

Legal Education and Technological Innovation: A Critical Essay

Daniel Bonilla Maldonado*

Universidad de los Andes (Colombia)

Received: July 13th, 2022 | Accepted: November 17th, 2022

How to cite: Bonilla Maldonado, Daniel. "Legal Education and Technological Innovation: A Critical Essay". *Latin American Law Review* n.º 10 (2023): 1-36, doi <https://doi.org/10.29263/lar10.2023.01>

Abstract

The article is divided into three parts. In the first part, I describe three of the most frequent answers to the question, why is it necessary, important, or urgent for technological innovation to be incorporated into law schools? The first two answers are directly related to agents of the market that demand legal education: law students and law firms. On the one hand, the legal literature that deals with this issue argues that law schools must innovate in technological matters to meet the expectations and needs of the new generations of law students. On the other hand, the literature argues that this aim should be achieved to satisfy the expectations and needs of law firms, that are the ones that hire new law school graduates. The third response indicates that technological innovation in law schools is necessary because it allows students to achieve learning objectives more effectively. In the second part, I offer a critique of the first two answers, those that react to, and want to meet, the needs both of the legal services market and the educational services market. This critique is based on a Heideggerian interpretation of technology. In the third part, I present my criticism of the third answer, which closely connects the pedagogical aims of legal education and technological innovation. In this section I argue that the third answer (i) is weakened by the naturalistic fallacy; (ii) does not empirically support its conclusions, or at least does not support them sufficiently, and presents some of its empirical arguments as absolute, although there is no consensus in the legal, scientific, or pedagogical communities around them; (iii) does not offer specific and detailed arguments that show how technological innovation may allow us to fulfill the objectives that legal education usually pursues; and (iv) it obscures the connection between technology and power in legal education.

* Profesor titular, Facultad de Derecho, Universidad de los Andes, Bogotá. ✉ dbonilla@uniandes.edu.co

<https://orcid.org/0000-0002-8303-6783>. I would like to thank Gabriela Pedraza and Andrés Jurado for the excellent work they did as research assistants. A Spanish version of this article was published in *Rev. Direito GV* 16, n.º 1.

Keywords

Legal education; technological innovation; Heidegger; criticism of technology; power and technology.

Educación jurídica e innovación tecnológica: un ensayo crítico

Resumen

El artículo se divide en tres partes. En la primera, describo tres de las respuestas más frecuentes a la pregunta: ¿por qué es necesario, importante o urgente que se incorpore la innovación tecnológica en la educación jurídica? Las primeras dos respuestas están relacionadas directamente con agentes del mercado que demandan educación jurídica: los estudiantes de derecho y las firmas de abogados. Por un lado, la bibliografía jurídica que se ocupa de este tema argumenta que las facultades de derecho deben innovar en materia tecnológica para satisfacer las expectativas y necesidades de las nuevas generaciones de estudiantes de derecho. Por el otro, argumenta que se debe alcanzar este fin para satisfacer las expectativas y necesidades de las firmas de abogados, que son las que contratan a los nuevos graduandos de las facultades de derecho. La tercera respuesta señala que la innovación tecnológica en las facultades de derecho es necesaria porque permite que los estudiantes alcancen los objetivos de aprendizaje más eficazmente. En la segunda parte, ofrezco mis críticas a las dos primeras respuestas, aquellas que reaccionan a las necesidades tanto del mercado de servicios jurídicos como del mercado de servicios educativos, y quieren satisfacerlas. Esta crítica se fundamenta en una lectura heideggeriana de la tecnología. En la tercera parte, presento mis críticas a la tercera respuesta, aquella que conecta estrechamente los fines pedagógicos que persigue la educación jurídica con la innovación tecnológica. En esta sección argumento (i) que la tercera respuesta se ve debilitada por la falacia naturalista; (ii) no fundamenta empíricamente sus conclusiones, o no lo hace suficientemente, y presenta algunos de sus argumentos empíricos como absolutos aunque no exista un consenso en la comunidad jurídica, científica o educativa en torno a ellos; (iii) no ofrece argumentos precisos y detallados que muestren cómo la innovación tecnológica permite alcanzar los objetivos que usualmente persigue de la educación jurídica; y (iv) oscurece la relación que existe entre tecnología y poder en la educación jurídica.

Palabras clave

Educación jurídica; innovación tecnológica; Heidegger; crítica a la tecnología; poder y tecnología.

INTRODUCTION

Technology is an omnipresent and inescapable fact both in the professional practice of law and in contemporary legal education.¹ Technology has impacted the legal services market

1 See: Richard Granat, "The Many Faces of e-Lawyering: Everyday Law for Everyday People", *Law Practice Management*, n.º 30 (2004): 36 (discussing the developments and possibilities of e-Lawyering in legal practice); Stephen M. Johnson, "www.lawschool.edu: Legal Education in the Digital Age", *Journal of Legal Education* 50,

around the world to a significant degree. Legal practice, which has global dimensions today, has been transformed by the arrival of online lawyers, e-discovery, the use of large databases for making legal decisions, the massive use of software for creating and sharing legal documents, and the use of software for following legal proceedings or comparing and analyzing a large number of legal documents. These technological innovations have made some aspects of legal services more efficient, more transparent, cheaper, and more accessible to citizens.² Nevertheless, these same technological innovations also threaten to eliminate a significant number of legal jobs, generate risks associated to the quality of the legal services they provide, create new ethical challenges for lawyers, and obscure aspects of legal practice that have come to be controlled by algorithms that few people know, understand, and are capable of transforming, making these aspects even more technical.³

The effective influence and impact of these technological innovations, however, vary depending on the characteristics of the legal community and the peculiarities of the technological innovation sector in each polity. In Latin America, for example, large law firms that can pay for these technological innovations, or that see that the services they provide to large national or multinational companies are affected by applying these innovations, occupy a small place

n.º 3 (2000): 393-397; Edward Rubin (ed.), *Legal Education in the Digital Age* (Cambridge: Cambridge University Press, 2012); Brian Sites, "The Influence of Algorithms: The Importance of Tracking Technology as Legal Educators", *The Law Teacher* 23, n.º 1 (2016): 21 (discussing technological developments: "It is essential that legal educators, as guides to students who live in an era of great technological change, stay abreast of the most important of such developments."); Thomas Steele, "The MacCrate Report: Its Impact on Education in Law Firm Management", *Pace Law Review* 23, n.º 2 (2003): 613-654; Richard K. Sherwin, Neal Feigenson, and Christina Spiesel, "Law in the Digital Age: How Visual Communication Technologies are Transforming the Practice, Theory, and Teaching of Law", *Boston University Journal of Science & Technology Law* 12, n.º 2 (2006): 227 ("The practice of law increasingly... depends on what appears on electronic screens in courtrooms, law offices, government agencies, and elsewhere. The theory and teaching of law must also adapt to these altered conditions."); USC Gould School of Law, "The Rise of Virtual Law Practices and 'E-Lawyering'", *Online International LLM Degree Program (Blog)*, 2017, <https://onlinellm.usc.edu/blog/elawyering-and-virtual-law-practices/> ("In order to stay competitive, today's lawyers must be able to look to the future while also understanding the lessons of the past. In the modern legal world, this requires a clear understanding of how technology and the all-encompassing nature of the internet have changed the face of legal practice"); Miguel Willis, "8 Law Schools on Cutting Edge of Tech + Innovation", *Innovative Law Student (Blog)*, April 28th, 2016, <https://www.innovativelawstudent.com/2016/04/7-law-schools-cutting-edge-tech-innovation/> ("The legal profession is rapidly changing with the influx of technology and legal entrepreneurs"); Ifeoluwa Olubiyi, Ayobami Olaniyan and Ngozi Odiaka, "The Role of Technology in the Advancement of Legal Education and Practice in Nigeria" Conference: Nigerian Association of Law Teachers, 2015, https://www.researchgate.net/publication/280566346_The_Role_of_Technology_in_the_Advancement_of_Legal_Education_and_Practice_in_Nigeria ("Technology plays a vital role in our daily routines and it also has significant impact on legal education and legal practice").

2 See: Ron Friedman, "The Future Law Office: Going Virtual", *Law Practice Management*, n.º 3030 (2004); USC Gould School of Law, "The Rise of Virtual Law Practices": "Virtual lawyering has a number of benefits, both for the lawyer and for the client"; Michele Pistone, "Law Schools and Technology: Where We Are and Where We Are Heading", *Journal of Legal Education* 64, n.º 4 (2015): 586-604 ("Using today's technologies, the job that took me 500 billable hours over two months could be completed in days by computers").

3 See USC Gould School of Law, "The Rise of Virtual Law Practices": "In spite of the benefits, eLawyering is not a perfect solution. There are risks and drawbacks to this new structure as well."; Olubiyi, Olaniyan, and Odiaka, "The Role of Technology"; Andrew Beckerman-Rodau, "Ethical Risks from the Use of Technology", *Rutgers Computer and Technology Law Journal* 31, n.º 1 (2004): 1-34; "Los abogados y la tecnología", *Universidad Externado de Colombia*, last modification: w. d., access August 8, 2019, <https://www.uexternado.edu.co/derecho/los-abogados-y-la-tecnologia/> (Explaining that technology could replace lawyers in the future).

within the legal services' market.⁴ Most of the lawyers in the region practice law individually or in small groups that share operating and coordination expenses but do not constitute an autonomous corporate entity. Also, the technological innovation sector in legal matters in Latin America is not large, and although it has impacted some dimensions of the services provided by large law firms, it has not had an impact on the practice of most lawyers who practice law individually or has done so only to a minor extent.⁵ In the United States, in contrast, large law firms occupy an important place within the legal services' market,⁶ and the technological innovation sector in law has developed to a significant degree in the last ten years.⁷ These large law firms also have the financial muscle to invest in technology, and technological innovations have impacted their practice, for example, by reducing the fees per hour that they can charge their clients or the number of hours that they can charge for each service they provide.

