supra* note 32, at 164–68; *see also* ANAND, *supra* note 8, at 20 (discussing Amazon's "sophisticated understanding of network effects"). Anand writes:

Why would a company work so hard to create a competitive advantage only to give it away? The answer speaks to Amazon's sophisticated understanding of network effects. Create a fabulous warehousing network, and ultimately so can others. Your competitive advantage will vanish. Create a retailing platform where anyone can sell to your customers and you've carved out an entirely different competitive position. Amazon wanted indirect network effect that would give it control over the *entire* e-commerce market, not just the market for its own products.

*Id.*; *see also* *Plotting the Platform Payoff*, *supra* note 158, at 18 (describing the market power of platforms). According to the IBM 2018 study:

By creating a common environment for collaboration, platforms promote a deeper sense of shared vision and innovation. They provide a place where economic activity might be more readily monetized and a structure that generates and promotes network effects, which in turn lead to the evolution and expansion of new types of services and new types of interactions.

*Id.* Further, on the topic of network effects, the IBM 2018 study observes, "The power of platforms often rests in their ability to generate and sustain network effects—a situation in which the addition of one more participant to an ecosystem or platform generates a greater addition of value to the system as a whole than the incremental value of the additional participant itself." *Id.* at 19.

235. CHESBROUGH, *supra* note 32, at 164–68. Data has been dubbed "the new oil" as tech titans like Facebook, Amazon, Apple, and Alphabet (Google) collect and analyze unfathomable quantities of data to gain consumer and personal insights. *See The World's Most Valuable Resource Is No Longer Oil but Data*, *ECONOMIST* (May 6, 2017), <https://www.economist.com/news/leaders/21721656-data-economy-demands-new-approach-antitrust-rules-worlds-most-valuable-resource> [http://perma.unl.edu/V5HY-4ACB]. The article notes how Amazon captures customer shopping habits, Facebook sees social connections and personal preferences, and Google's search engine knows more about you than anyone else. *Id.* Although outside the scope of this Article, Amazon's seemingly unstoppable data-driven growth—much like Mississippi Kudzu—may eventually invite regulatory scrutiny. *Id.*

tions III.A.3 and III.C.1). This market need has yet to be sufficiently filled as evidenced by the comments of panelists at the 2017 Consortium for Advanced Adult Learning & Development meeting where employers eagerly called for such solutions.<sup>236</sup> For example, Jason Palmer (general partner, New Markets Venture Partners) articulated the employer perspective: “Our higher education system is 25 years behind the curve. There needs to be a new set of institutions or programs that are jointly owned and managed by corporations or industry” to streamline the development and verification of essential worker skills and competencies in an era of rapidly changing technologies.<sup>237</sup>

Last, while the specifics of how to structure a university joint venture with for-profit platform collaborators fall outside the scope of this Article, leaders may find the open innovation and open business model concepts worthy of further inquiry.

##### 5. *Breakthrough/Revolutionary Versus Incremental/ Evolutionary Innovations*

As organizations grow, collect, and analyze data, innovation pathways may emerge. Innovations are often categorized in two primary types: breakthrough (revolutionary)<sup>238</sup> or incremental (evolutionary).<sup>239</sup> Transformative breakthrough innovations include the transistor developed at Bell Labs in 1947 by John Bardeen, Walter Brattain, and William Shockley; and the integrated circuit invented in

236. *Learning Innovation in the Digital Age*, MCKINSEY Q. (Sept. 2017), <https://www.mckinsey.com/business-functions/organization/our-insights/learning-innovation-in-the-digital-age> [<http://perma.unl.edu/673W-5EM6>].

237. *Id.*; see also Vanhaverbeke & Chesbrough, *supra* note 230, at 55 (“*Open or linked business models* thus refer to the situations where the innovating company relies on its partners’ competencies to jointly create value for customers and share that value according to the agreements they have negotiated prior to the collaboration.”). For general student perspectives and concerns about legal education, see *Legal Education: A New Growth Vision Part I*, subsections IV.B.1–4.

238. Tony Davila, *The Innovation Strategy Big Companies Should Pursue*, HARV. BUS. REV. (June 5, 2014), <https://hbr.org/2014/06/the-innovation-strategy-big-companies-should-pursue> [<http://perma.unl.edu/BW8W-F77S>]; see also Jeff Stibel, *Would You Rather be Revolutionary or Evolutionary?*, HARV. BUS. REV. (June 22, 2011), <https://hbr.org/2011/06/would-you-rather-be-revolution> [<http://perma.unl.edu/MH9T-HHJZ>] (discussing revolutionary innovations such as the automobile and the internet); Pisano, *supra* note 8 (using the terms routine and radical innovation); Robert M. Pech, *Achieving the Innovation Edge in Technology, Engineering Design, and Entrepreneurship*, J. INNOVATION & ENTREPRENEURSHIP 5:6 (2016), at 2, <https://innovation-entrepreneurship.springeropen.com/articles/10.1186/s13731-016-0035-y> [<http://perma.unl.edu/S3X3-KQZD>].

239. See Soren Kaplan, *How One Insurance Firm Learned to Create an Innovation Culture*, HARV. BUS. REV. (Aug. 15, 2017), <https://hbr.org/2017/08/how-one-insurance-firm-learned-to-create-an-innovation-culture> [<http://perma.unl.edu/5PST-GUJM>]; Pisano, *supra* note 8.

1958–1959 by Jack Kilby and Robert N. Noyce.<sup>240</sup> On the other hand, Intel’s continual and consistent improvement of transistor technologies every eighteen months<sup>241</sup> while simultaneously reducing product size represents a profoundly important but incremental innovation.<sup>242</sup> The source of the innovation—that is, either management-driven (top-down) or staff-driven (bottom-up)—adds texture to the analysis.<sup>243</sup> Digging deeper into the individual thought processes that underlie these categories reveals two types of thinkers: linear and non-linear.<sup>244</sup> These factors affect the characteristics of each category of innovation.

Incremental innovation is often achieved by linear thinkers, who tend to make consistent but fractional improvements.<sup>245</sup> Like natural evolution, incremental or evolutionary innovation changes an underlying product or technology gradually over time.<sup>246</sup> Management-led incremental innovations manifest in the form of small (albeit continuous) progress in management-defined goals and criteria.<sup>247</sup> Staff-developed incremental innovations appear as emergent improvements in products and services, often as the result of employee brainstorming and initiatives.<sup>248</sup> Incremental innovations often build on an organization’s “existing technological competencies,” adhere to its current business model,<sup>249</sup> and involve only minor “tweaks” that advance

240. David B. Haviland, *The Transistor in a Century of Electronics*, NOBEL PRIZE (Dec. 19, 2002) (on file with author). The Alfred Nobel Memorial Foundation awarded Bardeen, Brattain, Shockley, and Kilby the Nobel Prize in Physics for their work. *Id.*

241. Moore’s Law, discussed *infra* in subsection IV.C.1.

242. Haviland, *supra* note 240 (describing the “fantastic progression of circuit fabrication [which] is known as Moore’s law”); see Pisano, *supra* note 8; see also Greg Satell, *This 1 Rule Will Seriously up Your Company’s Innovation Game*, INC. (Dec. 9, 2017), <https://www.inc.com/greg-satell/this-1-rule-can-seriously-up-your-innovation-game.html> [<http://perma.unl.edu/6QEU-42VT>] (“A new generation of computer chips may not seem that exciting, but the incremental improvements over the past 50 years are what has driven the digital revolution and made many ‘radical’ innovations possible.”). It is worth noting that Clayton Christensen classifies Intel’s later development of now-common (and incrementally improved) microprocessor technologies as a “disruptive” technology. CHRISTENSEN, *supra* note 201, at 153–54.

243. Davila, *supra* note 238.

244. Stibel, *supra* note 238.

245. *Id.*

246. *Id.*

247. Davila, *supra* note 238; see also Porter, *supra* note 48 (stating “[t]he pursuit of operational effectiveness is seductive because it is concrete and actionable” but incremental steps in the form of operational effectiveness does not constitute strategy); Porter, *supra* note 96 (discussing the importance of both operational effectiveness and strategic positioning); ANAND, *supra* note 8, at 205 (describing “operational effectiveness” as “doing things better, activity by activity”).

248. Davila, *supra* note 238.

249. Pisano, *supra* note 8 (explaining how routine (i.e., incremental) innovation “fits with its existing business model—and hence its customer base”).

core business functions.<sup>250</sup> For instance, an updated version of Apple's iPhone illustrates the linear thinking involved in incremental or routine innovations.<sup>251</sup>

In contrast, non-linear thinkers tend to come up with breakthrough ideas<sup>252</sup> by recognizing trends and spotting opportunities for convergence.<sup>253</sup> Breakthrough innovations that lead to growth involve high aspirations and big ideas. Amazon's Jeff Bezos explains:

I think you need to make sure, with the things you choose to do, that you are able to say, "If we can get this to work, it will be big." Another important question to ask is, "Is it big enough to be meaningful to the company as a whole if we're very successful?"<sup>254</sup>

Management-driven breakthrough innovations take shape as strategic bets<sup>255</sup>—the success of which often turns on management's clarity of vision and "ability to execute."<sup>256</sup> For example, the original iPhone designed by Jobs and Ives in 2007, and its interrelated Apple digital ecosystem, likely qualify as breakthrough innovations because Apple unified multiple capabilities in a single device and digital platform.<sup>257</sup> Meanwhile, staff-driven breakthrough innovations spring forth as strategic discoveries<sup>258</sup> and green marketplace opportunities. For example, consumer market questions and challenges identified by

250. Kaplan, *supra* note 239.

251. Pisano, *supra* note 8; *see also* David Pierce & Lauren Goode, WIRED *The Wired Guide to the iPhone*, <https://www.wired.com/story/guide-iphone/> (describing how the iPhone has evolved since its 2007 breakthrough launch and asserting that "the current crop of iPhones are, for the most part, iterations.").

252. Stibel, *supra* note 238.

253. Stewart & Carayannis, *supra* note 44, at 24 (discussing how some entrepreneurs make their own luck by anticipating opportunities and maneuvering into position to increase returns on investment). Stewart & Carayannis also quote the following from their primary data: "I am a synergistic entrepreneur; I don't go into the lab and invent a new widget. I look for the trends and try to see where there will be a convergence—to look for multiple non-linear advantages and opportunities—that's where you want to be, to make your entrance." *Id.*

254. McGRATH & MACMILLAN, *supra* note 6, at 30.

255. Davila, *supra* note 238.

256. *Id.*

257. Economic and technology historians will ultimately make this classification. *See* DOMINGOS, *supra* note 67, at 236–37 ("Although it is less well known, many of the most important technologies in the world are the result of inventing a unifier, a single mechanism that does what previously required many."). Domingos provides the following examples of unifiers: the Internet, computers, and electricity. *Id.*; *see also* *Cognitive Catalysts: Reinventing Enterprises and Experiences with Artificial Intelligence*, IBM GLOBAL C-SUITE STUDY 10 (Sept. 2017), [https://www-01.ibm.com/common/ssi/cgi-bin/ssialias?htmlfid=GBE03877USEN& \[http://perma.unl.edu/FMW5-CXB7\]](https://www-01.ibm.com/common/ssi/cgi-bin/ssialias?htmlfid=GBE03877USEN& [http://perma.unl.edu/FMW5-CXB7]) ("Technological convergence, the combination of two or more technologies in a single device or process, has matured considerably across mobile, cloud and IoT [internet of things] . . . . The convergence of technologies leads to the integration of data, which in turn, can uncover new opportunities to reinvent a business model or achieve greater operational efficiency.").

258. Davila, *supra* note 238.

Adrian Gore (then a young, entry-level life insurance actuary in South Africa) eventually sprouted into the Discovery Group, a global, future-focused, data-driven health and life insurance provider.<sup>259</sup> Disruptive, recombinant, and value innovations may all be classified as breakthrough. Significantly, a single breakthrough innovation can catalyze many virtuous cycles of incremental innovation.<sup>260</sup> The following table depicts this “ecology of innovation.”<sup>261</sup>

	<b>Incremental/ Evolutionary</b>	<b>Breakthrough/ Revolutionary</b>
Management (top-down)	Continuous progress	Strategic bets
Staff (bottom-up) Personality type	Emergent improvements Linear	Strategic discoveries Non-linear

Leaders of organizations typically focus on incremental—not breakthrough—innovation because incremental innovation involves less risk and uses pre-existing knowledge and capabilities.<sup>262</sup> However, incremental or evolutionary innovation is often small, slow, and cautious, solving only immediately obvious problems in fairly predictable ways.<sup>263</sup> According to innovation scholar and strategy expert Gary Hamel, “Any company that believes that planning can yield

259. Adrian Gore, *How Discovery Keeps Innovating*, MCKINSEY Q. (May 2015), <https://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/how-discovery-keeps-innovating> [http://perma.unl.edu/VPC7-YUAT]. The Discovery Group tracks, collects, and analyzes data about customers’ lifestyle choices (e.g., member gym visits; data from workout devices such as Fitbit, Nike+, Garmin; healthy food choices collected via grocery shopping analytics, and driving habits collected via automobile apps), then uses the collected data to develop a tailored risk assessment—which rewards healthy behaviors—in determining health and life insurance premium rates. *Id.* The Discovery Group culture merits quick mention because it runs a yearly internal competition called “Inspiring Excellence” in which leaders break into teams of two to four people and develop new concepts. *Id.* Many ideas that do not win initially often win the competition later because these seed ideas are nurtured and given time to grow into strong and viable projects. *Id.* The Discovery Group determines financial bonuses based on the business group’s “innovation score” and success of their new concepts. *Id.*; see also Jong et al., *supra* note 31 (highlighting the innovations of the Discovery Group). In Exhibit 1, the authors describe eight essential innovation characteristics: aspire, choose, discover, evolve, accelerate, scale, extend, and mobilize. *Id.*

260. See Pech, *supra* note 238, at 16; see also Pisano, *supra* note 8 (noting how Apple’s breakthrough innovations continue to yield steady streams of incremental improvements and corporate profits).