Legal education has also been impacted by technological innovation.⁸ In many law schools around the world, administrators and faculty have created macro or micro programs for innovation in legal instruction through technology. In a large number of schools on five continents,

-
- 4 Daniel Bonilla, "Los mandarines del derecho: el trabajo jurídico pro-bono en perspectiva comparada", in *Los mandarines del derecho: trasplantes jurídicos, análisis cultural del derecho y trabajo pro-bono* (Bogotá: Siglo del Hombre Editores y Universidad de los Andes, Facultad de Derecho, 2017): 103.
- 5 See: Daniel Santiago Acevedo Sánchez, "Tecnología, Derecho y la transformación de esta profesión: ¿por dónde empezar? (I)", *Ámbito Jurídico*, November 8th, 2018, <https://www.ambitojuridico.com/noticias/columnista-online/tic/tecnologia-derecho-y-la-transformacion-de-esta-profesion-por-donde> (In 2018 the first "legaltech" in Mexico took place, it is the first time that two full days are dedicated to the relation between technology and legal practice); Rodrigo Riquelme, "LegalTech: el valor y los retos de la tecnología en el mundo del derecho", *El Economista*, March 1st, 2019, <https://www.economista.com.mx/tecnologia/LegalTech-el-valor-y-los-retos-de-la-tecnologia-en-el-mundo-del-derecho-20190228-0148.html> (Law firms in Latin America take too much time to implement technology); *américaeconomía.com*, "Global Legal Tech Venture Day llega a México para buscar y apoyar nuevas empresas", *américaeconomía.com*, w. d., <https://mba.americaeconomia.com/articulos/notas/global-legal-tech-venture-day-llega-mexico-para-buscar-y-apoyar-nuevas-empresas> (First Global Legaltech venture day in Mexico city).
- 6 See: Marc Galanter and William D. Henderson, "The Elastic Tournament: A Second Transformation of the Big Law Firm", *Stanford Law Review* 60, n.º 6 (2008): 1869: "In total, large law firm lawyers comprised 10.5% of the U.S. legal profession. Yet this is the fastest-growing, most prosperous, and most dynamic sector of the profession. If the recent past is a reliable guide, the institution of the large law firm - its power, influence, and prestige - will once again be a dominant theme in this discussion."; Margaret Grisdel, "Overview of the U.S. Legal Market", *HG Legal Resources*, w. d., <https://www.hg.org/marketing-us-market.html>.
- 7 See: Law Geex, "LegalTech Hits \$1 Billion Investment as Lawyers Embrace Automation", *The Law Geex Blog (Blog)*, December 3rd, 2018, <https://blog.lawgeex.com/legaltech-hits-1-billion-investment-as-lawyers-embrace-automation/>; Valentin Pivovarov and Nick Dolm, "713% Growth: Legal Tech Set An Investment Record In 2018", *Forbes*, January 15th, 2019, <https://www.forbes.com/sites/valentinpivovarov/2019/01/15/legaltech-investment2018/> (2018 was a successful year for legal tech); Olubiyi, Olaniyan, and Odiaka, "The Role of Technology" (Since the 1980s, computers had a major impact on legal education and research.); "The University Map of Legal Tech: Who Teaches it in the World", *The Technolawgist*, March 18th, 2019, <http://www.thetechnolawgist.com/2019/03/18/the-university-map-of-legal-tech-who-teaches-it-in-the-world/> (Many universities in the US have projects about law and technology.). See also, for example: Pearl Goldman, "Legal Education and Technology: An Annotated Bibliography", *Law Library Journal* 93, n.º 3 (2001): 423-468; Pearl Goldman, "Legal Education and Technology II: An Annotated Bibliography", *Law Library Journal* 100, n.º 3 (2008): 415-528, for the number of articles about technology and law published mainly in United States.
- 8 See in general: Johnson, "www.lawschool.edu", 101 ("Law schools must, and will, increase the use of technology in teaching for several reasons."); Steele, "The MacCrate Report", 614 ("In fact, the legal profession and its primary engine of education, the law schools, have responded to both rapid technological change, and to the demands of society and the public in preparing lawyers to properly represent clients."); Sherwin, Feigenson, and

tools like online courses, blended courses, interactive electronic case books, online platforms to evaluate students, sharing information between students and professors, integrating computers, cell phones, or clickers in class dynamics, anti-plagiarism software, the use of videos in classes, and the use of software to measure professors' productivity and to evaluate students' perceptions of their courses, have a greater or lesser presence. Consequently, law schools are investing an increasing number of financial resources into incorporating or developing these technological innovations in their educational practices. Likewise, law schools use these technological innovations to articulate a discourse to present themselves as avant-garde educational institutions, and thus compete more effectively in the education market.⁹ The discursive or practical impact of technological innovations in legal education is so strong that law schools that do not incorporate these innovations are seen by the market (and by themselves) as obsolete institutions, institutions that have been left behind by the train of "modernity."¹⁰

Technological innovation in legal practice and in legal education has therefore generated a line of academic research seeking to describe its characteristics, evaluate its effects, criticize its limits, and offer normative horizons for its adequate implementation or development.¹¹ The purpose of this essay is to critically evaluate three of the most common arguments offered by the legal literature to explain or substantiate the reasons why technological innovation is necessary in legal education. Therefore, the article shall only address the relationship between technological innovation and legal practice as it affects the discourse or practices of law schools.

The essay is divided into three parts. In the first part, I describe three of the most frequent responses to the question of why it is necessary, important, or urgent for technological innovation to be incorporated into law schools. The first two responses are directly related to agents of the market that demand legal education: law students and law firms. On the one hand, the legal literature that addresses this issue argues that law schools must innovate in technical matters to

Spiesel, "Law in the Digital Age", 227; Olubiyi, Olaniyan, and Odiaka, "The Role of Technology" ("Technology has made significant changes to legal education and practice in various jurisdictions.")

9 See: James B. Levy, "Teaching the Digital Caveman: Rethinking the Use of Classroom Technology in Law School", *Chapman Law Review* 19, n.º 1 (2016): 251 ("...tech carries great symbolism in the public's mind and, like high fashion, 'conveys a whiff of superiority' compared to schools that do not have it."); Ari Kaplan, "Reimagining Innovation in Legal Education (Interview with Gebe Teninbaum)", *Above the Law*, January 11th, 2019, <https://abovethelaw.com/career-files/reimagining-innovation-in-legal-education/>; Willis, "8 Law Schools on Cutting".

10 See: Levy, "Teaching the Digital Caveman", 250-251 ("Administrators feel a great sense of urgency to adopt new technologies because of the public perception that if a school is not doing so, it is falling behind...").

11 See: Johnson, "www.lawschool.edu"; Stephen Johnson, "Teaching for Tomorrow: Utilizing Technology to Implement the Reforms of MacCrate, Carnegie, and Best Practices", *Nebraska Law Review* 92, n.º 1 (2013):46-85; Joni Larson, "Turning the Tables: Is It Time for Professors to Stop Fighting the Presence of Students' Technology in the Classroom and Instead Use It to Enhance Student Learning", *The Northern Kentucky Law Review* 43, (2016): 231; Levy, "Teaching the Digital Caveman"; Samantha Moppett, "Control-Alt-Incomplete? Using Technology to Assess 'Digital Natives'", *Chicago-Kent Journal of Intellectual Property* 12, n.º 1 (2013): 77-129; Kristen E. Murray, "Let Them use Laptops: Debunking the Assumptions Underlying the Debate over Laptops in the Classroom", *Oklahoma City University Law Review* 36, (2011): 185-239; Rubin, *Legal Education in the Digital Age*; Olubiyi, Olaniyan, and Odiaka, "The Role of Technology"; Pistone, "Law Schools and Technology"; Steele, "The MacCrate Report"; Sherwin, Feigenson, and Spiesel, "Law in the Digital Age"; Nikos Harris, "The Risks of Technology in the Law Classroom: Why the Next Great Development in Legal Education Might Be Going Low-Tech", *University of British Columbia Law Review* 51, n.º 3 (2018): 773.

meet the expectations and needs of the new generations of law students.¹² On the other hand, the literature argues that this aim should be achieved to meet the expectations and needs of law firms, that are the ones that hire the new law school graduates¹³. The third response indicates that technological innovation in law schools is necessary because it allows students to achieve learning objectives more effectively.¹⁴ In the second part, I offer my criticism of the first two responses, those that react to and want to meet the needs of both the market of legal services and the market of education services. This criticism is based on Heidegger's interpretation of technology. In the third part, I present my criticism of the third response, which closely connects the pedagogical aims pursued by legal education and technological innovation. In this section of the essay I argue that the third answer (i) is weakened by the naturalistic fallacy; (ii) does not empirically support its conclusions, or at least does not support them sufficiently;

-
- 12 See: Johnson, "Teaching for Tomorrow", 55 ("Since the learning styles of many of the students in Generations X and Y have been forged through technology, it would seem to be beneficial to incorporate technology more fully into law school pedagogy to fit those students' learning styles, rather than requiring students to try to modify their learning styles to fit the mold of the traditional law school pedagogy."); Moppett, "Control-Alt-Incomplete?", 102 ("The choice to use technology to assess students not only meets this expectation but also sends a message to the students that their professors are invested in their success."); Rogelio Lasso, "From the Paper Chase to the Digital Chase: Technology and the Challenge of Teaching 21st Century Law Students", *Santa Clara Law Review* 43, n.º 1 (2002): 59 (Discussing the reasons to use technology in legal education: "to better connect with students who are the product of a learning revolution, electronic technology should also be integrated into teaching in order to enhance the learning experience of students regardless of the professor's teaching methodology and the students' respective learning styles"); Larson, "Turning the Tables", 240; Pistone, "Law Schools and Technology", 591; Paul L. Caron, "Teaching with Technology in the 21st Century Law School Classroom", *The Future of Law Libraries*, (2006): <https://papers.ssrn.com/abstract=896906>.
- 13 See: Pistone, "Law Schools and Technology", 589 ("Technological innovations are also influencing the practice of law. Consequently, lawyers and law students will need to develop new skill sets in order to thrive professionally."); Jeannette Eicks, "Educating Superior Legal Professional: Successful Modern Curricula Join Law and Technology", in *Educating the Digital Lawyer*, edited by Marc Lauritsen and Oliver Goodenough (Cambridge: Harvard Law School Program on the Legal Profession, 2012), <https://papers.ssrn.com/abstract=2465977>, 6 ("Law firms need lawyers who can implement technology innovation within their firms and understand and facilitate the appropriate vendor and technology choices for law firms. A Legal Profession technology lab would produce a solid foundation for emerging lawyers while cultivating deeper discussions in other courses."); Johnson, "Teaching for Tomorrow", 60-61. See generally: Richard L. Marcus, "The Electronic Lawyer", *DePaul Law Review* 58, n.º 2 (2008): 282 (Noting that technology is creating new jobs according to the new needs and expectations of law firms.); Stephanie Kimbro, "Receiving a Digital Legal Education", *Lawyerist (Blog)*, 2010, <https://lawyerist.com/receiving-a-digital-legal-education/> ("Therefore, [education in technology] has to be something that is provided to lawyers before they dive into practice, whether private practice or within a law firm where they may be expected to follow a firm's policy for the use of the technology." [modification in original]); Martin J. Katz, "Facilitating Better Law Teaching - Now The 2012 Randolph W. Thrower Symposium: Innovation for the Modern Era: Law, Policy, and Legal Practice in a Changing World", *Emory Law Journal* 62, n.º 4 (2012): 823 ("Law graduates are ill prepared for practice.").
- 14 See: Fred Galves, "Will Video Kill the Radio Star? Visual Learning and the Use of Display Technology in the Law School Classroom", *Illinois Journal of Law, Technology & Policy*, (2004): 197-198 ("The essence of teaching is to convey information and ideas in a way that can be understood by students... Legal educators can provide information to their students in an effective and efficient manner by incorporating display technology into their lessons."); Moppett, "Control-Alt-Incomplete?", 97; Larson, "Turning the Tables", 238 ("Technology can be used in an intentional and informed manner to support and promote the expected knowledge or skills the student should gain at each level."); Debora L. Threedy and Aaron Dewald, "Re-Conceptualizing Doctrinal Teaching: Blending Online Videos with in-Class Problem-Solving", *Journal of Legal Education* 64, n.º 4 (2015): 605-621. See also: Richard Warner, Stephen D. Sowle and Will Sadler, "Teaching Law with Computers", *Rutgers Computer and Technology Law Journal* 24, (1998): 107-185 (Computers provide an effective tool for achieving pedagogical goals important for lawyers); Johnson, "Teaching for Tomorrow", 47-48.

and presents some of its empirical arguments as absolute, although there is no consensus in the scientific, legal or pedagogical communities around them; (iii) does not offer specific and detailed arguments that show how technological innovation allows us to fulfill the objectives that legal education usually pursues; and (iv) it obscures the connection between technology and power in legal education.

MARKET, PEDAGOGY, AND TECHNOLOGICAL INNOVATION

The relationships between technological innovation and legal education have become a relevant object of study for legal scholars around the world.¹⁵ The description and evaluation (typically positive) of the interactions between technological changes and law schools (their discourses and practices) have been opening spaces in global legal academia over the last decade. This literature has a significant presence in US legal academia.¹⁶ This literature, however, has reached the legal academia in other parts of the world, including Latin America and Western Europe.¹⁷ Part of this literature inquires directly about the need, urgency, or importance of technological innovations in legal education¹⁸. Another part assumes as an implicit or explicit

-
- 15 See in general: Camille Broussard, "Teaching with Technology: Is the Pedagogical Fulcrum Shifting?", *New York Law School Law Review* 53, (2009): 903-915; David M. Becker, "Some Concerns About the Future of Legal Education", *Journal of Legal Education* 51, n.º 4 (2001): 469; Caron, "Teaching with Technology"; Eric A. DeGross, "Training Tomorrow's Lawyers: What Empirical Research Can Tell us about the Effect of Law School Pedagogy on Law Student Learning Styles", *Southern Illinois University Law Journal* 36, (2011): 251-285; "Los abogados y la tecnología"; Galves, "Will Video Kill the Radio Star?"; Johnson, "www.lawschool.edu"; Johnson, "Teaching for Tomorrow"; Katz, "Facilitating Better Law Teaching"; Larson, "Turning the Tables"; Lasso, "From the Paper Chase"; Levy, "Teaching the Digital Caveman"; Murray, "Let Them use Laptops"; Moppett, "Control-Alt-Incomplete?"; Olubiyi, Olaniyan, and Odiaka, "The Role of Technology"; Pistone, "Law Schools and Technology"; Riquelme, "LegalTech"; Rubin, *Legal Education in the Digital Age*; Sherwin, Feigenson, and Spiesel, "Law in the Digital Age"; Sites, "The Influence of Algorithms"; Steele, "The MacCrate Report"; Threedy and Dewald, "Re-Conceptualizing Doctrinal Teaching"; Paul L. Caron & Rafael Gely, "Taking Back the Law School Classroom: Using Technology to Foster Active Student Learning Pedagogy", *Journal of Legal Education* 54, n.º 4 (2004): 551-569.
- 16 See generally: Broussard, "Teaching with Technology"; Becker, "Some Concerns About the Future"; Caron, "Teaching with Technology"; DeGross, "Training Tomorrow's Lawyers"; Galves, "Will Video Kill the Radio Star?"; Johnson, "www.lawschool.edu"; Johnson, "Teaching for Tomorrow"; Katz, "Facilitating Better Law Teaching"; Larson, "Turning the Tables"; Lasso, "From the Paper Chase"; Levy, "Teaching the Digital Caveman"; Murray, "Let Them use Laptops"; Moppett, "Control-Alt-Incomplete?"; Pistone, "Law Schools and Technology"; Sherwin, Feigenson, and Spiesel, "Law in the Digital Age"; Sites, "The Influence of Algorithms"; Steele, "The MacCrate Report"; Threedy and Dewald, "Re-Conceptualizing Doctrinal Teaching".
- 17 See in general: Nidia Cicero, "Innovar la enseñanza del derecho. ¿Solo se trata de tecnologías de la información y comunicación?", *Revista Pedagogía Universitaria y Didáctica del Derecho* 5, n.º 2 (2018): 91-110. <https://doi.org/10.5354/0719-5885.2018.5197>; "Educación y tecnología: de la mano", *Ámbito Jurídico*, November 11th, 2018, <https://www.ambitojuridico.com/noticias/tecnologia/educacion-y-cultura/educacion-y-tecnologia-de-la-mano> (Colombian students should start to learn about technology); Tom Latrup-Pedersen, "Trends in Legal Education in the Learning Society - The Challenge of Information Technology", *International Journal of the Legal Profession* 9, n.º 2 (2002): 165-186; Paul Maharg and Antoinette J. Muntjewerff, "Through a Screen, Darkly: Electronic Legal Education in Europe", *The Law Teacher* 36, n.º 3 (2002): 307-332; "Los abogados y la tecnología". Also in Africa, see: Olubiyi, Olaniyan, and Odiaka, "The Role of Technology".
- 18 See: Moppett, "Control-Alt-Incomplete?"; Lasso, "From the Paper Chase"; Larson, "Turning the Tables"; Pistone, "Law Schools and Technology"; Olubiyi, Olaniyan, and Odiaka, "The Role of Technology"; Johnson, "Teaching for Tomorrow".

premise the positive response that legal scholars offer to this question and choose as an object of study more specific aspects of this field, for example, strategies to implement particular technological innovations like blended courses, the use of clickers in class dynamics, or quantitative or qualitative evaluations that measure the effectiveness of technological innovations in reaching the learning objectives pursued by law schools.¹⁹ These objectives are usually related in a direct way to the students receiving and processing legal information, developing the skills necessary to act competently in the practice of law, and being aware of and applying the ethical standards of the profession to their practice.²⁰

However, the most common responses offered by the first group of legal scholars, those who seek to respond directly to the question about the need, relevance, or urgency of technological innovations for legal education, can be categorized into three groups. The first group suggests that technological innovation in legal education is necessary, important, or urgent because it is only by incorporating these creations of technology that the needs and expectations of the new generations of law students can be met.²¹ This answer entails two premises. First, it assumes that one of the central aims of law schools is to meet the needs and expectations of the agents who demand educational services. Second, it starts from some specific descriptions of these agents. The characterizations that this set of responses begins with shall determine the needs and expectations that law schools should meet.²² This literature argues that most law students belong to generations Y (millennials, born between 1980 and 1995) and Z (centennials, born between 1995 and today).²³ The literature describes these generations as “digital natives.”²⁴ For the authors, law students belonging to these generations were born and grew up with technology. Generations Y and Z would therefore made up of individuals who like technology and

-
- 19 See: William R. Slomanson, “Blended Learning: A Flipped Classroom Experiment”, *Journal of Legal Education* 64, n.º 1 (2014): 93-102; Moppett, “Control-Alt-Incomplete?”, 106-131; Catherine Easton, “An Examination of Clicker Technology Use in Legal Education”, *Journal of Information Law and Technology*, n.º 3 (2009): <https://go.gale.com/ps/i.do?id=GALE%7CA217185439&sid=googleScholar&v=2.1&it=r&linkaccess=abs&issn=13614169&p=AONE&sw=w&userGroupName=anon%7Ef774eefe>; Caron, “Teaching with Technology”; Yoany Beldarrain, “Distance Education Trends: Integrating New Technologies to Foster Student Interaction and Collaboration”, *Distance Education* 27, n.º 2 (2006): 139-153.
- 20 Johnson, “Teaching for Tomorrow”, 31 (The ten fundamental lawyering skills); Larson, “Turning the Tables”, 235-237.
- 21 See note 12. See also: Larson, “Turning the Tables”, (about Generation Y or Millennials “They are accustomed to the convenience of digital technologies, and that access has informed the educational process they expect.”)
- 22 Johnson, “Teaching for Tomorrow”, 53-55; Moppett, “Control-Alt-Incomplete?”, 98-102; Lasso, “From the Paper Chase”, at 19-22; Larson, “Turning the Tables”, 232-234.
- 23 Johnson, “Teaching for Tomorrow”, 53 (“For the next fifteen or twenty years, most law students will be members of Generation X or Generation Y”); Moppett, “Control-Alt-Incomplete?”, 98-99 (“the majority of students entering law school today are members of the Millennial Generation”). See also: Murray, “Let Them use Laptops”, 194 (“Most of today’s law students are members of Generation X and Generation Y [also known as the ‘Millennial’ generation]. Millennial students will comprise a majority of the law student population for the next fifteen to twenty years.”).
- 24 See: Moppett, “Control-Alt-Incomplete?”, 78 (“Students matriculating at law schools today are “digital natives”— “‘native speakers’ of the digital language of computers, video games and the Internet.”); Johnson, “Teaching for Tomorrow”, 54. Cf. Marc Prensky, “Digital Natives, Digital Immigrants Part 1”, *On The Horizon* 9, n.º 1 (2001): 1. (“Our students today are all ‘native speakers’ of the digital language of computers, video games and the Internet.”); Larson, “Turning the Tables”, 232 (“they grew up surrounded by technology. It has always been part of their world”).

know it well. Hence, these law students “think differently” from other generations and expect technology to be part of the learning processes that take place in law schools.²⁵

On the other hand, these generations are made up of “visual” individuals²⁶ who learn primarily through the sense of vision. In addition, they appreciate and effectively perform various tasks simultaneously (multitasking), are interested in collaborative learning, and expect to be active, not passive, agents in the learning process.²⁷ Likewise, these generations expect to be evaluated rapidly and to receive specific and prompt feedback from their professors. For the group of authors that offers this response to the question about the need for technological innovations in law schools, the expectations and characteristics of millennials and centennials can only be taken into account effectively if legal education incorporates into its teaching practices technological instruments like computers, clickers, cell phones, or digital cameras in its class dynamics, as well as different kinds of software for designing and materializing online courses, blended courses, video recording, and platforms for sharing/editing documents and evaluating students.²⁸

The second group of responses to the question about the need for technological innovation in legal education revolves around another of the central agents in the market of education services: law firms. For this group of responses, technological innovation in law schools is urgent and important because without it, it would not be possible to meet the needs and expectations of the law firms that employ the new generations of lawyers.²⁹ From this perspective, it is argued that firms contend that technology has changed the legal services market. Online lawyers, the use of software to compare and analyze large numbers of legal documents, e-discovery, platforms allowing citizens and companies to create and share legal documents, and

25 See: Lasso, “From the Paper Chase”, 19 (“Students entering law school today differ from their predecessors of twenty years ago because they are very technology savvy.”); Moppett, “Control-Alt-Incomplete?”, 100 (Digital natives “do not think and process material in the same way as members of previous generations.”). See also: Broussard, “Teaching with Technology”, 904 (“computers are not technology for these new students but instead are “hardwired into their psyche”. [Quoting Jason Frand, “The Information Age Mindset: Changes in Students and Implications for Higher Education”, in <https://er.educause.edu/-/media/files/article-downloads/erm0051.pdf>]); DeGroff, “Training Tomorrow’s Lawyers”, 251 (Noting that today’s law students “are also quite unlike previous generations with respect to the way they learn and access information”). Cf. Prensky, “Digital Natives, Digital Immigrants Part 1”, 1 (“today’s students think and process information fundamentally differently from their predecessors”).