261. See Davila, *supra* note 238; Stibel, *supra* note 238.

262. Junghee Han, *Exploitation of Architectural Knowledge and Innovation*, J. OPEN INNOVATION: TECH., MKT. & COMPLEXITY 3:15 (2017) at 1.

263. Gary Hamel, *Strategy as Revolution*, HARV. BUS. REV. (July–Aug. 1996), <https://hbr.org/1996/07/strategy-as-revolution> [http://perma.unl.edu/L3YK-LEQ7].



strategy will find itself under the curse of incrementalism, while freethinking newcomers lead successful insurrections.”<sup>264</sup> To that point, breakthrough or revolutionary innovations occur when non-linear thinkers find solutions for questions or problems that “no one else has thought of.”<sup>265</sup> Free-thinking revolutionaries like Leonardo da Vinci, Ada Lovelace,<sup>266</sup> Ben Franklin, Albert Einstein, Hedy Lamarr,<sup>267</sup> and Steve Jobs changed the world with their daring willingness to innovate.<sup>268</sup>

Despite their different processes, incremental/evolutionary innovation can coexist with and complement breakthrough/revolutionary innovation. Revolutionary ideas like computers, photography, and internal combustion engines eventually evolved into laptops, digital photography, and electric cars.<sup>269</sup> Ideally, innovation-focused leaders will facilitate, encourage, and cross-pollinate the wild creativity of non-linear thinkers with the order and logic of linear thinkers, thereby growing—and harvesting—both incremental and breakthrough innovations.<sup>270</sup>

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264. *Id.*

265. Stibel, *supra* note 238.

266. Ada Lovelace, mathematician and computer programmer (1815–1852); see Betsy Morais, *Ada Lovelace, The First Tech Visionary*, NEW YORKER (Oct. 15, 2013), <https://www.newyorker.com/tech/elements/ada-lovelace-the-first-tech-visionary> [<http://perma.unl.edu/SJ8E-HVM4>] (noting the U.S. Department of Defense developed a software language called Ada).

267. Hedy Lamarr co-invented and received a patent for a “Secret Communications System” used to combat the Nazis in World War II. The frequency-hopping technology she co-invented with George Anthiel is integral to modern ICTs (cellular, Wi-Fi, GPS, etc.). She was also a Hollywood silver screen star. See *Hedy Lamarr, FAMOUS WOMEN INVENTORS*, <http://www.women-inventors.com/Hedy-Lamarr.asp> [<http://perma.unl.edu/ALU5-SX3F>]; *Hedy Lamarr: Movie Star, Inventor of WiFi*, CBS NEWS (April 20, 2012), <https://www.cbsnews.com/news/hedy-lamarr-movie-star-inventor-of-wifi/> [<http://perma.unl.edu/Y3NF-MU2X>]; BOMBHELL: THE HEDY LAMARR STORY (Reframed Pictures 2017), <https://www.imdb.com/title/tt6752848/> [<http://perma.unl.edu/H2RF-NPSH>].

268. Kara Swisher, Audio: ‘Leonardo di Vinci’ Biographer Walter Isaacson, RECODE DECODE (Nov. 3, 2017) (full transcript of interview), <https://www.recode.net/2017/11/3/16604082/transcript-leonardo-da-vinci-biographer-walter-isaacson-recode-decode-genius-innovation-creativity> [<http://perma.unl.edu/CCX6-PJKU>] (discussing Isaacson’s research on visionaries: Leonardo da Vinci, Ada Lovelace, Ben Franklin, and Steve Jobs). Isaacson also quotes Steve Jobs: “If you can stand at the intersection between the arts and sciences or between beauty and engineering. That’s where you’ll be the most creative.” *Id.*; see also STEVE JOBS – ONE LAST THING (PBS Nov. 2011), <http://www.pbs.org/programs/steve-jobs-one-last-thing/> [<http://perma.unl.edu/54UC-F5VX>] (previewing the documentary on Steve Jobs, founder of Apple).

269. Stibel, *supra* note 238; see also CHRISTENSEN, *supra* note 201, at 209 (deciding that electric vehicles are “a potentially disruptive technology”).

270. Stibel, *supra* note 238 (“[T]he Wright brothers may have invented the airplane, but it was innovations such as airmail, military air forces, and commercial airlines that evolved the invention into a commercial enterprise.”).

### C. Innovation in the Digital Age

As the world has digitized, innovation opportunities have blossomed like never before in history. “Digitization” describes human and machine exchanges made possible by technology (i.e., software, networks, servers, platforms, and the cloud).<sup>271</sup> Digitization is a dynamic and ongoing “process—enhanced by technology—of reimagining the delivery of goods and services and creating new business models and structures from which to manage them.”<sup>272</sup> Once an item has been digitized, the resulting copy is (theoretically) perfect and essentially free to reproduce instantly through ICTs.<sup>273</sup> Digitization results in the “death of distance” as a limiting factor in the spread of knowledge and information.<sup>274</sup>

Digital innovation—the “purest”<sup>275</sup> form of recombinant innovation—is “the implementation of new combinations of digital and non-digital resources to produce novel products and processes.”<sup>276</sup> Digital innovation includes process, products and/or business model transformations which are “embodied in or enabled by IT.”<sup>277</sup> At the other end of the spectrum, scholars refer to technology barriers to organizational performance and adaption as “dystechnia”—the flawed use of technology.<sup>278</sup> In industries where dystechnia is prevalent, visionary entre-

271. Mark A. Cohen, *Legal Delivery Is Becoming Digitized. What Does That Mean?*, FORBES (May 21, 2017), <https://www.forbes.com/sites/markcohen1/2017/05/21/legal-delivery-is-becoming-digitized-what-does-that-mean/#50bfe13f4e62> [http://perma.unl.edu/ZSU9-YEXH].

272. *Id.*; see also ANAND, *supra* note 8, at 317 (“We came to realize that the digital medium itself wasn’t an obstacle to creating a great online experience. Only our imagination was.”).

273. MCAFEE & BRYNJOLFSSON, *supra* note 31, at 135–36 (explaining that in 2016, a gigabyte of storage cost \$0.02 versus \$11 in 2000, with prices continually getting less over time (i.e., essentially free)).

274. *Id.* (quoting journalist Francis Cairncross’s observation about the internet and “the death of distance”).

275. BRYNJOLFSSON & MCAFEE, *supra* note 35, at 81.

276. Wenjie Li et al., *Digital Entrepreneurship Ecosystems as a New Form of Organizing: The Case of Zhongguancun*, FRONTIERS BUS. RES. CHINA 11:5 (2017), at 3.

277. Robert G. Fichman et al., *Digital Innovation as a Fundamental and Powerful Concept in the Information Systems Curriculum*, 38 MIS Q. 329, 330 (2014). Fichman et al. also note that “[d]igital innovators are marked by their ability to join two things together—(1) an understanding of what has become possible due to advances in technology, and (2) an astute insight into some unmet organizational or societal need—in order to create something new and valuable with digital technology.” *Id.*

278. Stewart & Carayannis, *supra* note 44, at 3. They explain:

Dystechnia is a barrier to organizational performance, a condition of flawed or failed efficacy in the use, deployment, or logistics of technology. Dystechnia occurs at every level: individual, team, firm, industry, region, nation, and world. At the micro level, dystechnia is a diminished self-efficacy or technophobia personally experienced by an individual or team. At the meso level, dystechnia is a disconnect among the critical

preneurs will find opportunities to remedy these flaws, spot trends, identify uninhabited market space, and formulate new services to “satisfy the void.”<sup>279</sup> As the Gates Foundation study revealed, the tendency for elite education programs to dismiss innovative teaching technologies and techniques<sup>280</sup> creates opportunities for non-elite education entrepreneurs to scale up rapidly and potentially change the landscape.<sup>281</sup> Digitization and digital innovation therefore represent powerful threats to traditional legal education programs because programs that fail to recognize and adapt to these threats may face obsolescence.

### 1. *Bits, Atoms, and Moore’s Law*

In September 2018, Dean Javier de Cendra (IE Law School in Madrid) described an ongoing “paradigm change”—fueled by accelerating technology, global, and economic forces—that will radically reshape the future of legal services and education.<sup>282</sup> To respond to this shift-

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organizational elements of people, culture, and technology. At the macro level, dystechia is a condition of suboptimal functioning in the socio-technologic-economic network, where the yield from resources and the efficacy of transactional logistics is compromised by latent demand for technological innovation.

*Id.*

279. *Id.* at 20 (explaining the importance of “seeing what others don’t see”—that is, spot trends). Entrepreneurs routinely shift human, organizational, financial, and digital resources to develop, iterate, and continuously develop market valued goods and services to identify and satisfy voids. *Id.*
280. *U.S. Postsecondary Faculty in 2015: Diversity in People, Goals and Methods, but Focused on Students*, GATES FOUND. 18, 25 (Jan. 2015); see also Casey Fabris, *Professors Know About High-Tech Teaching Methods, but Few Use Them*, CHRON. OF HIGHER EDUC. (Feb. 10, 2015), <http://www.chronicle.com/blogs/wiredcampus/professors-know-about-high-tech-teaching-methods-but-few-use-them/55777> [<http://perma.unl.edu/RXW3-MMXK>] (explaining that only 20% of educators are using innovative technology).
281. See Cohen, *supra* note 26 (arguing that non-elite law schools have “enormous” opportunities to serve a full spectrum of legal education consumers).
282. Javier de Cendra, *Are Law Schools Adapting to the Paradigmatic Transformation of The Legal Professions, and How To Measure It?*, 9 LEGAL BUS. WORLD: INT’L ED 32, 33–34 (2018), [https://docs.wixstatic.com/ugd/b30d31\\_e90efc88cd6d4441a1205d17ff1debb2.pdf](https://docs.wixstatic.com/ugd/b30d31_e90efc88cd6d4441a1205d17ff1debb2.pdf) [<http://perma.unl.edu/BPJ6-QSBU>] (identifying the following factors fueling the paradigm change: market and economic expansion, “digital and technological revolution,” and the “integration of the world economy”). Dean de Cendra articulates three potential responses for law schools to this paradigm change:
- (1) adapt the curriculum and programme portfolio to better reflect the paradigm change;
  - (2) undertake legal research on emerging areas, such as AI, biotech, robotics, and so forth that can be translated into the curriculum;
  - (3) use AI and big data analytics to undertake empirical research on (the evolution of) legal systems and the behaviour of stakeholders within them.
- Id.* at 34. Appearing to reflect on BRANDENBURGER & NALEBUFF’S “Co-Opetition” concept, *supra* note 227, and positing the general strategy of open innovation

ing market landscape, survival-oriented legal service and education providers must fully embrace *being digital*.<sup>283</sup> According to Professor Nicholas Negroponte (author and founder-chair emeritus of MIT's Technology Media Lab), "The best way to appreciate the merits and consequences of *being digital* is to reflect on the difference between bits and atoms."<sup>284</sup> Weightless "bits" of information moving at the speed of light<sup>285</sup> enable digital innovation.<sup>286</sup> For most computers, a binary digit, or bit, represents the smallest unit of information in a computer, with a value of either zero or one.<sup>287</sup> Bits are grouped into units to implement instructions and store data.<sup>288</sup> Meanwhile, atoms form the entire living and non-living physical world.<sup>289</sup> An atom is the "smallest particle of an element that can exist either alone or in combination."<sup>290</sup> Infinite combinations of atoms make possible all of human life, as well as familiarly mundane objects like books, pencils, computers, etc. Atoms are rare, bits are unlimited.<sup>291</sup>

The "realm of bits" is a "frictionless place where algorithms, architecture (the conceptual design of computing systems), and applied

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(without specifically naming it as such), Dean de Cendra also suggests the development of global innovation hubs that bring together law schools, market participants, and regulators to develop solutions for navigating the ongoing paradigm change. *Id.* at 35; see generally BRYNJOLFSSON & MCAFEE, *supra* note 35, at 159 (noting that while technology "destroy[s] geography . . . it opens up specialization as a source of differentiation").

283. NEGROPONTE, *supra* note 63, at 11.

284. *Id.*

285. *Id.* at 12.

286. Rich Karlgaard, *Atoms Versus Bits: Where to Find Innovation*, FORBES (Jan. 23, 2013), <https://www.forbes.com/sites/richkarlgaard/2013/01/23/atoms-versus-bits-where-to-find-innovation/#4a5ab25b65b7> [<http://perma.unl.edu/8BCL-RPDQ>].

287. *Binary Digit*, TECHOPEDIA, <https://www.techopedia.com/definition/2678/binary-digit-bit> [<http://perma.unl.edu/AH2U-FTLB>]. As quantum computers enter the marketplace, the concept of bits should be expanded to include qubits. A quantum bit (qubit) "can exist in superposition, which means that it can exist in multiple states at once" which means that a "quantum bit can exist as a 1, 0 or 1 and 0 at the same time." *Quantum Bit (Qubit)*, TECHOPEDIA, <https://www.techopedia.com/definition/2742/quantum-bit-qubit> [<http://perma.unl.edu/8NF9-6MG2>]. Since qubits can exist in superposition states, quantum computers have the potential to be exponentially more powerful than today's supercomputers. *Id.*

288. *Binary Digit (Bit)*, *supra* note 287. For example, a byte has eight bits, a kilobit has 1,000 bits, a megabit has one million bits, and a gigabit has one billion bits. *Id.*

289. *Matter, Elements, and Atoms*, KHAN ACADEMY, <https://www.khanacademy.org/science/biology/chemistry—of-life/elements-and-atoms/a/matter-elements-atoms-article> [<http://perma.unl.edu/2ZZF-8M75>].