26 Moppett, “Control-Alt-Incomplete?”, 100-101 (“Digital natives also tend to be visual and kinesthetic learners who learn better through interactive mediums”); Lasso, “From the Paper Chase”, 29 (“today’s law students tend to be visual learners”); Johnson, “Teaching for Tomorrow”, 54. See also: DeGroff, “Training Tomorrow’s Lawyers”, 252 (Noting that generations “X” and “Y” are “more likely to be visual learners”); Galves, “Will Video Kill the Radio Star?”, 198 (“Modern students are more accustomed to receiving information visually than students of the past”). Walter Benjamin was among the first to point out the primacy of vision in the modern age. See: Walter Benjamin, *Baudelaire*, edited by José Manuel Cuesta Abad, translated by Alfredo Brotons Muñoz (Madrid: Abada Editores, 2014), 70-71.

27 Moppett, “Control-Alt-Incomplete?”, 98-101; Lasso, “From the Paper Chase”, 23 (“Entering law students learn better when they receive information through a medium that is more dynamic, interactive, and creative than printed text”); Larson, “Turning the Tables”, 233; Johnson, “Teaching for Tomorrow”, 55; Beldarrain, “Distance Education Trends”.

28 *Supra* note 12; Slomanson, “Blended Learning”; Beldarrain, “Distance Education Trends”.

29 *Supra* note 13.

the use of large databases to make legal decisions, among other technological tools, have transformed the practice of law.³⁰

Consequently, it is argued by the authors who offer this second response, law firms require law schools to train the new generations of lawyers in a way that meets the needs and expectations arising from this new legal reality. Recent graduates of law schools should therefore be familiar with the new technological tools that are used in the legal services market and should have the ability to contribute to the development or improvement of some of these technologies; only lawyers who can use these tools will survive in a legal market that tends to reduce job opportunities as a consequence of the omnipresence of these technological innovations.³¹ The work performed by dozens of young lawyers at law firms over several days or weeks can now be done in minutes or hours by computers. Likewise, clients have different expectations of the services law firms provide: clients are no longer willing to subsidize the practical training of young lawyers and expect to pay less for the firm's services because they can be done more effectively with the new technological tools available at the legal market.³² Law schools should therefore offer more courses on how to use new legal technologies, and more courses for students to participate in the processes of creating these tools, for example, those in which law students are taught to code.³³ Likewise, other types of courses like theoretical courses

-
- 30 See in general: John O. McGinnis and Russell G. Pearce, "The Great Disruption: How Machine Intelligence Will Transform the Role of Lawyers in the Delivery of Legal Services Colloquium: The Legal Profession's Monopoly on the Practice of Law", *Fordham Law Review* 82, n.º 6 (2013): 3043; Marcus, "The Electronic Lawyer", 264 ("It is certainly tempting to say that electronic technology is a prime cause-or at least a critical facilitator-of the role of the lawyer today."); USC Gould School of Law, "The Rise of Virtual Law Practices"; Sherwin, Feigenson, and Spiesel, "Law in the Digital Age", 227; Jeffrey Allen, "Technology for the Mobile Lawyer in All of Us", *GPSolo* 29, n.º 6 (2012): 4-5 ("Lawyers must employ technology to function successfully in today's world"); Pistone, "Law Schools and Technology", 589-591.
- 31 See: Pistone, "Law Schools and Technology", 589 ("Technological innovations are also influencing the practice of law. Consequently, lawyers and law students will need to develop new skill sets in order to thrive professionally. Unfortunately, corporate clients are finding that many lawyers, including recent graduates, lack skills in the more sophisticated uses of technology for lawyering and law practice."); Kimbro, "Receiving a Digital Legal Education" ("Avoiding the use of technology in practice management is not a realistic option anymore."); Kristin B. Gerdy, Jane H. Wise, and Alison Craig, "Expanding Our Classroom Walls: Enhancing Teaching and Learning through Technology", *Legal Writing* 11 (2005): 263 ("The nature of law practice is becoming increasingly technical"); Moppett, "Control-Alt-Incomplete?", 103.
- 32 See in general: Patrick J. Schiltz, "On Being a Happy, Healthy, and Ethical Member of an Unhappy, Unhealthy, and Unethical Profession Symposium: Attorney Well-Being in Large Firms: Choices Facing Young Lawyers", *Vanderbilt Law Review* 52, n.º 4 (1999): 899-900 ("The market for lawyers' services has become intensely competitive... Clients insist on getting good work at low hourly rates. They also insist that lawyers minimize the amount of time that they devote to each file to hold down costs." [footnotes omitted]); The Irish Times Content Studio, "Technology Drives Change and Creates New Solutions for Legal Clients", *The Irish Times*, January 31st, 2019, <https://www.irishtimes.com/special-reports/innovation-in-law/technology-drives-change-and-creates-new-solutions-for-legal-clients-1.3769572> ("clients are demanding more with less" [Quoting David Halliwell]).
- 33 See: Harvard Law School, "Programming for Lawyers", *Harvard Law School*, last modification 2017, access August 11th, 2019, <https://hls.harvard.edu/academics/curriculum/catalog/default.aspx?o=71516>; Yenéé Saw, "Putting technology in its Place: Are Law Schools the Right Place to Teach Coding?", *Thompson Reuters Legal Insight*, July 12th, 2017, <http://insight.thomsonreuters.com.au/posts/law-schools-teach-coding> ("Coding courses will equip law students with the technical skills of programming and designing information legal systems"); Steve Lohr, "Where Non-Techies Can Get with the Programming", *The New York Times*, April 4th, 2017, <https://www.nytimes.com/2017/04/04/education/edlife/where-non-techies-computer-programming-coding>.

(philosophy of law or political philosophy, for example) or interdisciplinary courses (sociology of law, psychoanalysis and law, legal anthropology, for example) should disappear or lose weight in law schools' curricula.³⁴ It is argued that these courses are not useful or are only marginally useful for their professional practice.

The third group of responses to the question about the need for technological innovation in law schools indicates that technology allows to achieve more effectively the learning objectives pursued by law schools.³⁵ In these institutions, it is widely accepted that these aims revolve around the following three pillars: information, professional skills, and ethical competence.³⁶ Law students should familiarize themselves with and understand the basic contents of the primary areas that constitute the legal order. Likewise, students should develop the skills to adequately use legal materials and to perform the tasks required to competently provide the services their clients need, such as witness interviewing skills, skills for teamwork, and the ability to draft different kinds of legal documents like memos, lawsuits, and contracts. Finally, law students must learn, internalize, and apply the ethical standards that regulate the profession. They should be able to identify conflicts or ethical dilemmas that will inevitably arise in their practice and should have the knowledge and tools to solve them in accordance with the criteria accepted by the legal community the students belong to.

The authors who present this third group of responses argue that technology furthers the effective attainment of these three objectives.³⁷ For example, online or blended courses allow students and professors to devote more time to the development of skills than to the description and repetition of contents. The use of computers, cell phones, videos, and clickers in class allow students to be motivated, attentive, and focused in class, which contributes to them being better able to process the information discussed or develop the skills that are needed to adequately use this information. The use of interactive electronic case books, to continue with the examples, allows students to play a more active role in the learning processes, and the use

html.2019 See generally: Paul Ohm, "Computer Programming and the Law: A New Research Agenda", *Villanova Law Review* 54, (2009): 117-132; Jason Morris, "How Programming Can Make the Law More Accessible", Tedx Talks (YouTube video, May 8th, 2018), <https://www.youtube.com/watch?v=d5Mt-Q9K7tU> (last visited Aug 11th, 2019).

34 See: James E. Wallace, "Philosophy and the Future Law School Curriculum", *Denver Law Journal* 44, n.º 5 (1967): 30 ("the increasing pressure for specialized training to equip lawmen for the tasks which they are called to fulfill" [is excluding philosophy of law from law school curricula]; Jan R. Sieckmann, "La Sociología del Derecho en la formación jurídica", *Academia. Revista sobre Enseñanza del Derecho*, n.º 12 (2008): 117-133 (on the marginalization of the theoretical disciplines as legal sociology from law school curricula, especially in Germany).

35 *Supra* note 14.

36 Larson, "Turning the Tables", 235-237; American Bar Association [ABA], "Report and Recommendations American Bar Association Task Force on The Future of Legal Education" (report, 2014), https://www.americanbar.org/content/dam/aba/administrative/professional_responsibility/report_and_recommendations_of_aba_task_force.pdf. McGinnis and Pearce, "The Great Disruption", 3043 (describing "five areas in which machine intelligence will provide services or factors of production currently provided by lawyers: discovery, legal search, document generation, brief generation, and prediction of case outcomes.").

37 See: Larson, "Turning the Tables", 238: ("Technology fits into the taxonomy as a tool to be used to help students achieve a higher level. Technology can be used in an intentional and informed manner to support and promote the expected knowledge or skills the student should gain at each level"). Slomanson, "Blended Learning"; Beldarrain, "Distance Education Trends".

of online platforms lets them develop skills for working as part of a team. These platforms facilitate the work of different people to achieve common aims like drafting the documents necessary to meet their clients' needs, the articulation of litigation strategies, or the formulation of policies for searching for new clients or preserving the ones they already have.

TECHNOLOGY AS A FORM OF BEING IN THE WORLD: A CRITICISM OF TECHNOLOGY IN LEGAL EDUCATION BASED ON HEIDEGGER

The first two groups of responses are based on an interpretation of lawyers, professional practice, and legal education supported on an interpretation of technology as a mode of revealing, a way of being in the world.³⁸ According to this interpretation, technology is not a means to achieve a particular purpose. Nor does this perspective on technology describe, analyze, or evaluate a specific technological tool, for example, the internet, a particular software, or a specific application. Rather, technology is understood as the horizon of perspectives within which we are immersed. Technology is interpreted as "enframing,"³⁹ as the constellation of intelligibility that gives meaning to being in late modernity.⁴⁰ Technology is the framework from which we interpret the world and human beings. Technology is the mechanism, the fabric of meaning, through which one accounts for the world, for what happens, in late modern age.

Following this Heideggerian interpretation of technology, this horizon of perspectives is the last moment in the genealogy of Western metaphysics.⁴¹ This enframing emerges with Nietzsche,

38 See in general: Martin Heidegger, "The Question Concerning Technology", in *The Question Concerning Technology and Other Essays*, translated by William Lovitt (New York: Harper Torchbooks, 1977), 13 ("Technology is a mode of revealing. Technology comes to presence [in the West] in the realm where revealing and unconcealment take place, where aletheia, truth, happens."). See also: Iain D. Thomson, *Heidegger on Ontotheology: Technology and the Politics of Education* (Cambridge: Cambridge University Press, 2005), 53 ("Indeed, once we conceive of 'essence' as a verb rather than a noun, we can see that 'the essence of technology' denotes the way technological entities tend to 'come to presence' or happen for us."); Hubert Dreyfus, "Heidegger on the Connection between Nihilism, Art, Technology and Politics", in *The Cambridge Companion to Heidegger*, edited by Charles B. Guignon, 2nd ed. (Cambridge: Cambridge University Press, 2006) 345, 357 (Explaining technology as a nihilistic cultural paradigm).