290. *Atom*, MERRIAM-WEBSTER, <https://www.merriam-webster.com/dictionary/atom> [<http://perma.unl.edu/XA4N-XGFK>].

291. ANAND, *supra* note 8, at 215–16 (also noting that "Netflix's business [model] had shifted from 'moving atoms' to 'moving bits'" which underpinned its "binge watching" innovation).

mathematics govern the rate of progress.”<sup>292</sup> Moore’s Law, however, dominates the “realm of atoms.”<sup>293</sup> First articulated in 1965 by Intel co-founder Gordon E. Moore, “Moore’s Law” is both a technological and economic theory that has become a “central phenomenon of the computer age.”<sup>294</sup> It posits that the number of transistors—electrical on/off switches that power microprocessors, and which make computers increasingly fast and powerful—that engineers can fit onto a computer’s integrated circuit will compound every eighteen months.<sup>295</sup> As a result, computers will get progressively and consistently smaller, more powerful, and less expensive—thus unlocking powerful AI capabilities.<sup>296</sup> Moore’s Law explains the exponential growth in computing power, speed, and miniaturization.<sup>297</sup>

Like the transformations ushered in by the Industrial Revolution, these rapidly advancing new technologies can also result in profound individual, social, economic, and governmental shifts that have yet to be identified, named, and addressed.<sup>298</sup> To illustrate, Brynjolfsson and McAfee explain:

In the next twenty-four months, the planet will add more computer power than it did in all previous history. Over the next twenty-four years, the increase will likely be over a thousand-fold. We’ve already digitized exabytes of information, but the amount of data that’s being digitized is growing even faster than Moore’s Law.<sup>299</sup>

Some technology theorists predict that Moore’s Law will end around 2020 because it will become physically impossible to fit more transistors on a circuit.<sup>300</sup> Many other industry leaders believe, how-

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292. FORD, *supra* note 2, at 71.

293. *Id.*

294. BRYNJOLFSSON & MCAFEE, *supra* note 35, at 40, 43.

295. JAMES BARRAT, OUR FINAL INVENTION: ARTIFICIAL INTELLIGENCE AND THE END OF THE HUMAN ERA 139 (2013).

296. *Id.*; Monica Chin, *Nvidia Just Unveiled a Terrifying AI Supercomputer*, MASHABLE (Mar. 27, 2018), <https://mashable.com/2018/03/27/nvidia-unveils-ai-super-computer/#L5sgXIGP4aqw> [<http://perma.unl.edu/834X-GDT7>] (stating that Nvidia’s supercomputer offers an “insane” two “petaflops of performance”). “For some perspective: A Macbook Pro might have around one teraflop. A petaflop is one thousand teraflops.” *Id.*; see also Rob Verger, *Intel’s New Chip Puts a Teraflop in Your Desktop. Here’s What that Means*, POPULAR SCI. (June 1, 2017), <https://www.popsci.com/intel-teraflop-chip> (“With 18 cores and a price tag of \$1,999, the [Intel Core i9 Extreme Edition] processor is known as a teraflop chip, meaning it can accomplish a trillion computational operations every second.”).

297. *Id.* In 1971, 2,300 transistors could be printed on one computer chip. In 2015, two million transistors could fit on the period at the end of this sentence. BARRAT, *supra* note 295, at 139–40.

298. BRYNJOLFSSON & MCAFEE, *supra* note 35, at 251.

299. *Id.*

300. BARRAT, *supra* note 295, at 141; see also Tom Simonite, *Moore’s Law Is Dead. Now What?*, MIT TECH. REV. (May 13, 2016), <https://www.technologyreview.com/s/601441/moores-law-is-dead-now-what/> (describing the relationship between Moore’s law and the chip transistor technology).

ever, that Moore's Law will control for the foreseeable future, given the skillfulness of engineers who have found ways to circumvent the laws of physics (e.g., by layering integrated circuits and "wavelength division multiplexing (WDM) techniques").<sup>301</sup> Over the past five decades, continuous modifications mean that every five to seven years, technology improves significantly.<sup>302</sup> As a result, consumers, businesses, and schools must allocate the time and resources to update regularly hardware, software, and employee skills.

## 2. *Information Over Instinct*

ICTs become especially important where bits and atoms converge.<sup>303</sup> In 1995, Negroponte theorized that all information would be converted into bits and bytes.<sup>304</sup> The past two decades have validated Negroponte's prediction. The amount of global digital data created in 2013 totaled 3.5 zettabytes (thirty-five followed by twenty zeros).<sup>305</sup> To conceptualize the size and scale of a single zettabyte, consider that the memory of an average smartphone is thirty-two gigabytes.<sup>306</sup> Then consider that one zettabyte equals the full storage capacity of 34,359,738,368 smartphones.<sup>307</sup> Some estimates forecast that by 2020, the global data generated annually will increase to forty-four zettabytes<sup>308</sup> and then skyrocket to 163 zettabytes by 2025.<sup>309</sup>

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301. BRYNJOLFSSON & MCAFEE, *supra* note 35, at 42–43.

302. *Id.* To illustrate how computer costs and size have decreased dramatically in about a decade, Brynjolfsson and McAfee describe the U.S. government's Accelerated Strategic Computing Initiative (ASCI) Red, the world's first super-computer designed and developed in 1996 to simulate nuclear tests. ASCI Red cost over \$55 million and physically covered 1,600 square feet of floor space. It was "the first computer to score above one teraflop—one trillion floating point operations per second—on the standard benchmark test for computer speed. . . . By 1997, it had reached 1.8 teraflops." ASCI Red lost its super-computer status less than ten years later when Sony's PlayStation 3 matched ASCI Red's performance at 1.8 teraflops. Sony sold approximately sixty-four million PlayStation 3 game consoles for five hundred dollars each. The government retired ASCI Red from service in 2006. BRYNJOLFSSON & MCAFEE, *supra* note 35, at 49–50.

303. FORD, *supra* note 2, at 71.

304. NEGROPONTE, *supra* note 63, at 20; *see also* ANAND, *supra* note 8, at xxiv ([S]lobering statistic: five exabytes (or 5 billion bytes) of data could store all of the words ever spoken by humans between the birth of the world and 2003. In 2011, five exabytes were created every two days.)

305. Desire Athrow, *World Could "Run Out of Storage Capacity" Within Two Years Warns Seagate*, TECHRADAR (Dec. 22, 2014), <http://www.techradar.com/news/internet/data-centre/world-could-run-out-of-storage-capacity-within-2-years-warns-seagate-vp-1278040>.

306. *Id.*

307. *Id.*

308. *Id.* McAfee and Brynjolfsson state:

Over the next ten years, you will have at your disposal 100 times more computer power than you do today. Billions of brains and trillions of devices will be connected to the Internet, not only gaining access to the

To plow through zettabytes of information, modern data scientists use algorithms: fixed series of steps used to sort, calculate, and organize data in an effort to identify patterns and solve problems.<sup>310</sup> While algorithms are not new,<sup>311</sup> they have become increasingly pivotal as data explodes and scientists search for ways to harness the information. Here, the value of computer algorithms—sequences of instructions that tell a computer what to do<sup>312</sup>—becomes clear.

The beauty of algorithms is that they enable humans to partner with computers to perform sequential and systematic examinations of situations, challenges, and problems, which hopefully yield abundant areas of inquiry, analysis, and creativity.<sup>313</sup> Because computers operate using logic, human-developed algorithms must be precise and clear enough that any computer executing the instructions will always produce the same result.<sup>314</sup> Once this condition precedent is met, however, algorithms can provide insights that otherwise would remain unknowable. As predicted in 1949 by MIT computer pioneer Norbert Wiener, “if we can do anything in a clear and intelligible way, we can do it by machine.”<sup>315</sup>

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collective knowledge of our humanity, but also contributing to it. And by the end of the decade, more and more of that knowledge will be accessed by software agents, and created by them.

McAFEE & BRYNJOLFSSON, *supra* note 31, at 329.

309. Andrew Cave, *What Will We Do When the World's Data Hits 163 Zettabytes in 2025?*, FORBES (Apr. 13, 2017), <https://www.forbes.com/sites/andrewcave/2017/04/13/what-will-we-do-when-the-worlds-data-hits-163-zettabytes-in-2025/#5cd02472349a> [http://perma.unl.edu/V32M-R8PC].
310. *Algorithm*, TECHOPEDIA, <https://www.techopedia.com/definition/3739/algorithm> [http://perma.unl.edu/9ASQ-PF9N]. Algorithms can also be used to manipulate data (i.e. by inputting, finding, or sorting a particular item). *Id.*
311. Humans have applied algorithms since at least the ninth century, when Persian mathematician al-Khwārizī wrote a book called al-Jabr wa'-Muqābala (which has since been shortened to “al-jabr,” the source of our modern word “algebra”). BRIAN CHRISTIAN & TOM GRIFFITHS, ALGORITHMS TO LIVE BY: THE COMPUTER SCIENCE OF HUMAN DECISIONS 3 (2016). Ordinary manual tasks with multiple steps and specific sequences such as baking bread and knitting from patterns employ algorithms. *Id.* at 4; see also BARRAT, *supra* note 295, at 214 (“If you make a list of instructions that produce that function . . . [or result], you have a computer program or algorithm.”).
312. DOMINGOS, *supra* note 67, at 1.
313. Gregg et al., *supra* note 108 (“Companies that harness creativity and data in tandem have growth rates twice as high as companies that don’t.”). The Gregg article categorizes users of data into three groups: integrators (continuous use/analysis/integration of data in operations), isolators (use data in isolation), and idlers (insignificant use). *Id.*
314. DOMINGOS, *supra* note 67, at 2–3.
315. John Markoff, *In 1949, He [Norbert Wiener] Imagined an Age of Robots*, N.Y. TIMES (May 20, 2013), <https://www.nytimes.com/2013/05/21/science/mit-scholars-1949-essay-on-machine-age-is-found.html> [http://perma.unl.edu/32X3-TZ9W]. In his essay, Weiner warned of a future of “unmitigated cruelty” as employees are disintermediated from the workplace. *Id.*

In addition to human-created algorithms, machine learning algorithms—also called learners—program themselves by making inferences from available data, thus figuring out things on their own.<sup>316</sup> Algorithms represent nourishing sunshine, where data is the soil and emerging machine learning programs are the growing plants.<sup>317</sup> Data makes it possible to reap valuable crops such as statistical modeling and pattern recognition, which stem from data professionals’ (scientists, engineers, architects, visualization experts, and translators) combined ability to mine data, perform predictive analytics, and articulate the information gleaned from different data sets into actionable insights, models, and solutions.<sup>318</sup> The combination of big data, human-created algorithms, and machine learning allows humans to rapidly analyze and understand much more complex phenomena than was previously possible.<sup>319</sup> Eventually, machine learning algorithms

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316. See EXEC. OFFICE OF THE PRESIDENT, NAT’L SCI. & TECH. COUNCIL, COMM. ON TECH., PREPARING THE FUTURE OF ARTIFICIAL INTELLIGENCE 10–11 (Oct. 2016) [https://obamawhitehouse.archives.gov/sites/default/files/whitehouse\\_files/microsites/ostp/NSTC/preparing\\_for\\_the\\_future\\_of\\_ai.pdf](https://obamawhitehouse.archives.gov/sites/default/files/whitehouse_files/microsites/ostp/NSTC/preparing_for_the_future_of_ai.pdf) [<https://perma.unl.edu/NT3E-MS8M>] (“Modern machine learning is a statistical process that starts with a body of data and tries to derive a rule or procedure that explains the data or can predict future data.”); see also DOMINGOS, *supra* note 67, at 8 (noting that machine learning is sometimes confused with AI, but in fact it is a subfield of AI); FORD, *supra* note 2, at 89 (“Machine learning generally involves two steps: an algorithm is first trained on known data and then is unleashed to solve similar problems with new information.”).
317. DOMINGOS, *supra* note 67, at xi, 7, 13 (“Businesses look at data as a strategic asset [i.e., “new oil”]: What data do I have that my competitors don’t? How can I take advantage of it? What data do my competitors have that I don’t?”); see also BARRAT, *supra* note 295, at 73 (explaining that machine learning involves “software that modifies itself”). For example, Amazon’s recommendations apply the “affinity analysis” machine learning technique which is essentially a “buyer’s assistant.” *Id.*
318. DOMINGOS, *supra* note 67, at 8; see Nicolaus Henke et al., *You Don’t Have to Be a Data Scientist to Fill This Must-Have Analytics Role*, HARV. BUS. REV. (Feb. 5, 2018), <https://hbr.org/2018/02/you-dont-have-to-be-a-data-scientist-to-fill-this-must-have-analytics-role> [<http://perma.unl.edu/UY9U-F7YD>]; Jit Kee Chin et al., *Advanced Analytics: Nine Insights from the C-Suite*, MCKINSEY ANALYTICS (July 2017), <https://www.mckinsey.com/business-functions/mckinsey-analytics/our-insights/advanced-analytics-nine-insights-from-the-c-suite> [<http://perma.unl.edu/8AWK-HL2Z>] (“Embedding analytics is as much about change management as it is about data science.”).
319. DOMINGOS, *supra* note 67, at 15. Domingos states, “If you know how to expertly tweak the control knobs [of data and algorithms] until they’re just right, magic can ensue, in the form of a stream of insights.” *Id.* at 258. Domingos also explains that one should “[t]hink of big data as an extension of your senses and learning algorithms as an extension of your brain.” *Id.* at 277; see also *Reinventing Innovation*, *supra* note 80, at 14 (“Big data, for example, can tell you that customers behave a certain way—that they embrace or reject a given innovation—but data alone won’t explain why they behave that way. Bringing the right human judgment and intuition to bear on the data (and not just from the analytics department) is critical to obtaining useful insights for innovation.”).



will bloom into AI technologies which will profoundly change the way humans live, learn, work, and socialize.<sup>320</sup>

Despite this sunny technology optimism, Weiner's prescient warning currently takes root as technologies continue to disintermediate (remove) humans from the workplace.<sup>321</sup> Highly educated knowledge workers are not immune from this threat.<sup>322</sup> In his book *Super Crunchers: Why Thinking-by-Numbers Is the New Way to Be Smart*, Yale Law Professor Ian Ayres cites numerous studies showing how algorithms "routinely outperform human experts."<sup>323</sup> For example, in an experiment pitting an algorithm versus lawyers to predict the outcomes of U.S. Supreme Court decisions, the highly-trained, and respected human experts lost.<sup>324</sup> The statistical model correctly predicted 75% of the Court's affirm or reverse decisions, while the legal experts' prediction success was 59.1%.<sup>325</sup> Because data-driven decisions prove more accurate than those made by human experts, Ayres argues that human expertise and judgment should be a factor—but

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320. See generally Nicolaus Henke et al., *The Age of Analytics: Competing in a Data-Driven World*, MCKINSEY GLOBAL INST. 778–79, 93, 115 (Dec. 2016), <https://www.mckinsey.com/business-functions/mckinsey-analytics/our-insights/the-age-of-analytics-competing-in-a-data-driven-world> [<http://perma.unl.edu/X74A-E5ST>] (describing how data and analytics can assist students, employees, employers, and education programs quickly adapt to changing workforce conditions and design responsive coursework and skills development services).

321. Markoff, *supra* note 315 (writing in his 1949 essay, Weiner warned of a future of "unmitigated cruelty" for workers).

322. FORD, *supra* note 2, at 94 ("Big data and predictive algorithms have the potential to transform the nature and number of knowledge-based jobs in organizations and industries across the board. The predictions that can be extracted from data will increasingly be used to substitute for human qualities such as experience and judgment."). Another emerging technology includes genetic programming which

essentially allows computer algorithms to design themselves through a process of Darwinian natural selection. Computer code is initially generated randomly and then repeatedly shuffled using techniques that emulate sexual reproduction. Every so often, a random mutation is thrown in to help drive the process in entirely new directions. As new algorithms evolve, they are subject to a fitness test that leads to either their survival, or—far more often—their demise.

*Id.* at 110. If genetic programming takes root, Stanford Professor John Kowza "argues that genetic algorithms may have an important advantage over human designers because they are not constrained by preconceptions; in other words, they may be more likely to result in an 'outside-the-box' approach to the problem." *Id.*

323. FORD, *supra* note 2, at 125; IAN AYRES, *SUPER CRUNCHERS: WHY THINKING-BY-NUMBERS IS THE NEW WAY TO BE SMART* 108 (2007).

324. AYRES, *supra* note 323, at 104–08 (citing Andrew D. Martin et al., *Competing Approaches to Predicting Supreme Court Decision Making*, 2 PERSPECTIVES ON POLITICS 763 (2004)). Ayres also articulated differing views about the law, that is Langdell's "law is a science" and Justice Holmes "[t]he life of the law has not been logic; it has been experience." *Id.* at 105.

325. *Id.* at 108.

not necessarily controlling—in decision-making.<sup>326</sup> Ayres also writes, “Evidence is mounting in favor of a different and more demeaning, dehumanizing mechanism for combining expert and [algorithmic] expertise.”<sup>327</sup>

Moving past the future workplace gloom, data analysis provides important benefits and is particularly pivotal for breaking down the traditional organizational default of deferring to “HiPPO,” or the “highest paid person’s opinion.”<sup>328</sup> This unfortunate trend gives top priority to (often flawed) human instinct and personality in decision-making<sup>329</sup> and may lead to quashing good ideas.<sup>330</sup> Instead of using the heuristics of HiPPOs, harvested data can propel teams, leaders, and organizations to make empirically-supported decisions.<sup>331</sup> Startup expert Eric Reis states the two most important questions innovation leaders must ask are “(1) What did you learn? and (2) How do you know?”<sup>332</sup> He explains that these questions and the answers thereto

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326. *Id.* at 117.

327. *Id.*

328. DOMINGOS, *supra* note 67, at 39.

329. MCAFEE & BRYNJOLFSSON, *supra* note 31, at 45, 63 (providing that “HiPPOs, in short, need to become an endangered species within organizations” because they often destroy value). For example, Michael Lewis’s fascinating book *Moneyball* showed how statistical analysis consistently beat the hunches made by seasoned baseball talent scouts. DOMINGOS, *supra* note 67, at 39. See Adam Hartung, *Innovation: Why Bezos Succeeded, While Lampert Failed at Sears*, FORBES (May 15, 2016), <https://www.forbes.com/sites/adamhartung/2016/05/15/innovation-why-bezos-succeeded-while-lampert-failed-at-sears/#2b8f76f37d38> [<http://perma.unl.edu/UU7N-3AZN>] (describing HiPPO Lambert’s many management failures at Sears); see also RICK WARTZMAN, *THE END OF LOYALTY* 283 (2017) (describing how Coca-Cola Enterprises’ embrace of technology enable them to operate “off of information instead of instinct and personality” as well as to maximize economies of scale and reduce redundancies) (quoting Coca-Cola executive, Ted Highberger).

330. MCAFEE & BRYNJOLFSSON, *supra* note 31, at 323 (recommending that emerging ideas be subjected to iteration and experimentation to uncover “unbiased evidence on the quality of a new idea. Managers, in other words, step away from their traditional roles as evaluators and gatekeepers of ideas”); see also Sheppard et al., *supra* note 170 (“The key to connecting design with commercial success is the ability of leaders to eschew subjective opinions or personal preferences and instead make decisions based on a factual understanding of the customer.”). Design metrics such as customer-satisfaction scores provide leaders with the data necessary to base decisions. *Id.*

331. REIS, *supra* note 34, at 291 (emphasizing the importance of innovation leaders and teams making “fact based” decisions and by overcoming “their biases about what the ‘right’ answer is, and use the evidence uncovered by teams to make decisions”).

332. *Id.* at 115; see generally Chris Bradley et al., *How to Confront Uncertainty in Your Strategy*, MCKINSEY & CO. (Mar. 2018), <https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/how-to-confront-uncertainty-in-your-strategy> [<http://perma.unl.edu/KP6M-U7M7>] (“By understanding the chances your strategy has of succeeding before you start to execute it, and knowing how those odds change based on specific actions you take, you can tackle uncertainty with hard empirics, not guesswork or wishful thinking.”); Chris Bradley

direct the focus to information and data analysis instead of instinct and wishful thinking.<sup>333</sup> Further, according to Scott Cook (co-founder of Intuit and chair of its executive committee), basing decisions on data, analysis, and verifiable metrics shifts the role and perspectives of leaders from “playing Caesar,” which involves deciding which projects die or live, to “playing scientist,” which means being open to exploration and discovery.<sup>334</sup> In the future, information—not instinct—will guide decision-making.<sup>335</sup> Most importantly, leaders of the future will ride data trend waves while always vigilantly monitoring for disruptions and preparing for change.<sup>336</sup> Trendspotting within

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et al., *Strategy to Beat the Odds*, MCKINSEY & CO. (Feb. 2018), <https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/strategy-to-beat-the-odds> [<http://perma.unl.edu/63QY-J8KK>] (using data to assess a strategy’s “odds of success”).

333. REIS, *supra* note 34, at 115; *see generally* AYRES, *supra* note 323.

334. REIS, *supra* note 34, at 11, 176–79; *see also* LASZLO BOCK, WORK RULES! INSIGHTS FROM GOOGLE THAT WILL TRANSFORM HOW YOU LIVE AND LEAD 128 (2015) (quoting Hal Varian, Google chief economist) (“Relying on data helps out everyone. Senior executives should not be wasting time debating whether the best background color for an ad is yellow or blue. Just run an experiment. This leaves management free to worry about the stuff that is hard to quantify, which is usually a much better use of their time.”). *See generally* Ron Kohavi & Stefan Thomke, *The Surprising Power of Online Experiments*, HARV. BUS. REV. (Sep.-Oct. 2017), <http://hbr.org/2017/09/the-surprising-power-of-online-experiments> (describing the benefits of A/B testing and other controlled digital experiments to obtain user data on whether a change improves or frustrates the customers’ experiences and perceived value of the product or service).

335. McAFEE & BRYNJOLFSSON, *supra* note 31, at 85. Successful organizations also have a shared purpose and mission and a strong community. *Id.* at 332; *see also* REIS, *supra* note 53, at 140 (emphasizing that in healthy, innovation-focused cultures, they evaluate ideas by merit (often data-driven) instead of by job title).

336. In other words, modern leaders will embrace the financial trader’s credo: “The trend is your friend except at the end when it bends.” JACK D. SCHWAGER, TECHNICAL ANALYSIS 25 (1996) (quoting Ed Seykota, computerized trading pioneer); *see also* JERRY KAPLAN, HUMANS NEED NOT APPLY 52–55 (2015) (describing how Dave Shaw, founder of D.E. Shaw and Company, became “King Quant” by launching High Frequency Trading strategies using AI/synthetic intelligence which broadly involves identifying “unnormalized data,” detecting anomalies, and acting/betting on an “impending resolution”). Kaplan provides interesting details about Amazon CEO Jeff Bezos’s early work experience with Dave Shaw. *Id.* at 95. Bezos recognized early on that “the same basic principles that D.E. Shaw and Company applied to securities transactions could be applied to information provided by people” in the retail marketplace. *Id.* at 96–97. The message hopefully imparted from this brief detour into trading strategies is that data collected from faculty-student interactions may provide valuable insights into broad and subtle patterns which may reveal innovation pathways. However, please note that despite the overall optimism for the future of algorithms and machine learning, data and analytics are not infallible. Downsides of both human-supervised and non-supervised (machine learning) algorithms include bias and the potential for making decisions based on generalized statistics instead of an individual’s particular situation. As such, while algorithms can be helpful and important tools, they cannot substitute for humans’ unique ability to reason and act ethically, morally, and

the available data is essential for developing innovation responses that effectively address the friction points that consumers experience.

### 3. *Agile and Lean Startup Methodologies*

Innovation does not appear out of thin air; rather, it emerges when organizations with spirited cultures work together and stretch to achieve big goals that are typically viewed as “beyond what is reasonable.”<sup>337</sup> These forward-minded organizations empower multidisciplinary teams to identify problems and experiment with groundbreaking, data-driven approaches.<sup>338</sup> For education programs

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with discernment. For some discussion about these concerns see Matthias Spielkamp, *Inspecting Algorithms for Bias*, MIT TECH. REV. (June 12, 2017), <https://www.technologyreview.com/s/607955/inspecting-algorithms-for-bias/> [<http://perma.unl.edu/PS56-687A>]; Molly Worthen, *The Misguided Drive to Measure Learning Outcomes*, N.Y. TIMES (Feb. 23, 2018), <https://www.nytimes.com/2018/02/23/opinion/sunday/colleges-measure-learning-outcomes.html?> [<http://perma.unl.edu/EFZ2-GNXG>]; Bryan Camp, *NY Times Op-Ed: The Misguided Drive To Measure Learning Outcomes*, TAXPROF BLOG (Feb. 25, 2018), [http://taxprof.typepad.com/taxprof\\_blog/2018/02/nyt-op-ed-about-learning-outcomes.html](http://taxprof.typepad.com/taxprof_blog/2018/02/nyt-op-ed-about-learning-outcomes.html) [<http://perma.unl.edu/6EY9-PZ82>] (describing his experiences at Texas Tech School of Law to comply with ABA Section 3.02, “Learning Outcomes”); see generally MULLER, *supra* note 71; Tobias Baer & Vishnu Kamalnath, *Controlling Machine-Learning Algorithms and Their Biases*, MCKINSEY & CO. (Nov. 2017), <https://www.mckinsey.com/business-functions/risk/our-insights/controlling-machine-learning-algorithms-and-their-biases> [<http://perma.unl.edu/9HZY-YAMP>].

337. Waguih Ishak, *Creating an Innovation Culture*, MCKINSEY & CO. (Sept. 2017), <https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/creating-an-innovation-culture> [<http://perma.unl.edu/Y48M-UUZU>].