39 Heidegger uses the German word *Gestell*. About the meaning of *Gestell* for Heidegger, see: Heidegger, "The Question Concerning Technology", 24 ("Enframing is the gathering together that belongs to that setting-upon which sets upon man and puts him in position to reveal the real, in the mode of ordering, as standing-reserve."); *Ibid*, 9 ("We now name that challenging claim which gathers man thither to order the self-revealing as standing-reserve: "Ge-stell" [Enframing]"); George Steiner, *Martin Heidegger*, 4th ed. (New York: Open Road Media, 2013), 211-212; Thomson, *Heidegger on Ontotheology*, 53.

40 See: Heidegger, "The Question Concerning Technology", 33 ("The question concerning technology is the question concerning the constellation in which revealing and concealing, in which the coming to presence of truth, comes to pass."). See also: Thomson, *Heidegger on Ontotheology*, 53 ("In other words, the referent of Heidegger's phrase 'the essence of technology' is our current constellation of historical intelligibility, 'enframing' [das Gestell], an historical 'mode of revealing' in which things increasingly show up only as resources to be optimized."); Dreyfus, "Heidegger on the Connection" (Technology as a cultural paradigm that embodies and furthers our technological understanding of being, according to which we understand what it is to be a person, a thing, a natural object, a plant, an animal, and so on.).

41 See: Heidegger, "The Question Concerning Technology", 11, Thomson, *Heidegger on Ontotheology*, 8-9, (The epochs in Western metaphysics are the pre-Socratic, the ancient, the medieval, the modern, and, now, the late modern).

although Nietzsche radically questions the West's metaphysical tradition and seeks to separate himself from it.⁴² In Heidegger's interpretation, Nietzsche unintentionally constructs a metaphysics that serves as a basis for the interpretation that late Western modernity has of being, of *what* and *how* being is. This enframing has the concepts of the will to power and the eternal return as fundamental pillars.⁴³ In Heidegger's interpretation, for Nietzsche being is an infinite aggregation and disaggregation of forces that do not pursue any purpose other than their own incrementation. Therefore, being is understood as a resource⁴⁴ that can be ordered, classified, and optimized so that it can be used effectively.⁴⁵ Being does not have intrinsic meaning. God has died; there is no longer an accepted tradition that can give content to being; Nihilism is the starting position of late modernity. In this mode of revealing, being is always understood as a reserve of productive energy that can and should be used in a flexible and effective manner. Thus, in Heidegger's interpretation, technology as enframing is a way of rendering the occult visible, a way to reveal being.

The first two responses to the question about the need for technology in legal education are based on this enframing. In them, law students and professors, as well as legal education, are interpreted as resources for meeting the needs of the legal services market and the education services' market. Law professors and legal education are resources to meet the needs and expectations of both law students and law firms. Likewise, students are understood as reserves of energy at the service of the needs and expectations of the legal services market. In these two responses, the specific technological tools that are promoted are useful because they allow for implementing the process of classification and optimization of the resources of energy that students and professors of law are. These technological instruments materialize the enframing that dominates late modernity. Courses on coding, classes that teach students to use the tools for e-discovery or to compare and analyze large numbers of legal documents, clickers, and videos, among other particular technological tools that are promoted in contemporary legal education, optimize the reserves of energy that law students are. Through the use of these technologies, law students shall be more effective forces in the legal services market, will be able to more accurately and quickly meet the needs and requirements of the agents that supply and demand legal services. Likewise, these technological tools (their development, promotion, and use) interpret law professors as reserves of energy that can be optimized. Professors are resources that have the objective of optimizing other reserves of energy, law students, in order to serve the legal services market effectively.

42 See: Thomson, *Heidegger on Ontotheology*, 44. ("Heidegger holds Nietzsche's 'unthought' metaphysics responsible for our nihilistic 'technological' understanding of the being of entities and its devastating historical consequences."). *Ibid.*, 148.

43 See: Thomson, *Heidegger on Ontotheology*, 21, 148.

44 Heidegger uses the German word *Bestand*. About the meaning of *Bestand* for Heidegger see in general: Heidegger, "The Question Concerning Technology", 17 (Explaining what implies to be *Bestand*: "Everywhere everything is ordered to stand by, to be immediately at hand, indeed to stand there just so that it may be on call for a further ordering. Whatever is ordered about in this way has its own standing. We call it the standing-reserve [*Bestand*]"); Thomson, *Heidegger on Ontotheology*, 44 (*Bestand* as "'resources' standing by to be optimized, ordered, and enhanced with maximal efficiency.>").

45 See: Heidegger, "The Question Concerning Technology", 16 (Exemplifying what implies to be a resource: "the energy concealed in nature is unlocked, what is unlocked is transformed, what is transformed is stored up, what is stored up is, in turn, distributed, and what is distributed is switched about ever anew.>").

The argument I offer is not that, in the two responses examined in this section, students, professors, and legal education are valued only as an instrument of capitalism; nor is it a criticism of the commercialization of legal education. The argument I present is simultaneously more specific and more general: the two responses are based on a problematic form of interpreting human beings and the world they inhabit supported by the technological horizon of perspectives that constitutes the current stage of the history of Western metaphysics. This technological interpretation of being cuts through the capitalist forms of understanding the economy. Nevertheless, it goes much further; this contingent mode of revealing being permeates the interpretation we have of ourselves and of the world around us. As human beings, we construct all the dimensions that constitute us and that constitute the world we inhabit through this enframing.⁴⁶

This enframing is also naturalized.⁴⁷ This is its greatest success. Despite its contingent character, the enframing is presented as the only possible horizon of perspectives. In the case of the interpretation of legal education promoted by the first two responses, the view that is based on the technological mode of revealing is presented as the only interpretation possible, as the only one that is reasonable, as the only one that can effectively meet our commitment to the idea that human beings and the world that surrounds us are forces, energy, resources that exist to be ordered and optimized. Legal education is therefore radically professionalized;⁴⁸ it is understood as a means for quantifying the qualitative relationships that exist between law professors, students, and law firm lawyers.⁴⁹ All agents involved in legal education are understood as energy that should be improved through specific technological tools for the market of legal services to be more efficient in a process that has only its infinite reproduction as objective.

-
- 46 See: Heidegger, "The Question Concerning Technology", 24 ("The essence of modern technology starts man upon the way of that revealing through which the real everywhere, more or less distinctly, becomes standing-reserve."). See also: Thomson, *Heidegger on Ontotheology*, 148 ("Our unthinking reliance on Nietzsche's ontotheology is leading us to transform all beings, ourselves included, into mere 'resources' [Bestand], entities lacking intrinsic meaning that are thus relentlessly optimized and ordered with maximal efficiency so as to serve the purely instrumental interests of flexible use"); David I. Waddington, "A Field Guide to Heidegger: Understanding 'The Question Concerning Technology'", *Educational Philosophy and Theory* 37, n.º 4 (2005): 569 (Technology "changes the way we see the world"); Hubert Dreyfus, "Heidegger on Gaining a Free Relation to Technology", in *Readings in the Philosophy of Technology*, edited by David M. Kaplan, 2nd. ed. (Lanham: Rowman & Littlefield Publishers, 2009), 27-28 (Everything becomes a resource that can be used and enhanced).
- 47 See: Heidegger, "The Question Concerning Technology", 28 ("The rule of Enframing threatens man with the possibility that it could be denied to him to enter into a more original revealing and hence to experience the call of a more primal truth."). See also: Waddington, "A Field Guide to Heidegger", 569 ("Heidegger thinks that our default state is that of being trapped by Ge-stell"); Michael Bonnett, "Education in a Destitute Time", *Journal of Philosophy of Education* 17, n.º 1 (1983): 22 ("The technological mode of revealing is aggressive in the sense that it involves us in the world in a way such that we increasingly come to perceive the world and ourselves exclusively from its standpoint, covering over and subverting other ways of understanding and perceiving.").
- 48 See: Thomson, *Heidegger on Ontotheology*, 142 (Explaining professionalization as the result of the technological understanding of being).
- 49 Cf. Heidegger, "The Question Concerning Technology", 21 (Explaining the way Being is quantified in the case of nature: "Accordingly, man's ordering attitude and behavior display themselves first in the rise of modern physics as an exact science. Modern science's way of representing pursues and entraps nature as a calculable coherence of forces"). See: Thomson, *Heidegger on Ontotheology*, 158 (Explaining quantification in education: "This ontohistorical development explains the increasingly ubiquitous quantification of education, which preconceives of students as Bestand, not as human beings with intrinsic talents and capacities to be identified and cultivated, but rather as educational 'outcomes' to be 'optimized' in uniformly quantifiable terms").

These two “technological” responses do not allow us to see that legal education can be interpreted differently, although changing the technological interpretation requires a change in the horizon of technological perspectives that we are immersed in. Technological legal education obscures the fact that legal education can be a poietic process that does not make the agents and relationship that constitute them one-dimensional (energy to be optimized.)⁵⁰ This poietic process does not aim at quantifying and optimizing quality relationships between students, professors, and practicing lawyers. Rather, it aims at constructing a bidirectional learning process⁵¹ that recognizes and understands the dominant enframing in late modernity and the “technologization” of the law this enframing generates. Likewise, it would involve a bidirectional learning process that clarifies and questions the one-dimensional nature of the lawyer generated by the technological constellation of intelligibility. It would also be a poietic process that questions the radical professionalization and hyper-specialization aimed at the market that technology as a mode of revealing generates.

Finally, it would be a mutually creative learning process that seeks to reveal the possible meanings of lawyering and lawyer; to reveal their contents. This revealing is not an unveiling of the essence of lawyering, of an absolute meaning of the lawyer. Rather, it is the construction of the lawyer as an individual that can and should incarnate the historical normative perspectives that give meaning to the legal professional. The new generations of lawyers must have the ability to serve their clients competently and effectively, of course. Likewise, they must be able to obtain and preserve jobs in the legal services market. However, lawyers should not be understood as professionals who only have contractual relationships with their clients and employers, relationships whose only objective is meeting the needs and expectations of these groups of individuals or institutions. Legal education as a poietic process must have the capacity to reveal the possibilities and capabilities of lawyers with respect to the society and the natural world they inhabit. This poietic legal education must inquire about and promote forms of understanding legal discourse and practices for understanding the role lawyers should play, for example, the role they should play regarding the rule of law, the recognition and protection of nature, the enforcement of the rights of the poor, and the development of critical thought.

Specific technological tools can play a role in this poietic process; they can play a role in the learning process. Nevertheless, the use they are given will depend on an accurate and critical reflection on the academic objectives that these technological tools can help to achieve. These objectives must also include a non-technological interpretation of the lawyer; an interpretation that gives the lawyer meaning but not in the abstract, as energy or resource, but in context; an interpretation that does not miss the natural and social space where the lawyer dwells. This lawyer is also understood qualitatively, as full of content based on the normative meanings that have been historically constructed about the profession. Therefore, the criticism of technology as enframing from which the lawyer and legal education are interpreted does not involve an absolute rejection of technology.⁵² Technology has various dimensions that must

50 See: Heidegger, “The Question Concerning Technology”, 10 (About the meaning of poiesis [ποίησις] for Heidegger).

51 See: Heidegger, “The Question Concerning Technology”, 5-6.

52 See: Heidegger, “The Question Concerning Technology”, 14 (“The threat to man does not come in the first instance from the potentially lethal machines and apparatus of technology. The actual threat has already affected man in his essence. The rule of Enframing threatens man with the possibility that it could be denied to him

be appropriately described and evaluated. Nevertheless, technology in legal education must be interpreted from a non-technological horizon of perspectives. Consequently, it should be recognized as only one of the possible ways in which the *what* and the *how* of being in the world should be interpreted; its contingent and partial nature as a mode of revealing being should be recognized.⁵³ The Heideggerian critique of technology may (and should) be understood as a critique that does not make technology one-dimensional, that does not involve taking or leaving it as a whole. In late modernity, technology is inevitable and can be valuable in some contexts.