338. *Id.* (emphasizing the importance of non-hierarchical multidisciplinary teams to innovation success). SATELL, *supra* note 100, at 187; see Darrell K. Rigby et al., *Agile at Scale*, HARV. BUS. REV. (May–June 2018), <https://hbr.org/2018/05/agile-at-scale> [<http://perma.unl.edu/Z4TY-8XME>] (identifying an Agile pre-team launch check list: team tasked with tackling major business opportunity, team responsible for specific outcomes; team fully staffed multidisciplinary members and experts; team members trained in Agile and have expert support; teams collaborate directly with customers; teams to employ rapid prototyping and minimum viable products; teams have senior leadership support (funding, elimination of bureaucratic hurdles, removal of impediments, etc.)); see Gregg et al., *supra* note 108 (describing how Agile teams or “squads” use data to (1) identify customer needs and pain points, (2) move faster in designing, testing, and iterating new products and services, and (3) timely and efficiently deliver and implement these new customer-focused innovations). See generally *How to Create an Agile Organization*, MCKINSEY & CO. (Oct. 2017), <https://www.mckinsey.com/business-functions/organization/our-insights/how-to-create-an-agile-organization> [<http://perma.unl.edu/3SAH-J7BD>] (describing how Agile organizations need to be “both dynamic and stable”). “Dynamic practices enable companies to respond nimbly and quickly to new challenges and opportunities, while stable practices cultivate reliability and efficiency by establishing a backbone of elements that don’t need to change frequently.” *Id.*; Wouter Aghina et al., *The Five Trademarks of Agile Organizations*, MCKINSEY & CO. (Jan. 2018), <https://www.mckinsey.com/business-functions/organization/our-insights/the-five-trademarks-of-agile-organizations> [<http://perma.unl.edu/Q9G8-5US4>].

seeking to rethink, redesign, re-engineer, and reinvent their educational products and services, software-based methodologies like Agile and Lean Startup may prove helpful. The brainchild of a group of software engineers tired of the slow, bloated, document-heavy processes of traditional software development,<sup>339</sup> the Agile method values customer satisfaction, regular in-person collaboration and adjustment, quickness, evolutionary updates, sustainability, simplicity, transparency, and technical excellence.<sup>340</sup> Development under Agile involves prototypes, iterations by integrated multidisciplinary teams, and ongoing refinements.<sup>341</sup> Likewise, the Lean Startup method<sup>342</sup> prioritizes experimentation, iterative design, rapid and responsive development, continuous testing, and direct customer feedback on current and future products and services—all while seeking to minimize waste.<sup>343</sup> The Lean Startup methodology brings order to the often-

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339. Darrell K. Rigby et al, *Embracing Agile*, HARV. BUS. REV. (May 2016), <https://hbr.org/2016/05/embracing-agile> [<http://perma.unl.edu/GJ2C-P73Y>]; see also Darrell K. Rigby et al., *The Secret History of Agile Innovation*, HARV. BUS. REV. (Apr. 20, 2016), <https://hbr.org/2016/04/the-secret-history-of-agile-innovation> [<http://perma.unl.edu/P4EF-N57M>] (explaining how “Agile innovation” methods are quicker than traditional methods such as IT); Video, *A Quick Introduction to Agile Management*, HARV. BUS. REV. (Apr. 20, 2016), <https://hbr.org/video/4846148015001/a-quick-introduction-to-agile-management> [<http://perma.unl.edu/Z66J-DCVM>].
340. Rigby et al, *supra* note 339; see *Twelve Principles of the Agile Manifesto*, MANIFESTO FOR AGILE SOFTWARE DEV., <http://agilemanifesto.org/> [<http://perma.unl.edu/NX6D-QZ62>]; see also Rigby et al., *supra* note 338 (noting that teams using Agile software achieve greater success).
341. Matt Kaisti et al., *Agile Methods for Embedded Systems Development - A Literature Review and a Mapping Study*, EURASIP J. ON EMBEDDED SYS., 2013:15 (2013), at 2; see generally Oliver Bossert et al., *Unleashing the Power of Small, Independent Teams*, MCKINSEY & CO. (July 2018), <https://www.mckinsey.com/business-functions/organization/our-insights/unleashing-the-power-of-small-independent-teams> [<http://perma.unl.edu/7NWM-SS8W>] (“Amazon CEO Jeff Bezos contends that a team is too big when it needs more than two pizza pies for lunch.”); Aaron De Smet, *The Agile Manager*, MCKINSEY & CO. (July 2018), <https://www.mckinsey.com/business-functions/organization/our-insights/the-agile-manager> [<http://perma.unl.edu/C8UA-B8PJ>].
342. In 2008, Eric Ries proposed the Lean Startup methodology based on his experiences working on software and product development projects. See generally REIS, *supra* note 53; REIS, *supra* note 34.
343. Steve Blank, *Why the Lean Start-Up Changes Everything*, HARV. BUS. REV. (May 2013), <https://hbr.org/2013/05/why-the-lean-start-up-changes-everything> [<http://perma.unl.edu/GND2-4TLR>]; REIS, *supra* note 53, at 4 (explaining that Lean Startup offers a “new approach to creating continuous innovation” by building on a range of “management and product development ideas, including lean manufacturing, design thinking, customer development, and agile development”). For example, as explained by Kenneth A. Grady, Toyota’s lean manufacturing principles involved breaking down each element of the process to find ways in which processes can be streamlined in order to improve quality and reduce waste. Cathy Reisenwitz, *What Is Lean Law? A Conversation with Expert Kenneth A. Grady*, CAPTERRA LEGAL SOFTWARE BLOG (June 9, 2015), <https://blog.captterra>

chaotic creative process by continuously testing the product or service vision and putting together an efficient process for development which involves: building a minimum viable product; engaging in extensive customer testing; applying a “build-measure-learn” framework for continuous innovation; and deciding whether to persevere or pivot.<sup>344</sup>

Above all, Agile and Lean Startup methodologies embrace a continuous improvement mindset fixed on ensuring customer satisfaction. Both recognize Voltaire’s aphorism: “*Le mieux est l’ennemi du bien*”—“the perfect is the enemy of the good.”<sup>345</sup> In other words, the quest for perfect planning and performance inhibits experimentation, creativity, smart risk-taking, and innovation. Agile and Lean Startup methodologies, therefore, reject plan-driven approaches that focus too narrowly on fixed processes, comprehensive documentation, and defined contractual or structural relationships.<sup>346</sup> Instead of perfection, these methodologies focus on concrete strategic actions that create forward momentum toward achieving innovation mission trajectories (e.g., the “articulated end result”).<sup>347</sup> Recognizing that the best designed plans always encounter complications, Agile and Lean Startup build nimbleness into the design process. For example, both methodologies use minimum viable products (discussed in the following section) to identify customer interest, test and refine features and functionality, and gauge how customers value the product or service. Given the

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.com/what-is-lean-law-a-conversation-with-expert-kenneth-a-grady/ <https://perma.unl.edu/T4LD-284C>. Grady further explains that the Lean process separates work flows into two categories: “1. Things that add value to the customer or client, [or] 2. Things that don’t add value, which in the lean system are called waste.” *Id.*

344. REIS, *supra* note 34, at 86.

345. Neil Patel, *Your Secret Mental Weapon: ‘Don’t Let the Perfect be the Enemy of the Good’*, ENTREPRENEUR (Aug. 31, 2015), <https://www.entrepreneur.com/article/249676> [<http://perma.unl.edu/7KND-3BUA>].

346. Kaisti et al., *supra* note 341, at 1–3; *see also* Carl Schramm, *It’s Not About the Framework*, HARV. BUS. REV. (May–June 2018), <https://hbr.org/2018/05/do-entrepreneurs-need-a-strategy#its-not-about-the-framework> [<http://perma.unl.edu/WAH3-9DMJ>] (questioning business school orthodoxy about the importance of detailed business plans and noting that giants like Disney, IBM, United Airlines, and Walmart launched without plans). He argues that instead of writing business plans, entrepreneurs should “learn by doing” and therefore focus their time and energy on devising a product or service and then taking it to market to answer two fundamental questions (1) Are there buyers? and (2) How much will they pay? *Id.* Schramm also quotes Titan Industrial Corporation, CEO Michael Levin, “Making a successful company requires an intimate tango with customers, not a tight grip on a business plan.” *Id.*

347. GROVE, *supra* note 4, at 147; *see* JOHN DOERR, MEASURE WHAT MATTERS 6, 23 (2018); *see also* *Legal Education: A New Growth Vision Part III* (illuminating a potential path forward to being human and digital and explaining how innovation mission trajectories, innovation frameworks, a “Day 1 mindset,” and OKRs (Objectives and Key Results) can inspire, guide, and support law school enterprise transformation).

inherent uncertainty involved in innovation, Agile and Lean Startup trained leaders (and funders) fully understand that “for two thirds of successful innovations, the original concept will change significantly during the development process.”<sup>348</sup>

Agile and Lean Startup leaders and teams predict that unexpected discoveries will materialize once forward motion begins. They understand that the innovation process will not lead to instant solutions, but rather it uncovers essential components of the ultimate solution.<sup>349</sup> While the innovation process will generate many failures, these flops accelerate and reduce the cost of learning.<sup>350</sup> Leaders and teams celebrate these learning experiences, provided that the underlying objective was progress.<sup>351</sup> Successful, serial innovators realize that innovation is an “unpredictable, probabilistic endeavor,” which means, “Whoever tries the most stuff wins.”<sup>352</sup> They also know that failures impart essential lessons that shape future directions and in-

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348. Kaisti et al., *supra* note 341, at 2–3 (discussing Agile); see REIS, *supra* note 34, at 96–102 (discussing importance of MVPs in the measurement and learning processes of creating new products and services); see also Rigby et al., *supra* note 338 (explaining that agile teams “adapt quickly to changing conditions”).

349. Rigby et al., *supra* note 338.

350. *Id.*; see also CHRISTENSEN, *supra* note 69, at 180–81 (warning that fear of failure impedes growth opportunities and advising that organizations implement “plans for learning rather than plans for implementation”). Christensen then describes the benefits of the discovery driven planning approach articulated by Rita Gunther McGrath and Ian C. MacMillan in their book *Discovery Driven Growth*. *Id.* 181–84; see also MCGRATH & MACMILLAN, *supra* note 6, at v–vi (emphasizing the importance of “focusing on strategic growth,” “executing specific growth opportunities,” and “making discovery-driven growth work”).

351. When revamping their education offerings to contain costs, implement process efficiencies, and improve quality (discussed further in *Legal Education: A New Growth Vision Part III*, subsection III.C.2), BYU Idaho leaders embraced a continuous improvement spirit, which involved taking risks, adjusting as necessary, and seeking new ideas, approaches, and opportunities. CHRISTENSEN & EYRING, *supra* note 137, at 270. BYU Idaho leaders understood that some of their actions would flop and others would fly. Barber et al, *supra* note 189, at 55. Flops were not viewed as failures, but rather as opportunities for data collection, evaluation, and redirection. *Id.*

352. CHRISTENSEN, *supra* note 69, at 95; STAATS, *supra* note 50, at 19 (quoting author and consultant Tom Peters) (“[The] winning strategy for organizations is WTTMSW: ‘Whoever tries the most stuff wins.’”); see also Phil Rosenzweig, *The Halo Effect, and Other Managerial Delusions*, MCKINSEY & Co. (Feb. 2007), <https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/the-halo-effect-and-other-managerial-delusions> [http://perma.unl.edu/G3AT-AMV5] (quoting Robert E. Rubin, former U.S. Treasury Secretary and Goldman Sachs executive) (“Once you’ve internalized the concept that you can’t prove anything in absolute terms, life becomes all the more about odds, chances, and trade-offs. In a world without provable truths, the only way to refine the probabilities that remain is through greater knowledge and understanding.”). Smart leaders know that the objective is to improve the odds of success—while always understanding that outcomes are never certain. *Id.*

quiries.<sup>353</sup> Consistently innovative cultures value experimentation and typically view failures as badges of honor.<sup>354</sup> Forward-looking leaders recognize that ideas must be nurtured through numerous iterations—and sometimes complete failure—in order to ultimately harvest successful innovations.<sup>355</sup> According to Columbia Business School Professor Rita Gunther McGrath and Wharton Business School Professor Ian C. MacMillan, “Failure is a bad thing when it costs a lot, when it isn’t intelligent, when you’re repeating the same mistakes, or when it is covered up. Handled properly, intelligent failures may be among the most valuable experiences your organization can have.”<sup>356</sup>

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353. CHESBROUGH, *supra* note 32, at 99–100 (distinguishing between failed outcomes and mistakes). Chesbrough states that a “failed outcome” is “quite useful, and a natural outcome of the experimentation process. Every successful result is preceded by numerous failed outcomes along the way. Understanding why the experiment failed and how to adjust the experiment to increase its chance of success is the way organizations learn.” *Id.* In contrast, “An experiment that is poorly designed so that nothing new is learned from the experiment is a mistake. Repeating an experiment that failed before without changing the conditions of the experiment (and therefore failing again) is a mistake. . . . [M]istakes teach us nothing, so they waste time, resources, and initiative.” *Id.*; see McGRATH & MACMILLAN, *supra* note 6, at 176 (“People overlook the advantages of what was learned during the growth initiative—things like newly created knowledge, technologies and assets, or increases in people’s skills and other know-how.”); see also Julian Birkinshaw, *Telling a Good Innovation Story*, MCKINSEY & CO. (July 2018), <https://www.mckinsey.com/featured-insights/innovation-and-growth/telling-a-good-innovation-story> [http://perma.unl.edu/69MM-QZXH] (“Dyson’s bagless vacuum cleaner was perfected only after a staggering 5,127 tries.”).
354. SATELL, *supra* note 100, at 194–95 (“Innovation is a messy business.”). For instance, WD-40, the go-to home product for fixing various squeaks, stands for “Water Displacement, Fortieth Experiment.” LINKNER, *supra* note 56, at 34; see also CHESBROUGH, *supra* note 32, at 100 (“Companies need a culture that supports failure as a healthy and necessary part of innovation and reserves its condemnation for mistakes.”); IBM 2016 CEO C-SUITE STUDIES, *supra* note 10, at 11 (stating “[c]ontrolled failure should be viewed as a good thing”); IBM 2018 GLOBAL C-SUITE STUDY, *supra* note 42, at 28 (noting that “73 percent of Reinventors have established an operating structure that promotes exploration by rewarding fast failure”).
355. LINKNER, *supra* note 56, at 37; see also REIS, *supra* note 34, at 32–33 (describing Amazon’s disappointing Fire phone). In response to the Fire phone, Bezos said:  
 I’ve made billions of dollars of failures at Amazon.com. Literally. None of these things are fun, but they also don’t matter. What matters is that companies that don’t continue to experiment or embrace failure get in the position where the only thing that they can do is make a Hail Mary bet at the end of their corporate existence. I don’t believe in bet-the-company bets.  
*Id.* at 33. Instead of dismantling the team that designed Fire, Amazon moved the team members to other projects such as Alexa (voice-activated assistant), Echo, and tablets. *Id.*
356. McGRATH & MACMILLAN, *supra* note 6, at 224; see *Plotting the Platform Payoff*, *supra* note 158, at 15 (“Fifty-nine percent of Reinventor CEOs reward fast failure.”); *Reinventing Innovation*, *supra* note 80, at 12 (quoting Sue Siegal, CEO GE Ventures) (“Failing fast without losing a customer is better than spending three



Agile and Lean Startup management and process methodologies are broadly applicable to organizations of all types and sizes, from progressive powerhouses like Google and Apple to traditionally-structured law firms.<sup>357</sup> Large industries apply Agile and various forms of Lean Startup methods to develop new products and change organizational direction.<sup>358</sup> For example, General Electric (GE) currently uses Agile to facilitate its transformation into a “digital industrial company.”<sup>359</sup> Similarly, since 2010, GE’s Energy Storage division has applied Lean Startup techniques in the development and manufacture of advanced batteries.<sup>360</sup> Organizations large and small understand that the decision to pursue and the process of achieving big goals begins with a single step, followed by more steps, until enough virtuous forward momentum places the prize within reach.