Technology may have virtuous and vicious uses at the same time. The role it plays in human life depends on the horizon of perspectives from which it is interpreted and implemented. Technology can certainly occupy a space in legal education. Nevertheless, it is a limited space that does not change the playing field, as the authors who defend the two technological responses to the question about the need for technology in legal education implicitly or explicitly believe. Legal education with or without technology. It can also be bad with or without technology. The faith that technology will change legal education that seems to be behind these responses does not seem to have a basis. This faith is not capable of recognizing the ambiguous character of technology, or the profound difficulties generated by the technological framework of meanings that supports it.

The Heideggerian critique of technology should also be interpreted as one that recognizes the historical nature of the dominant technological mode of revealing being in late modernity.⁵⁴ Technology should not be interpreted, based on Heidegger, as an essence, as an absolute, as a reality constituted by invariable components that exist from the start of humanity. This enframing emerges paradigmatically in the 19th century with the work of Nietzsche and is developed in the work of multiple other theorists who interpret and apply it in the 20th and 21st centuries. Technology is another stage in the genealogy of Western metaphysics; a stage that, according to Heidegger, is simultaneously differentiated from and connected to the Pre-Socratic, Ancient, Medieval, and Early Modernity modes of revealing being.⁵⁵ All of these stages ask about being's *why* and *how*; all of these responses offer answers that simultaneously specify that which constitutes being and the forms of being from which all other forms of being in the world arise.⁵⁶

to enter into a more original revealing and hence to experience the call of a more primal truth. Thus, where Enframing reigns, there is danger in the highest sense. But where danger is, grows the saving power also.") This approach is called one-dimensionalism, it implies the acceptance or rejection of technology as a whole. See: Andrew Feenberg, *Questioning Technology* (New York: Routledge, 1999); Andrew Feenberg, "Constructivism and Technology Critique: Replies to Critics", *Inquiry* 43, n.º 2 (2000): 225-237; Andrew Feenberg, "The Ontic and the Ontological in Heidegger's Philosophy of Technology: Response to Thomson", *Inquiry* 43, n.º 4 (2000): 445-450. See also: Thomson, *Heidegger on Ontotheology*, 51 (About one-dimensionalism: "one-dimensional technological essentialists must either reject or embrace technology wholecloth.").

53 See: Thomson, *Heidegger on Ontotheology*, 68-76 (About Heidegger's position against one-dimensionalism: "he does not philosophically advocate any monolithic rejection of technology").

54 See: Feenberg, *Questioning Technology*, 15 (About ahistoricism: "it interprets a historically specific phenomenon in terms of a transhistorical conceptual construction."). See also: Thomson, *Heidegger on Ontotheology*, 49 ("in an attempt to 'fix the historical flux [of technology] in a singular essence,' ahistorical essentialists abstract their understandings of the essence of technology from the 'socially and historically specific context' in which particular technologies are always embedded.").

55 See: *Supra* note 41.

56 See: Iain Thomson, "Ontotheology? Understanding Heidegger's Destruktion of Metaphysics," *International Journal of Philosophical Studies* 8, n.º 3 (2000): 298 ("Heidegger's claim is that by giving shape to our historical

However, all these stages offer contingent answers to these questions. The proximity we have to the technological constellation of intelligibility does not usually allow us to recognize or understand it. The omnipresence and closeness of this technological constellation of intelligibility makes us interpret it as an act of nature. Consequently, technological legal education should not be understood as the only possible form or as the only plausible form of interpreting legal education. It should be understood as an interpretation resulting from the dominant interpretation of human beings and the world they inhabit as reserve of energy, as an abstract reserve directed at achieving a given aim. Meeting the needs and expectations of the legal services' market; making law students and professors optimal resources to do so more efficiently, is only one of the many possible forms of understanding legal education.

Finally, technology as enframing should not be understood as an entity that exists outside human beings, that controls human beings, and in the face of which nothing can be done other than accepting it.⁵⁷ Inasmuch as it is the mode of revealing being of late modernity, technology constitutes us. We interpret ourselves and we interpret the world we inhabit through its web of meanings. Changing this enframing is not easy; it involves work and long-term collective theoretical and practical efforts. Nevertheless, we are not destined to technology as a mode of revealing being; it is not human destiny. There is no radical fatalism in this interpretation of technology. Technology is not an external agent that exists by itself and for itself. It is a powerful but contingent metaphysical apparatus articulated by human beings.⁵⁸ Therefore, technological legal education is not the only fate of legal education, either. Nonetheless, this form of interpreting legal education has a high degree of stability. Constellations of intelligibility are not transformed from one day to the next. The processes and entities based on them are therefore also persistent and enduring. However, it is possible to oppose the idea that law students and professors are only energy without meaning that can be optimized and used efficiently, in the case of technological legal education, to meet the needs and expectations of the legal services market or education services' market.⁵⁹

understanding of 'what is', metaphysics determines the most basic presuppositions of what anything is, including ourselves. 'Western humanity, in all its comportment toward beings, and even toward itself, is in every respect sustained and guided by metaphysics'").

57 This approach is called substantivism (fatalism). See: Feenberg, *Questioning Technology*, vii (About substantivism: "all agreed that technology was an autonomous force separate from society, a kind of second nature impinging on social life from the alien realm of reason"). See also: Thomson, *Heidegger on Ontotheology*, 49 ("For the substantivist, the essence of technology seems to be shaping history from outside, imposing itself as though from some metaphysical beyond that entirely escapes human control.").

58 See: Thomson, *Heidegger on Ontotheology*, 61-68.

59 See: Bonnett, "Education in a Destitute Time"; Thomson, *Heidegger on Ontotheology*; Patrick Fitzsimons, "Enframing Education", in *Heidegger, Education, and Modernity*, edited by Michael Peters (London: Rowman & Littlefield Publishers, 2010); Bert Lambeir, "Comfortably Numb in the Digital Era: Man's Being as Standing-Reserve or Dwelling Silently", in *Heidegger, Education, and Modernity*, edited by Michael Peters (London: Rowman & Littlefield Publishers, 2010) and Paul Standish, "Only Connect: Computer Literacy from Heidegger to Cyberfeminism", *Educational Theory* 49, n.º 4 (1999): 417-435, for a critical discussion of technology and education.

TECHNOLOGY AND LEARNING IN LEGAL EDUCATION

The third response the legal literature offers to the question about the need, relevance, or urgency of technological innovation in legal education has the following four weaknesses. These weaknesses intersect; they are jointly articulated and undermined. They are also closely tied to the weaknesses afflicting the first two responses. Nevertheless, they also have some features of their own. The first weakness is that this third response derives the “ought” from the “is”. The normative arguments it defends are derived from the descriptive arguments it offers, without any further reason that would allow for establishing why what “is” also “should be”, that is, it incurs in the naturalistic fallacy.⁶⁰ This third response is based on the following three arguments: on the one hand, on a description of millennials and centennials, who make up the most part of contemporary law students, and on a description of the contemporary legal services market; on the other, on a normative argument unjustifiably derived from the previous dual descriptive argument: legal education must be at the service of the needs and expectations of law students and the needs and expectations of the agents who hire these millennials and centennials when they graduate from law schools. Finally, it is argued that technological innovations are an inescapable tool for achieving the objectives that legal education should pursue. The naturalistic fallacy appears in the transit from the first to the second argument. From the fact that law students and the legal services market have certain characteristics, it cannot be derived, without further argument, that legal education should have the objective of satisfying the needs and expectations that arise from these characteristics. Nor can the assertion that technology should be how such needs and expectations are met be derived either. This last argument, however, will be analyzed below.

The following two examples can illustrate and strengthen this first criticism. The authors who offer this third response describe millennials and centennials as individuals who are characterized by having the ability to perform various tasks simultaneously (multitasking).⁶¹ At the same time, these authors indicate that law students who belong to these generations positively evaluate this skill to advance several undertakings at the same time.⁶² These authors argue that,

60 Max Black, “The Gap Between ‘Is’ and ‘Should’”, *The Philosophical Review* 73, n.º 2 (1964): 165-181. <https://doi.org/10.2307/2183334>; Stephen Priest, *The British Empiricists*, 2nd ed. (New York: Routledge, 2007), 177-178. Initially formulated by David Hume, “Treatise of Human Nature”, in *The Philosophical Works of David Hume*, Book III, Part I, Section I, vol. 2 (Edinburgh: Adam Black and William Tait, 1826), 245-246: “[in] all moral systems I have come across for some time, I have noticed that the author makes use of the ordinary way of reasoning, starting from God or making a series of observations concerning human issues; when, suddenly, I am surprised by the fact that the copula usually employed in propositions ‘is’ or ‘is not’, is replaced in all the phrases for ‘should’ or ‘should not’. The change is quite small, but it has a huge transcendence. This ‘should’ or ‘should not’ expresses a new relation or affirmation, that is why it is necessary to expose this fact and explain it. At the same time, what seems inconceivable must be justified: that this new relation is deduced from others that are completely different.”; interpreted by Carlos-Ignacio Massini Correias, *Filosofía del derecho I. El derecho y los derechos humanos* (Buenos Aires: Abeledo Perrot, 1994), 114: (“from a series of affirmations about how things are, meaning, prescriptive or speculative propositions, an asseveration on how men should behave, meaning a practical proposition, cannot be inferred – Hume says ‘deducted’ -”).

61 Johnson, “Teaching for Tomorrow”, 55 (“these generations are rabid multitaskers, even in the classroom”).

62 Daniel J. Levitin, *The Organized Mind: Thinking straight in the age of information overload* (New York: Dutton, 2014), 306 (cognitive illusion, fueled by a dopamine-adrenaline feedback loop, makes multitaskers think they are doing much better than they actually are); Mary L. Courage et al., “Growing Up Multitasking: The Costs

as a result, law schools and law professors should include teaching practices allowing students to use this capacity in their learning processes.⁶³ They also contend that technology would be the best means for achieving this objective.⁶⁴ Law professors should then incorporate, for example, the use of computers, cell phones, and clickers in their classes, technological tools that facilitate the performance of various tasks simultaneously. Likewise, law professors should recognize the value of this practice that many of them are unfamiliar with and be patient with it; otherwise, they would not perform efficiently, because they belong to a generation different from that of their students.