Management support is critically important for Agile and Lean Startup methodologies to blossom. To quote legal innovation expert Kenneth A. Grady, “if we want sustainable innovation, we must build structures in which innovation thrives.”<sup>361</sup> Innovation will not happen

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hundred million dollars on a project that you take all the way out for a year or two.”); *see also* CHRISTENSEN, *supra* note 201, at 156–57 (discussing “Plans to Learn versus Plans to Execute”); STAATS, *supra* note 50, at 33–34 (emphasizing the importance of “destigmatizing failure” and choosing action over inaction). Staats then quotes Pixar cofounder, Ed Catmull, “Mistakes aren’t a necessary evil. They aren’t evil at all. They are an inevitable consequence of doing something new (and, as such, should be seen as valuable; without them, we’d have no originality).” *Id.* at 34.

357. Roya Behnia, *Avoiding Complexity: An Agile Manifesto for Lawyers*, ABA LEGAL REBELS (Nov. 15, 2011), [http://www.abajournal.com/legalrebels/article/avoiding\\_complexity\\_an\\_agile\\_manifesto\\_for\\_lawyers](http://www.abajournal.com/legalrebels/article/avoiding_complexity_an_agile_manifesto_for_lawyers) [<http://perma.unl.edu/GDW5-K335>]. Behnia argues that Agile methodologies would benefit law practices by fostering client collaborations, incorporating flexibility, adaptability, and rapidity into processes, simplifying communications, re-examining risk management assessments, and promoting simplicity. *Id.*; *see also* Reisenwitz, *supra* note 343; Mark A. Cohen, *Law Schools Must Restructure. It Won’t Be Easy.*, FORBES (May 15, 2017), <https://www.forbes.com/sites/markcohen1/2017/05/15/law-schools-must-restructure-it-wont-be-easy/#3f687d723d3f> [<http://perma.unl.edu/8PTD-BGGA>]. *But see* Jill Switzer, *Make Way for the New Generation of Lawyers, Lest You be Left in the Dust*, ABOVE THE LAW (May 30, 2018), <https://abovethelaw.com/2018/05/make-way-for-the-new-generation-of-lawyers-lest-you-be-left-in-the-dust> [<http://perma.unl.edu/8LLU-9ZXM>] (“The [2018 Altman Weil *Law Firms in Transition*] survey reports that more than two-thirds of law firm partners are resistant to change” and thus are unwilling to “engage in testing out innovative ideas and methods.”).
358. Blank, *supra* note 343; Rigby et al., *supra* note 338 (identifying the following “advanced agile enterprises”: Amazon, Google, Spotify, Bosch, Saab, SAP, Tesla, SpaceX, and Netflix).
359. Rigby et al., *supra* note 339.
360. Blank, *supra* note 343.
361. Kenneth A. Grady, *Innovation.Law 2017*, VIMEO at 21:43 (Apr. 6, 2017), <https://vimeo.com/217093911> [<http://perma.unl.edu/HD5M-GL23>] (speaking at Legal Industry Forum’s 2017 Innovation Law Conference).

magically; it requires leadership focus, commitment, determination, and a “bias for action.”<sup>362</sup> As such, there is a difference between leaders using the buzzwords of innovation and actually fostering innovation, especially when it looks significantly different than the way things have always been done. Because forward-focused leaders appreciate that innovation involves fluid processes—not fixed destinations—they respect (and expect) that within organizations, there will be tensions between those who are comfortable with uncertainty and others that have a strong need for certainty. Since change can be difficult, these transformation methodologies value and encourage human interactions and stress the importance of building collaborative relationships.<sup>363</sup> While change is hard, history books are filled with stories of determined groups that work together to achieve great feats. In sum, successful implementation of Agile and Lean Startup methodologies requires management leadership and commitment; resource allocation (e.g., funding, staff, training, expert support, etc.); realistic time horizons; recognition that the innovation process requires patience, determination, and continuous adjustments and modifications; and respect for failure and the important lessons failure imparts.<sup>364</sup>

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362. CHESBROUGH, *supra* note 32, at 100; *see, e.g.*, Robert Ambrogio, *How Does a Law School Innovate? Mulling That Question at BYU Law*, ABOVE THE LAW (Mar. 19, 2018), <https://abovethelaw.com/2018/03/how-does-a-law-school-innovate-mulling-that-question-at-byu-law/> [<http://perma.unl.edu/AA84-VMUZ>] (seeking to answer “one overarching question: How will BYU prepare students for an increasingly complex and unpredictable world?”); Stephen Embry, *LegalRnD’s Workshop on Building a Better Lawyer: Can Law Schools Lead Us Out of the Wilderness?*, TECH LAW CROSSROADS (Feb. 19, 2018), <https://www.techlawcrossroads.com/2018/02/legalrnds-workshop-building-better-lawyer-can-law-schools-lead-us-wilderness/> [<http://perma.unl.edu/9GTU-N3FT>] (describing the “Building a Better Lawyer” Design Thinking Workshop at Michigan State University College of Law led by Stanford’s Margaret Hagan and LegalRnD’s Dan Linna wherein the workshop participants brainstormed ideas and potential solutions for many issues including: the future of lawyers and legal work, the adequacy/inadequacy of legal education to prepare graduates for the future of work, the need for school innovation, the challenge of providing legal services to underserved communities, and the skills needed for identifying and responding to emergent market needs).

363. Kaisti et al., *supra* note 341, at 2; *see generally* Larry Cunningham, *Building a Culture of Assessment in Law Schools*, CASE W. RES. L. REV. (forthcoming 2019) (manuscript at 17–18) (on file with author) (explaining that successful change management involves a process which brings together: strong sense of urgency, coalition of powerful players, clear and articulated vision and strategy, empowerment of individuals, reward of progress or “wins,” replication of successful improvements, and program-wide dissemination).

364. *Id.* at 6, 11; *see also* IBM 2018 GLOBAL C-SUITE STUDY, *supra* note 42, at 24 (emphasizing the importance of reallocating capital to invest in new innovation).

#### 4. *Basic Tools: Prototypes and Minimum Viable Products (MVPs)*

Both Agile and Lean Startup use prototypes and minimum viable products (MVPs) to imagine, design, create, test, and iterate new products and services.<sup>365</sup> For digital innovations, access to zettabytes of global digital content represents an abundance of plant stock ready for cross-pollination and development of new seed ideas to be planted and nurtured in innovation growth factories.<sup>366</sup> Digital products and services often begin with these seed ideas, which emerge in the form of prototypes and MVPs that are iterated by team members over time.<sup>367</sup> Prototypes, or the original model of a particular product, provide a starting point for future models.<sup>368</sup> For example, a pencil sketch of a birthday cake is a prototype that serves as the basis for dialogue regarding specific characteristics of an actual birthday cake.<sup>369</sup> Prototypes are jumping-off points from which MVPs develop and potential pilot projects may launch.<sup>370</sup> An MVP is a pared-down version of the product.<sup>371</sup> MVPs determine market viability by providing the “most minimal form of your complete solution.”<sup>372</sup> Thus, a basic white cake

365. Kaisti et al., *supra* note 341, at 12–13; *see* REIS, *supra* note 34, at 99 (strongly recommending that it is best to “brainstorm *multiple* MVPs for any given project” so that one does not “prematurely anchor to one solution”). He further suggests that MVP brainstormers consider “radically different alternatives” consisting of: (1) the initial idea, (2) the super fancy version, and (3) the super fancy version extremely simplified. *Id.*; *see also* JOHN MARKOFF, MACHINES OF LOVING GRACE: THE QUEST FOR COMMON GROUND BETWEEN HUMANS AND ROBOTS 292 (2015) (describing how technology teams routinely iterate when building rapid and efficient prototypes).

366. McGRATH, *supra* note 80, at 124.

367. MARKOFF, *supra* note 365, at 292.

368. *Prototype*, TECHOPEDIA, <https://www.techopedia.com/definition/678/prototype> [<http://perma.unl.edu/S4PU-VQ6F>]. According to IBM, it is best to “[t]est the most promising prototypes on a select group of knowledgeable, impassioned customers . . . [a]nd be ruthless about discarding all but the very best options. ‘Good’ isn’t good enough in a transparent digital environment.” *Redefining Boundaries: Insights from the Global C-suite Study*, IBM 2015 CEO C-SUITE STUDIES 1, 29 (Nov. 2015), <https://www-01.ibm.com/common/ssi/cgi-bin/ssialias?htmlfid=GBE03695USEN> [<http://perma.unl.edu/F6ZQ-SPCR>]; *see also* Hoyt & Sutton, *supra* note 53 (“‘Design thinking’ is a hands-on approach that focuses on developing empathy for others, generating ideas quickly, testing rough ‘prototypes’ that, although incomplete or impractical, fuel rapid learning for teams and organizations.”).

369. Rebecca Das, *What Is the Difference Between a Prototype and an MVP?*, TRANSPIRE (July 18, 2017), <https://www.transpire.com/insights/blog/prototype-vs-mvp> [<http://perma.unl.edu/8EVX-4AUF>] (last visited Feb. 1, 2018).

370. *Reinventing Innovation*, *supra* note 80, at 11–12 (describing Marriott International’s “prototype-to-pilot” process).

371. *Minimum Viable Product (MVP)*, TECHOPEDIA, <https://www.techopedia.com/definition/27809/minimum-viable-product-mvp> [<http://perma.unl.edu/P4SK-HG4M>].

372. Jason Thomas, *Proof of Concept vs. Minimum Viable Product (and When to Use Each)*, LEAN LABS (Jan. 23, 2015), <https://www.lean-labs.com/blog/proof-of-con>

with vanilla frosting would be an MVP that resulted from the pencil-sketched birthday cake prototype.<sup>373</sup> MVPs represent a “good enough” product that enables sufficient customer engagement to obtain feedback for future iterations.<sup>374</sup> Specifically, MVPs can be used to gauge market interest in a new product or service; identify customer adoption and retention issues; open an essential “feedback loop” as to customer use, satisfaction, complaints, and suggestions for future versions; and provide valuable insights that support data-driven decision-making.<sup>375</sup> Ideally, a properly-executed MVP of a birthday cake will result in an ultimate dessert that is the right flavor, beautifully designed, and delicious.

MVPs also provide opportunities to assess customer preferences and beta test hypotheses before expending significant human, financial, and technical resources on building fully executed versions.<sup>376</sup> Often individuals with traditional, perfection-oriented mindsets dismiss beta versions of new products and services as incomplete.<sup>377</sup> For consumers who value cutting-edge approaches, beta versions provide immediacy—a relative concept measured with brisk turn-around and improvement time horizons.<sup>378</sup> Because market pioneers want to move quickly to grab market share, they derive great value from the feedback of early users.<sup>379</sup> The beauty of these initial versions is that they are designed to be tested, questioned, and “broken.”<sup>380</sup> Rigorous testing gives designers and developers opportunities to make “inex-

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cept-vs.-minimum-viable-product-and-when-to-use-each [http://perma.unl.edu/GY5X-FE6V].

373. Das, *supra* note 369.

374. Scott Anthony, *The Dangers of the Minimal Viable Product*, HARV. BUS. REV. (Apr. 9, 2012), <https://hbr.org/2012/04/the-dangers-of-teh-minimal-via> [http://perma.unl.edu/BS6E-DPVK].

375. *Minimum Viable Product*, *supra* note 371; see MCAFEE & BRYNJOLFSSON, *supra* note 31, at 61–64 (discussing the importance of iteration, experimentation, testing, and data-informed decision-making). Also, it is important to remember that “success” occurs when innovation teams learn how to solve customer problems. REIS, *supra* note 53, at 66; see also MCGRATH & MACMILLAN, *supra* note 6, at 157 (“If you can put a device (even if it doesn’t fully work) in someone’s hand, you will often get far more relevant feedback early on than if you are working with verbal descriptions.”).

376. SATELL, *supra* note 100, at 76; see also *Beta Test*, TECHOPEDIA, <https://www.techopedia.com/definition/27136/beta-test-gaming> [http://perma.unl.edu/5XW5-NH32] (explaining that beta testing involves the distribution of early digital products to select users to facilitate the identification and resolution of glitches, bugs, and other issues).

377. KEVIN KELLY, *THE INEVITABLE: UNDERSTANDING THE 12 TECHNOLOGICAL FORCES THAT WILL SHAPE OUR FUTURE* 68 (2016).

378. *Id.*

379. IBM 2016 CEO C-SUITE STUDIES, *supra* note 10, at 7 (noting that “consumers are increasingly tolerant of live fine-tuning to enhance products and services that are already on the market”).

380. MCGRATH, *supra* note 80, at 149–50.

pensive, intelligent mistakes.”<sup>381</sup> This leads to rapid project improvements and refinements—and if necessary, elimination. With ongoing MVP user feedback, developers can design, test (including A/B tests),<sup>382</sup> iterate, and re-test to discover the right combination that creates and captures value.<sup>383</sup> It is important to remember that successful innovation takes time, patience, and determination. For example, “Microsoft Windows did not mature into an industry-dominating force until Microsoft released version 3.0—at least five years after the product was first introduced.”<sup>384</sup>

When evaluating prototypes and MVPs, former Intel CEO Andrew S. Grove strongly warns that the “trap of the first version” often blinds people to the potential opportunities and significance of subsequent versions.<sup>385</sup> For example, Grove recalls that he was generally underwhelmed when he first saw the Mac because he focused on its problems instead of recognizing the underlying elegance and beauty of the technology.<sup>386</sup> Additional examples of less-than-spectacular first versions include the early platforms for Airbnb and YouTube. Both were ridiculed because they did not “offer the quality and reliability provided by their traditional competitors.”<sup>387</sup> However, the value of the underlying product withstood each company’s initial growing pains as to scaling, curation, and quality control—and ultimately challenged market incumbents as the platforms were refined.<sup>388</sup>

Columbia Business School Professor Rita Gunther McGrath notes that during the product “incubation” process (i.e., prototype/MVP development, iteration, and continuous testing), the seed project is “vul-

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381. *Id.* at 150.

382. A/B testing involves providing fifty percent of users with option A and the other fifty percent with option B to determine if a particular version is preferred. *See* McAfee & Brynjolfsson, *supra* note 31, at 62. A/B testing is also known as bucket or split testing. *AB Testing*, TECHOPEDIA, <https://www.techopedia.com/definition/27398/ab-testing> [<http://perma.unl.edu/Z576-5C9D>]; *see also* Domingos, *supra* note 67, at 227 (describing use of A/B testing by pharmaceutical companies, Amazon, and Google, and in political campaigns); Kohavi & Thomke, *supra* note 334 (discussing benefits of A/B and other controlled tests).

383. SATELL, *supra* note 100, at 78.

384. FORD, *supra* note 2, at 139.

385. GROVE, *supra* note 4, at 112–14. According to Reis, because visionary “break-through projects almost always look like toys or downright bad ideas at first,” decisions to continue or terminate must be based on evidence and data from experiments instead of instinct and snap judgment. REIS, *supra* note 34, at 58; *see, e.g.*, Joseph Stromberg, *What Reviewers Said About the First Mac When It Debuted*, SMITHSONIAN.COM (Jan. 23, 2014), <https://www.smithsonianmag.com/history/what-reviewers-said-about-first-mac-when-it-debuted-180949448/> [<http://perma.unl.edu/3CRV-JX6J>].

386. GROVE, *supra* note 4, at 112–14.

387. PARKER ET AL., *supra* note 203, at 67.

388. *Id.* at 68. In the author’s experience, students appreciate short tax study videos (despite basic recording quality). Study videos also support the flipped and digital-first teaching models.

nerable and fragile.”<sup>389</sup> She recommends patience and thoughtfulness during the incubation phase so that there is opportunity to refine and improve the prototypes or MVPs before full launch.<sup>390</sup> Further, organizations like Apple and luggage-maker Tumi wisely build in future innovation pipelines by requiring designers to envision how their project may evolve over several product or service generations.<sup>391</sup> According to McGrath, “[H]aving gone to the trouble of developing deep customer insight, you might want to utilize it in developing a series of innovations.”<sup>392</sup> The MVP development process aligns with McGrath’s “options-oriented” approach to exploring new opportunities, wherein project portfolios are regularly tested and scrutinized to identify whether a specific initiative seems strong or anemic.<sup>393</sup> Leaders abandon anemic projects and prioritize the strong prospects for support and scaling.<sup>394</sup> The options-oriented approach efficiently shifts resources to projects with potential—thereby populating gardens with healthy initiatives.<sup>395</sup>

This subsection examined the exciting opportunities that bloom from pairing human creativity with modern technologies and data. The shift from atom-based education to the seamless integration of humans, atoms, and bits will take time and guidance from project and process development and improvement methodologies like Agile and Lean Startup. Wild ideas can and should be tested with MVPs to uncover new growth opportunities. However, when confronted with new and foreign innovations, strong human resistance can spring forth like bindweed.<sup>396</sup> This behavioral tendency and appropriate responses thereto are discussed next.

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389. McGRATH, *supra* note 80, at 108–09.

390. *Id.* at 108–11 (describing the incubation period as being followed by an acceleration process involving launch and ramp-up). McGrath emphasizes that acceleration represents “a delicate moment for an innovation project, because it marks a major transition point. At this point, the innovation and incubation emphasis needs to transition to mechanisms for getting to scale, fast.” *Id.* at 110.

391. *Id.* at 150; *see also* McGRATH & MACMILLAN, *supra* note 6, at 100–01 (“To grow in today’s markets, you must keep innovating and thinking of your follow-up innovations even as you launch your current ones.”).

392. McGRATH, *supra* note 80, at 150.

393. *Id.* at 47 (describing conversations with her colleague Ian MacMillan where he explained that the option-oriented approach is “like building a firm that grazes on options—always testing, then engaging and entering, then disengaging from exhausted areas well before disengagement becomes costly”).

394. *Id.*; *see* Jong et al., *supra* note 31 (“Innovation is inherently risky, to be sure, and getting the most from a portfolio of innovation is more about managing risk than eliminating it.”).

395. McGRATH, *supra* note 80, at 47; Jong et al., *supra* note 31 (echoing the conclusion that when leaders have a portfolio of innovations, it is easier to prune low yield initiatives).

396. Bindweed is an invasive perennial often considered “one of the most noxious weeds in the world” that “makes itself at home by sinking roots as much as nine

#### D. Resistance to Innovation

Human responses to technological, organizational, and economic changes can be strong and complex. They may manifest in the form of resistance, including by highly educated professionals.<sup>397</sup> Economist Joseph A. Schumpeter observes that innovation in particular often encounters resistance because “the social environment [is] against one who wishes to do something new.”<sup>398</sup> Resistance often intertwines with denial.

In his book *Denial: Why Business Leaders Fail to Look Facts in the Face—and What to Do About It*, Richard S. Tedlow writes, “Denial is seductive because it can work in the short term. Occasionally, it works in the long term, but that is rarely true in business. In business, pretending that things are better than they are virtually ensures failure.”<sup>399</sup> Severing the tightly enmeshed vines of resistance and denial begins by asking and answering this threshold question, is our organization “doing today” what is necessary to adapt and succeed tomorrow, next year, and in the future?<sup>400</sup> If the answer is yes, the organization appears well positioned to respond to changing market conditions and seize new opportunities. If the answer is no, then it is time for leaders to question if denial functions as a barrier to change.

Because denial operates on a continuum, forward-focused leaders can shape whether the organization embraces or denies the facts presented.<sup>401</sup> Organizations that have cultures that acknowledge unpleasant factual realities understand that survival requires adaptation and change; they act and respond accordingly.<sup>402</sup> In contrast,

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feet into the soil and can stay on as an unwanted guest for up to 20 years.” Andy Hulting, *Bidding Farewell to the Dreaded Bindweed*, OR. STATE U: EXTENSION SERV. (Sept. 2008), <https://extension.oregonstate.edu/news/bidding-farewell-dreaded-bindweed> [<http://perma.unl.edu/S8VJ-T5XJ>]. It is also “known to weed scientists as ‘field bindweed’ (Latin name: *Convolvulus arvensis*).” *Id.*

397. REIS, *supra* note 34, at 222; MULLER, *supra* note 71, at 45 (quoting poet and historian Robert Conquest) (“Everyone is conservative about what they know best.”); *see also* Henderson, *supra* note 51, at 407, 419 (describing how massive public resistance [MPR] is a “common reaction” to innovation goals and change efforts and observing that “[c]hange is hard, even for highly educated professionals”). He also warns that “organizations are much harder to influence than individuals.” *Id.* at 427.

398. JUMA, *supra* note 166, at 96; *see also* Jong et al., *supra* note 31 (describing how “[v]irulent antibodies undermine innovation at many large companies”). To defeat these antibodies, Jong et al. recommend that innovators test their “promising ideas with customers early in the process, before internal forces impose modifications that blur the original value proposition.” *Id.* They also write, “To end up with the innovation initially envisioned, it’s necessary to knock down the barriers that stand between a great idea and the end user.” *Id.*

399. TEDLOW, *supra* note 70, at 3.

400. *Id.* at 113.

401. *Id.* at 204–05.

402. *Id.* at 205.

leaders of organizations with cultures that ignore, reject, or discount facts must work diligently to avert the proverbial boiled frog situation.<sup>403</sup> To overcome denial, Tedlow recommends the following eight step process: (1) act immediately, and do not wait for a crisis since once there is a crisis, it will be too late; (2) acknowledge and confront the brutal facts; (3) solicit and encourage honest straight talk from all levels of the organization; (4) welcome and listen to Cassandras' warnings; (5) adopt a long-term perspective; (6) be on high alert for "trash-talk" within your organization about another competitor which can be signs of denial; (7) tell the truth; and (8) ask the critical question, would you "rather be conventionally wrong or unconventionally right?"<sup>404</sup>

Because facing troublesome facts and making changes disrupts the status quo, law school leaders should anticipate some initial pushback on attempts to undergo the sometimes-radical changes dictated by market realities and the digitized world.<sup>405</sup> To buffer this resistance and move forward, successful leaders will (1) recognize the "human and emotional dimensions of their business,"<sup>406</sup> (2) "[e]mbrace the magnitude of the change,"<sup>407</sup> (3) articulate a clear vision of the future, and (4) explain how organizational agility enables the program to navigate through economic uncertainty and respond with alacrity to opportunities.<sup>408</sup> After completing these preliminary steps, leaders can begin the process of persuading faculty and staff that new technologies and approaches can strengthen the institution's tradition of educational excellence<sup>409</sup> and increase the likelihood of financial sustainability.

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403. *Id.* at 206 (providing that for the frog resting in comfortable and increasingly warmer water, there "was no sudden shock forcing it to face reality. By the time it realized what was happening, the opportunity for confronting the facts and doing something about them had passed").

404. *Id.* at 204–13.

405. JUMA, *supra* note 166, at 169 (noting that sometimes disruptions are viewed as destructive which may cause social tensions). Juma also "argues that technological controversies often arise from tensions between the need to innovate and the pressure to maintain continuity, social order, and stability." *Id.* at 5; *see also* Reisenwitz, *supra* note 343 (asking law practice expert Kevin Grady why lawyers seem to resist Lean methodologies in their work). According to Grady, "Lawyers are risk averse and resistant to change by personality type . . . . You typically don't want to hire a lawyer that says, let's take lots of chances!" *Id.*

406. TEDLOW, *supra* note 70, at 183.

407. Karin Ahlbäck, et al., *How to Create an Agile Organization*, MCKINSEY & Co. (Oct. 2017), <https://www.mckinsey.com/business-functions/organization/our-insights/how-to-create-an-agile-organization/> [http://perma.unl.edu/G269-5ULH].

408. *Id.* (explaining that "organizational agility" includes the ability to swiftly reimagine and reconfigure strategies, processes, structures, technologies, and human talent to create new value opportunities).

409. *See* JUMA, *supra* note 166, at 169–70.



To facilitate the transition, leaders may find it beneficial to foster co-evolution of new technologies with traditional teaching methods—thereby forming integrated systems for knowledge and know-how transfer.<sup>410</sup> However, special care must be taken to avoid the trap of simply using technology as an “overlay” of traditional models of teaching and learning.<sup>411</sup> Further, because incremental curricular modifications will not escape the gravitational pull of traditional, atom-based law schools, modern education entrepreneurs should instead laser-focus on launching visionary, breakthrough innovations that completely reimagine and reinvent legal education for a new era where humans and digital technologies work together—since it is smarter to “race with the machines, instead of against them.”<sup>412</sup>

As a practical matter, technology skills training, support, and assistance should be provided to help faculty and staff adapt and thrive in this ever-changing environment. Organizations should provide employees with the resources and skills needed to advance innovation mission trajectories, such as training in problem-solving, effective pedagogical methods, value and process engineering, team-building, and data and statistical analysis.<sup>413</sup> A couple of important benefits result from comprehensive technology and innovation employee training. First, the training gives employees a common language for developing new ideas.<sup>414</sup> Second, training amplifies the realities that

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410. *Id.* at 169 (noting how Thomas Edison “adopt[ed] a strategy that sought to include those who were likely to be displaced by his innovation”).