The normative argument offered in this example (promoting multitasking in teaching practices) is derived from the fact that law students are familiar with and good at doing this kind of work. Nevertheless, the reason why doing various tasks simultaneously is good from an academic point of view is not justified. On the one hand, to be precise, what is described as multitasking is really the sequential and partial performance of several different tasks. It is one thing, to use a colloquial example, to walk and listen to music, which can effectively be done simultaneously; it is another thing to read or answer some emails, then attend to the discussion in class, subsequently answer a text message, review the news updates on a website, and finally take some notes about what the professor said. In this case, there is no simultaneity in performing the tasks. On the other hand, this jump from “is” to “ought” ignores the studies that show that multitasking is a remarkably inefficient practice that reduces the levels of concentration necessary to perform complex and long-term tasks, like many of the tasks lawyers must perform in their professional practice.⁶⁵ It could be that there are other arguments that support

and Benefits for Cognitive Development”, *Developmental Review* 35, n.º 4 (2015): 6 (“Multitasking promotes mental flexibility that can actually change the manner in which we learn and retain information, especially among children and youth whose neural plasticity is relatively high”); Kelvin F. H. Lui and Alan C.-N. Wong, “Does Media Multitasking Always Hurt? A Positive Correlation between Multitasking and Multisensory Integration”, *Psychonomic Bulletin and Review* 19, n.º 4 (2012): 647 (“A higher degree of media multitasking was correlated with better multisensory integration.”). Diane J. Skiba, Amy J. Barton, “Adapting Your Teaching to Accommodate the Net Generation of Learners”, *The Online Journal of Issues in Nursing* 11, n.º 2 (2006), ([The Net Generation – or new generations - has a preference] “for digital literacy, experiential learning, interactivity, and immediacy”). Lindsey Farrell and Andrew C. Hurt, “Training the Millennial Generation: Implications for Organizational Climate”, *Journal of Organizational Learning and Leadership* 12, n.º 1 (2014): 47-60, (about the millennial generation preference for workplace environments that favor their multitasking skills).

63 David Glenn, “Divided Attention”, *The Chronicle of Higher Education*, February 28th, 2010, <http://chronicle.com/article/Scholars-Turn-Their-Attention/63746/> (some professors argue we should accommodate multitasking behaviors in learning practices because “[o]ne of the basic tenets of good teaching is that you have to start where the students are”).

64 See: Murray, “Let Them Use Laptops”, 185 (employing survey data and educational research to lay bare the major laptop myths). See also: Slomanson, “Blended Learning”.

65 See: “Interview Clifford Nass”, *Frontline*, February 2nd, 2010, <https://www.pbs.org/wgbh/pages/frontline/digitalnation/interviews/nass.html> (“It turns out multitaskers are terrible at every aspect of multitasking. They’re terrible at ignoring irrelevant information; they’re terrible at keeping information in their head nicely and neatly organized; and they’re terrible at switching from one task to another.”); Jennifer Lee, Lin Lin, and Tip Robertson, “The Impact of Media Multitasking on Learning”, *Learning Media and Technology*, n.º 1 (2012): 94-104 (“Multitasking interferes with knowledge acquisition. It generates extraneous cognitive load that burdens the working memory. Students perform better when they focus on one task at a time especially when they are learning new materials inside and outside the classroom”). See also: M. H. Sam Jacobson, “Paying Attention or Fatally Distracted: Concentration, Memory, and Multi-Tasking in a Multi-Media World”, *Journal of Legal Writing Institute* 16, (2010): 419.

the idea that multitasking is a type of practice that should be promoted by law schools. Nevertheless, this type of argument does not appear as part of the third response to the question about the need for technology in legal education. Nor does this response include the studies that negatively evaluate the practice or offer the counterarguments that would respond to the objections that those studies present to the sequential and partial performance of several tasks by students.

The second example is related to the visual nature of millennials and centennials. The third response argues that these generations of law students learn primarily through vision.⁶⁶ In addition, they are used to visual materials like videos, films, and news clips. Therefore, law schools should promote and privilege the use of audiovisual materials in classes.⁶⁷ I believe that it would be difficult to argue that as law professors we should not include as many didactic materials as possible, audiovisual materials included, if they help to achieve the learning objectives we pursue in our classes. Nevertheless, in this case, the arguments seem to lose sight of several important elements.

First, reading is also a visual activity, and it is a central element in the practice of any legal professional. One of the lawyers' central tasks is reading statutes, opinions, memos, claims, etc. It is therefore not clear why law schools should promote and privilege the use of audiovisual materials in classes solely because law students are used to and like audiovisual materials. The only or central argument offered by response three is that law schools should meet the expectations or needs generated by the characteristics that define the students' identities. This is a clear example, I believe, of the naturalistic fallacy.

Nevertheless, it could be said that what these authors are really trying to argue is that law professors should reduce the number of reading assignments and increase the number of audiovisual materials in their classes. However, the literature that offers response three does not usually present precise arguments that state what the ideal balance between reading assignments and audiovisual materials should be, and how this would be supported in pedagogical terms. Response three remains silent in the face of questions that should be addressed, like the following: What are the learning objectives that audiovisual materials help achieve and what are the objectives that would not be attainable using these materials? If both audiovisuals and readings are materials that are perceived by means of vision, why should the former be privileged? Does the supposed motivation that interactions with audiovisual materials generate among students justify privileging these materials in class *per se*? Is the opportunity cost of not interacting with other materials or developing other skills justified?

Second, response three does not seem to account for the fact that, in part, legal education aims at transforming some elements that characterize students,⁶⁸ at transforming the reality of

66 *Supra* note 26.

67 See: Slomanson, "Blended Learning", 96-98. See also: Galves, "Will Video Kill the Radio Star?", 198.

68 See: Esahaque Sk, "Education as an Instrument of Social Change", *International Research Journal of Multidisciplinary Studies* 3, (2017): 1 ("Education is considered as the most powerful and effective instrument of social change and social development in social time. Social change implies change in the social structure and function of the various units which form society"); Saikat Chakraborty *et al.*, "Education As an Instrument of Social Change And Enhancing Teaching Learning Process with the Help of Technological Development", *Journal of Emerging Technologies and Innovative Research* 5, n.º 10 (2018): 317-321, https://www.researchgate.net/publication/325143953_Education_as_an_instrument_of_social_change_and_enhancing_teaching-learning_process_with_the_help_of_technological_development (on education's role as the root cause for social, cultural

learners. For example, students may have few interpersonal skills, may be individualistic, or may not have the discipline to engage in long-term projects. Students may feel comfortable with these traits and may not have any interest in transforming them. However, I believe that few law schools would argue that legal education should not try to change or moderate these characteristics. Would it not be desirable for law students to develop skills to interact with other people, skills that are necessary to competently serve their clients? Would it not be desirable for law students to learn to work as part of a team and to collaborate with others in development of their professional activities? Would it not be desirable for law students to develop concentration skills for longer periods than those required by videos and social networks? As I argued above, the “ought” cannot be derived from the “is” without further considerations that establish why what “is” “should be”. Likewise, what “is” is not always morally, politically, or pedagogically justified. In these cases, the purpose of education should be the transformation of what “is”.

The second weakness of the third response is related to the third argumentative step: technology is an inescapable tool for achieving the learning objectives that law schools seek to materialize.⁶⁹ Without technological innovation, it is argued, these objectives could not be achieved insofar as law schools would not take into account who law students “are”. Technology is then presented as the inescapable means that law schools have in order to meet the needs and expectations of students and thus efficiently fulfill the learning goals they pursue. A significant part of the literature associated with response three does not support its arguments empirically or does not do so completely and sufficiently. In addition, a significant part of this literature does not interact with the literature produced in schools of education or medical schools that is central for describing, understanding, and evaluating the facts that answer three interprets.⁷⁰

The literature on education offers specific arguments related to the learning objectives that should be pursued, the means for achieving them, their efficiency, and the undesired effects they have, among other things.⁷¹ Medical literature offers arguments related, for example, to

and individual change – it is meant to interrupt the outlook and attitude of people and society in general, to change the way students think, to lead social reform, etc.)

69 See *supra* notes 36 and 37.

70 Levy, “Teaching the Digital Caveman”, in general and at 305 (“classroom practices informed by an understanding of how the brain learns will always be more successful than approaches based on observations about students’ changing technology habits.”). See: Shahid Alvi, “Proceed with Caution: Technology Fetishism and the Millennial Generation”, *Interactive Technology and Smart Education* 8, n.º 2 (2011): 135-144. <https://doi.org/10.1108/17415651111141849>. See also *infra* notes 72, 73.

71 Douglas Kellner, “New Technologies/New Literacies: Reconstructing Education for the New Millennium”, *International Journal of Technology and Design Education* 11, (2001): 67-81; John Palfrey, “Smarter Law School Casebooks”, in *Legal Education in the Digital Age*, edited by Edward Rubin (Cambridge: Cambridge University Press, 2012), 122-123, (Law professors need to incorporate research from other fields to inform their teaching instead of relying on observable student behavior); Peter C. Brown, Henry L. Roediger, and Mark A. McDaniel, *Make It Stick: The Science of Successful Learning* (Cambridge: Belknap Press, 2014), 106-108; Lawrence A. Cunningham, “Digital Evolution in Law School Course Books: Trade-Offs, Opportunities and Vigilance”, in *Legal Education In The Digital Age, Legal Education in the Digital Age*, edited by Edward Rubin (Cambridge: Cambridge University Press, 2012), 95-96, 100; Maryanne Wolf, *Proust and the Squid: The Story and Science of the Reading Brain* (New York: Harper Perennial, 2007), 70-71; Larry Cuban, *Teachers and Machines: The Classroom Use of Technology Since 1920* (New York: Teachers College Press, 1986), 3, 19, 27, 72-73; Roger Schank, *Teaching Minds: How Cognitive Science Can Save Our Schools* (New York: Teachers College Press, 2011), xv, xvi, 13, 16, 207-209 (Educators need to understand how the brain works).

how human beings learn, the relationship between our senses, the brain, and the world that we want to apprehend, the effects that interaction with different types of external stimuli have on our brain and on our learning processes, or the role that memory or genes play in these processes.⁷² In an interdisciplinary field like education, the legal literature concerned with the relationship between technology and legal education should be familiar with and use this medical- and education-related literature; the arguments offered by response three are supported, in many cases, on presumptions on issues that the medical literature and the literature on education have appropriately established or have disproved with persuasive arguments.⁷³ It is not a secret that a good part of law professors around the world are self-taught on pedagogical issues.⁷⁴ We have learned by doing; we have learned through a process of trial and error that has usually ignored the technical arguments on pedagogy and the neurological processes by which human beings learn about the world.

Sometimes, the literature that offers response three offers empirical information to support its arguments. Nevertheless, it presents this argumentation as uncontroversial, as absolute, as conclusions about which there is consensus in the academic community.⁷⁵ However, a significant part of the arguments that support the characterizations of law students or the relationship between technology and learning processes that response three is based on are profoundly controversial. Two examples may help to illustrate and justify my argument. The first is the characterization of generations Y and Z on which response three is based. This characterization presents these generations as monolithic entities;⁷⁶ all individuals born between 1980 and

72 See: Levy "Teaching the Digital Caveman", 255-276; Winifred Gallagher, *Rapt: Attention and the Focused Life* (New York: Penguin Books, 2010), 25, 146, 163; John J. Ratey, *A User's Guide to The Brain* (New York: Vintage, 2001), 185-195; Duane F. Shell et al., *The Unified Learning Model: How Motivational, Cognitive, and Neurobiological Sciences Inform Best Teaching Practices* (New York: Springer, 2010), 12, 13, 22, 25-26; Robert Sylwester, *A Celebration of Neurons: An Educator's Guide to The Human Brain* (New York, Assn for Supervision & Curriculum, 1995), 54 (On how the intuition about how students learn leads to mistakes, overgeneralizations, and stereotypes); John Medina, *Brain Rules: 12 Principles for Surviving and Thriving at Work, Home, and School* (Washington: Pear Press, 2008), 32; Daniel Kahneman, *Thinking, Fast and Slow* (New York: Straus and Giroux, 2011), 115; Joshua Foer, *Moonwalking with Einstein: The Art and Science of Remembering Everything* (New York: Penguin Books, 2011), 209.