411. BRYNJOLFSSON & MCAFEE, *supra* note 35, at 211 (quoting Boston University Business and Management Professor Venkat Venkatraman) (“We need digital models of learning and teaching. Not just a technology overlay on old modes of teaching and learning.”). Brynjolfsson and McAfee also advise that the best approach for using new technologies involves restructuring the process, instead of substitution. *Id.* at 138. Harvard’s HBX digital-first approaches merit consideration. See Appendix III, located in *Part III* of this Article series.

412. BRYNJOLFSSON MCAFEE, *supra* note 35, at 241–42; see DAVID I. C. THOMSON, *LAW SCHOOL 2.0: LEGAL EDUCATION FOR A DIGITAL AGE 11–24* (2009) (predicting in 2009 the technological, demographic, and business forces that currently batter traditional law schools). Professor Thomson advocates for proactive, future-oriented, human-centered, and technologically integrated curricular innovations. *Id.*

413. Gary Hamel & C.K. Prahalad, *Strategic Intent*, HARV. BUS. REV. (July–Aug. 2005), <https://hbr.org/2005/07/strategic-intent> [<http://perma.unl.edu/3LFS-2UQD>] (observing that the first to act on insights often enjoy the best return on their efforts); see, e.g., Niko Mohr & Holger Hürtgen, *Achieving Business Impact with Data*, DIGITAL MCKINSEY 10 (Apr. 2018), <https://www.mckinsey.com/business-functions/mckinsey-analytics/our-insights/achieving-business-impact-with-data> [<http://perma.unl.edu/YT6X-AAS8>] (describing “analytics academies” to train employees on how data science applies to their current job functions and include these employees when translating the data captured and analyzed into actionable customer improvements and innovations).

414. MCGRATH, *supra* note 80, at 122–23.

clinging to the status quo undercuts innovation.<sup>415</sup> Once initial training has been completed, ongoing “coaching” can help employees strengthen and expand their innovation capabilities.<sup>416</sup> Once a virtuous cycle of innovation gains momentum, it is likely to unleash “a huge amount of latent creativity and energy” because “impossible-seeming things suddenly [appear] possible”—so get ready.<sup>417</sup> Employee reviews and compensation should track progress, support innovation mindsets, and reward creativity.<sup>418</sup>

Understandably, the transition between incumbency and innovation injects instability and uncertainty into familiar work processes and flows.<sup>419</sup> Innovations to established programs and processes can unearth deep emotional responses throughout the organization. Debates about technology reflect concerns about economic benefits and risks, but also more individualized worries about the loss of personal and cultural identity.<sup>420</sup> For example, because incremental innovation builds on established knowledge, employees with deep doctrinal knowledge may see gradual and deliberate improvements as “competence-enhancing.”<sup>421</sup> In contrast, because breakthrough and disruptive innovations involve unfamiliar knowledge, skills, and processes, these same highly knowledgeable employees may become frustrated when they cannot find an immediate path to combine their hard-earned expertise with modern technologies. As a result, they may view the breakthrough innovation process as “competence-destroying.”<sup>422</sup>

To ameliorate employee anxieties, leaders should assign these faculty members and staff to a supportive digital innovation team so that their years of experience and doctrinal knowledge can be combined with the capabilities of the learning science and technology experts.<sup>423</sup> Most importantly, this time of transition should be viewed as an opportunity for multigenerational knowledge-sharing, dialogue,

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415. *Id.*

416. *Id.* at 130–31; see REIS, *supra* note 34, at 206–15 (discussing coaching programs); see also IBM 2018 GLOBAL C-SUITE STUDY, *supra* note 42, at 32 (recommending continuous investment in employee development).

417. REIS, *supra* note 34, at 188.

418. Hamel & Prahalad, *supra* note 413 (discussing the importance of establishing “clear milestones and review mechanisms”); see also REIS, *supra* note 34, at 248–51 (discussing compensation as innovation, recruiting, and retention tools).

419. JUMA, *supra* note 166, at 143 (describing transition from farm horses to tractors).

420. *Id.* at 141. Fears of technological unemployment often prompt resistance (e.g., Luddite rebellion). *Id.* at 203–04.

421. Han, *supra* note 262, at 5.

422. *Id.*; see also GROVE, *supra* note 4, at 48 (noting that successful professionals under the static and stable approach may have difficulties adapting to dynamic and unstable environments); REIS, *supra* note 34, at 312 (observing that “transformation pits its leader against the hostile reactions of experienced people whose lives and careers are deeply invested in the status quo”).

423. See *Legal Education: A New Growth Vision Part III*, subsection II.B.1 for a discussion of multidisciplinary digital innovation teams.

and path-building that connects traditional excellence and faculty wisdom with dynamic technologies and the unlimited opportunities of the future.<sup>424</sup>

To break institutional inertia, law school deans must remain steadfast. In particular, they must support the change-agents on the front lines making the forceful moves necessary to reinvent the creation and delivery of knowledge and skills development services.<sup>425</sup> Innovation leaders should reasonably anticipate some resistance to change, but when faculty or staff resistance turns into belligerence, corrective action will be required to further the program's innovation mission trajectories. Unfortunately, in some situations, pruning non-producing branches may be necessary to make room for new growth.<sup>426</sup> Otherwise, the organization will revert to the status quo and critical time will be lost.

#### **E. Innovation Triumvirate: Visionary, Thinker-planner, and Driver**

In their book, *Discovery Driven Growth*, Columbia Business Professor Rita Gunther McGrath and Wharton Business School Professor Ian C. MacMillan identify the following five competencies required for continuous and long-term innovation: discovery, incubation, acceleration, disengagement, and recycling.<sup>427</sup> Discovery involves generating new ideas; incubation takes a seed idea and turns it into a business proposition; acceleration drives the business proposition from concept to reality; disengagement evaluates the viability of budding projects and terminates them if they do not show strong growth potential; and recycling takes valuable lessons learned of successful and failed endeavors and puts them to future use.<sup>428</sup> Because one person is unlikely to embody all of these competencies and capabilities, Professors

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424. BERLIN, *supra* note 176, at xv–xvi (describing collegial “passing the baton” multigenerational relationships between technology legends and upstarts).

425. GROVE, *supra* note 4, at 95 (crediting Intel's business survival to Grove's and Moore's “forceful move[s]” to see and seize new opportunities).

426. *Id.* at 60 (noting at NeXT, Steve Jobs learned that business survival injects reality into “long-held dogmas”). Grove also states, “For us senior managers, it took the crisis of an economic cycle and the sight of unrelenting red ink before we could summon up the gumption needed to execute a dramatic departure from our past.” *Id.* at 97. When Intel emerged from its SIPs, about half of “management transformed themselves and were able to move in the new direction. Others ended up leaving the company.” *Id.* at 143; *see also* MCGRATH & MACMILLAN, *supra* note 6, at 172 (emphasizing that pruning is essential for growth).

427. MCGRATH & MACMILLAN, *supra* note 6, at 212–13.

428. *Id.* at 212; *see also* REIS, *supra* note 34, at 32–33 (describing how Jeff Bezos/Amazon's innovation team recycled the learning of the failed Fire phone into the successful Alexa and Echo products).

McGrath and MacMillan emphasize the important relationships between leaders and their teams.<sup>429</sup>

For the purpose of this brief inquiry, this Article compresses McGrath and MacMillan's five-part criteria into three main roles that comprise an innovation triumvirate: visionary, thinker-planner, and driver, because termination and recycling decisions likely cut across all three roles. The leaders at the Intel Corporation illustrate the interplay between these core competencies and roles and how effective leadership teams can identify and seize market opportunities.<sup>430</sup> In 1968, Robert N. Noyce and Gordon E. Moore left Fairchild Semiconductor (likened to the Google of the 1960s) to start the Intel Corporation.<sup>431</sup> Andrew S. Grove joined Intel as the third employee.<sup>432</sup> Venture capitalist investor Arthur Rock attributed Intel's spectacular success to the combined talents of Noyce, Moore, and Grove.<sup>433</sup> This dynamic trio provided Intel with "an outside man, a man of thought, and a man of action."<sup>434</sup> Specifically, Noyce's charisma, status as co-inventor of the integrated circuit, and passion for starting new ventures provided access to ample funding for the Intel startup.<sup>435</sup> Moore's quiet—yet revolutionary—genius abilities to conceive of new products and markets provided Intel with myriad innovation pathways.<sup>436</sup> And Grove's role as company whip parlayed his tenacious and pugnacious personality into bold, decisive, and determined leadership.<sup>437</sup> Grove and Moore led Intel not only to make incredible profits and product advancements, but they also quickly responded to SIPs and shepherded the company through the "valley of death."<sup>438</sup> Intel's

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429. MCGRATH & MACMILLAN, *supra* note 6, at 212.

430. The Google leadership team comprised of Larry Page, Sergey Brin, and Eric Schmidt provides another example of an innovation and leadership "triumvirate." DOERR, *supra* note 347, at 11–12; *see generally* BOCK, *supra* note 334, at 178–203 (explaining that every company has "two tails" of people who sit at either side of the performance distribution and examining the two extremes for meaningful differences in behavior and outcomes to improve the company).

431. TEDLOW, *supra* note 70, at 167–68. Intel incorporated on July 16, 1968. *Id.*

432. *Id.* at 169.

433. *Id.* at 169–70; *see* MICHAEL S. MALONE, THE INTEL TRINITY: HOW ROBERT NOYCE, GORDON MOORE, AND ANDY GROVE BUILT THE WORLD'S MOST IMPORTANT COMPANY (2014).

434. TEDLOW, *supra* note 70, at 170 (explaining that Andrew Grove developed these categories based on his reading of Peter Drucker's *The Practice of Management*).

435. *Id.* at 168, 171. In 1979, Noyce stepped down as chair of Intel's board to become vice chair because he preferred to start new things, not manage a large company. *Id.* at 171.

436. *Id.* at 170; *see* ARNOLD THACKRAY ET AL., MOORE'S LAW: THE LIFE OF GORDON MOORE, SILICON VALLEY'S QUIET REVOLUTIONARY (2015).

437. RICHARD S. TEDLOW, ANDY GROVE: THE LIFE AND TIMES OF AN AMERICAN 461 (2006).

438. *See* GROVE, *supra* note 4, at 34 (describing how companies must navigate SIPs to survive long-term).

innovation triumvirate (visionary, thinker-planner, and driver) shows that the once impossible can become possible when multidisciplinary leaders synthesize their perspectives, knowledge, and creativity to solve complex problems.

Deloitte labels this team approach to management and innovation as “the symphonic C-suite” because it brings together leader-experts to play in harmony.<sup>439</sup> Working together to achieve innovation mission trajectories, these leadership teams can (1) transform business models, (2) redesign programs and processes that adapt to emerging technologies and marketplace factors, (3) expand brand recognition, and (4) continuously innovate.<sup>440</sup> The combination of leadership teams and digital innovation teams discussed in *Legal Education: A New Growth Vision Part III*, subsection II.B.1 provides law schools with exciting opportunities to enhance program solvency, status, and growth. In 2018, Deloitte wrote the following “bottom line”: “teams leading teams—is the most effective way to tackle the complex issues businesses face today.”<sup>441</sup>

## V. CONCLUSIONS

As discussed in *Legal Education: A New Growth Vision Part I*, the legal education industry as a whole faces the combined forces of creative destruction and strategic inflection points. Building on that conclusion, this *Part II* began with an examination of the challenges facing U.S. law schools with traditional business models and atom-based teaching processes. It warned of impending battles for survival between schools located in compressed geographic regions. Because digital technologies increasingly empower customers with choice, students can now base their enrollment decisions on whether a law school can (1) serve their needs and (2) deliver value for the tuition paid. Customer choice combined with their purchasing power will continue to destabilize law schools with traditional teaching and business models. The culling of technologically frozen and financially nonviable law schools has only just begun.

Innovation provides the way forward. The rapid, ongoing, and dynamic changes in the realms of bits and atoms open vast and poten-

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439. Dimple Agarwal et. al, *The Rise of the Social Enterprise: 2018 Deloitte Global Human Capital Trends*, DELOITTE INSIGHTS 17–22 (2018), [https://www2.deloitte.com/content/dam/insights/us/articles/HCTrends2018/2018-HCTrends\\_Rise-of-the-social-enterprise.pdf](https://www2.deloitte.com/content/dam/insights/us/articles/HCTrends2018/2018-HCTrends_Rise-of-the-social-enterprise.pdf) [http://perma.unl.edu/YRW4-RNR2] (“More and more problems are of the “wicked” variety—problems with multiple roots and drivers that cannot be effectively solved by one party working alone.”).

440. *Id.* at 20.

441. *Id.* at 21; see also *Reinventing Innovation*, *supra* note 80, at 16, 20 (emphasizing the importance of “strong C-suite leadership” when establishing successful, aligned innovation cultures).

tially fertile fields for education service innovations. Innovation in the digital age requires a deft balance of creative vision, organizational hustle, and strategic patience. Human creativity, combined with the powerful insights gleaned from data analytics and the efficiencies of Agile and Lean Startup methodologies, can illuminate innovation pathways.

Prototypes and MVPs represent essential and powerful development and testing tools—but only if the budding ideas are allowed the space and time take root and grow. By designing and testing MVPs and using project and process management methodologies, education leaders and digital innovation teams can streamline and expedite the modern transformation of legal education programs into the hybrid, human and digital knowledge and skill development services that customers want and value.

Last, resistance to technology and digitization should be treated compassionately but firmly, with leaders setting a clear path forward that embraces technology's ability to supplement—not supplant—student learning of both doctrinal knowledge and market-valued skills.

Customer satisfying innovation represents the smartest, safest, and sustainable path forward. Inventing the future begins now.