73 Levy, "Teaching the Digital Caveman", 252 (noting the complacency spiral between authors and their assumptions about the digital natives). Daniel Haun, *Repetition, Availability and Truth, is the Internet Changing the Way You Think?: The Net's Impact on Our Minds and Future*, edited by John Brockman (New York: Harper Collins Publishers, 2011), 293 (on how people have the tendency to mistake repetition for truth, owing to the "illusion of truth" effect – assumptions about digital natives are considered too self-evident to question); Sue Bennett, Karl Maton, and Lisa Kervin, "The 'Digital Natives' Debate: A Critical Review of Evidence", *British Journal of Educational Technology* 39, n.º 5 (2008): 775, 779, 780, 783; Sue Bennett and Karl Maton, "Beyond the 'Digital Natives' Debate: Towards a More Nuanced Understanding of Students' Technology Experiences: Beyond the 'Digital Natives' Debate", *Journal of Computer Assisted Learning* 26, n.º 5 (2010), 321, 328; Chris Jones and Binhui Shao, "The Net Generation and Digital Natives: Implications for Higher Education", *Higher Education Academy* (2011): 1, 2, 34

74 *Id.* at 251. (Noting that teachers tend to use technology in an intuitive way, due to the pressure to innovate); Slomanson, "Blended Learning", 93.

75 See: Bennett, Maton and Kervin, "The 'Digital Natives' Debate", 779 (Although many claims about digital natives appeal to common sense they lack empirical support).

76 See: Bennett and Maton, "Beyond the 'Digital Natives' Debate", 324 (On how digital natives are different, even if some of them do know about Web 2.0 tools, create content, etc., most of them do not have those skills); Lauren Troksa, "The Study of Generations: A Timeless Notion within a Contemporary Context" (thesis, University

1995 or between 1995 and today share certain characteristics that are central to their identity, among others, that they are visual individuals and digital natives.

In addition, these generalizations are derived from studies that are more or less precise or rigorous or done in specific countries, usually in the Global North,⁷⁷ but their conclusions are generalized to apply to the entire world.⁷⁸ These generalizations are problematic because they homogenize a field that is profoundly heterogeneous. Do all law students in the United States really have the characteristics attributed to generations Y and Z? Don't the variables of class, race, and gender make these generalizations relative, or refute them? Does a poor black woman who comes from a rural area in Louisiana have the same relationship to the visual and multitasking as a middle-class white man who was raised in New York? Even more problematic, do a generation "Y" middle-class Kenyan man, a generation "Y" working-class Vietnamese woman, and a generation "Y" upper-class Colombian man have the same relationship to collaborative learning or share the idea that students should play an active role in learning processes? This last question is particularly important in contexts where legal education is multicultural, like the United States, Mexico, or Germany. It does not seem right to assume that all law students who arrive at law schools in these countries have the same relationship to technology or teaching processes.⁷⁹ To blindly assume characterizations of generations can lead to errors in how multicultural law courses are designed and implemented.

However, a more charitable reading of the argument could say that the generalizations on generation Y and Z law students are useful, though imprecise, in that they describe cultural tendencies that affect how new generations construct their identities or the contents of these identities. I believe that this interpretation could be correct. Nevertheless, it is one thing to use these generalizations to describe macro cultural processes and a very different thing to use these generalizations to derive specific conclusions on how law should be taught, how human beings learn, and where the scarce resources at law schools' disposal should be invested, in technology or in hiring new professors, buying books for the library, or creating or strengthening a scholarship program for students with limited economic resources, for example. Few law schools around the world have the financial resources to finance all these projects at the same time.

of Colorado, 2016)., (On how 'names have power' and generations have been traditionally named - to provide a title, identity or definition – in a way that can be misleading, misrepresentative or misguided. Millennials, Baby Boomers, etc., are represented as radically different groups of people that are, within the group, homogenous. Both of these premises are far from true).

77 For example, the term millennial was coined by Neil Howe and William Strauss, *Generations: The History of America's future, 1548 to 2069* (New York: Quill, 1991) clearly making exclusive reference to the US younger generation and it has been extended to the whole global discussion since. See also: Prensky, "Digital Natives, Digital Immigrants Part 1".

78 See: *supra* note 78; Jones and Shao, "The Net Generation", 34 ("Rather than showing that there is a Net Generation of digital natives who are naturally proficient with technology, empirical evidence from a variety of countries shows that students' experiences with technologies are far from universal.") (Even these studies are usually carried out in the US).

79 Nicole R. Zarrett and Oksana Malanchuk, "Who's Computing? Gender And Race Differences In Young Adults Decisions To Pursue An Information Technology Career", *New Directions for Child And Adolescent Development*, n.º 110 (2005): 65-84, (On how the decision of youths to pursue a technology career and youth's technology-related knowledge in general is race and gender dependent); Kellner, "New Technologies/New Literacies" in general (on the digital divide, technology have and have-nots related especially to class and education).

The second example is the characterization of generations Y and Z as digital natives, who therefore “think differently” from other generations of individuals.⁸⁰ First, the argument seems imprecise. The fact that technology is present in the daily life of young people who belong to generations Y and Z does not mean that they know it well or that they can use it efficiently. Multiple studies show that the way young people use technology is focused fundamentally on social networks, text messages, and game, and video platforms. The young people of these generations have certainly grown up around computers and interacting with them.⁸¹ There is, however, no empirical evidence showing that these generations know and can manage basic programs like Word, Excel, and PowerPoint well and effectively; nor that they have basic coding notions. If this is true, it would not be clear in what sense this general familiarity with some technologies could be useful for learning and teaching law, how the technologies that these generations are effectively familiar with should be included urgently and inescapably in law classes, or what pedagogical objectives these technologies could contribute to achieving.

On the other hand, even more questionable is the argument derived from generations Y and Z's familiarity with technology, i.e., that these young people “think differently”⁸² from other generations, and that legal education should therefore be adapted to the new forms of thinking that human beings developed at the end of the 20th century and the beginning of the 21st century. If we take the argument seriously, and do not just interpret it as a rhetorical exaggeration, it seems to be baseless. The medical literature has not found that the brains of members of the new generations have changed or that the neurological learning processes are different.⁸³ These

80 *Supra* notes 24 and 25.

81 Bennett and Maton, “Beyond the ‘Digital Natives’ Debate”, 321, 324 (“In fact, with the exception of social networking, most activities associated with Web 2.0 are engaged in by a minority of respondents on key large-scale surveys”, they do not create content, do little gaming and instead use the internet mostly for social activity); Jones and Shao, “The Net Generation”, 34 (“Although there was a considerable growth in university students’ access to a range of computing technologies and online technological tools, in some contexts their use of technologies was mainly for social and entertainment purposes, but not for learning”); Penny Thompson, “The Digital Natives as Learners: Technology Use Patterns and Approaches to Learning”, *Computers and Education* 65, (2013): 12, 20, 23 (On surveys that show that college students have a very limited proficiency with a small number of devices that are used for a narrow range of activities like socializing, gaming, and surfing the web); Shiang-Kwei Wang, Hui-Yin Hsu, and Daniel Coster, “An Investigation of Middle School Science Teachers and Students Use of Technology Inside and Outside of Classrooms: Considering Whether Digital Natives Are More Technology Savvy than Their Teachers”, *Educational Technology Research and Development* 62, n.º 6 (2014): 637, 643, 655 (Studies of high school students show they are no more tech savvy than their teachers); Megan O’Neil, “Confronting the Myth of the ‘Digital Native’”, *The Chronicle Higher Education*, April 21st, 2014, <http://chronicle.com/article/Confronting-the-Myth-of-the/145949/> (Contends that the assumption that today’s students are tech savvy is a myth).

82 Bennett, Maton, and Kervin, “The ‘Digital Natives’ Debate”, 783 (“Emerging research challenges notions of a homogenous generation with technical expertise and a distinctive learning style.”); Bennett and Maton, “Beyond the ‘Digital Natives’ Debate”, 328; Mark Bullen, Tannis Morgan, and Adnan Qayyum, “Digital Learners in Higher Education: Generation is Not the Issue”, *Canadian Journal of Learning and Technology* 37, n.º 1 (2011): 17-18, <https://www.learntechlib.org/p/42755/> (last visited Aug 5th, 2019); Chris Jones et al., “Net Generation or Digital Natives: Is There A Distinct New Generation Entering University?”, *Computers & Education* 54, n.º 3 (2010): 731.

83 See: Steven Pinker, *How The Mind Works* (New York: W. W. Norton & Company, 1997), 343.; Hank Davis, *Caveman Logic: The Persistence of Primitive Thinking in a Modern World* (New York: Prometheus, 2009), 33-40; Bennet, Maton, and Kervin, “The ‘Digital Natives’ Debate”, 780-783; Bennett and Maton, “Beyond the ‘Digital Natives’ Debate”, 328; Bullen, Morgan, and Qayyum, “Digital Learners in Higher Education”, 1, 17-18 (“there

structural changes of forms of thinking only occur in evolutionary processes over long periods of time – processes that are measured in centuries and not decades.⁸⁴ Currently, there is no empirical information that supports the idea that, due to their familiarity with technology, law students “think differently” from law professors. This does not mean that they are identical, of course.

The use of technology like cell phones, email, social networks, etc., has changed some individual or social patterns of behavior: members of new generations that are familiar with technology, for example, have greater difficulties concentrating for extended periods, expect immediate responses to their communications, and gather information differently and more effectively than other generations, via digital instruments.⁸⁵ It is not clear, however, which of these transformations, if any, should be taken into account to transform legal education, or how technology could contribute to boosting its positive effects and neutralizing the negative ones. It is possible to argue that it would be desirable for law schools to take these individual and social transformations into consideration. However, to establish this normative argument, these transformations would have to be described more specifically, their causes and consequences would have to be examined in greater detail, and the potentially negative and positive impacts they could have on the learning processes at law schools would have to be explored.

The third weakness, closely connected to the previous two, is that response three does not base its conclusions on specific and detailed reflections on the relationship between technology and legal education. Very rarely does this legal literature offer detailed information on how the learning objectives pursued by law schools (familiarity with and use of legal information, development of professional skills, and creation of ethical competences) are connected negatively or positively with specific technologies. It is uncommon to find empirically established arguments for understanding, for example, how interactive electronic books, platforms

is no evidence that so-called digital native university students have different learning needs than others”); Ellen J. Helsper and Rebecca Eynon, “Digital Natives: Where Is the Evidence?”, *British Educational Research Journal* 36, n.º 3 (2010): 517-518 (On no empirical support for making distinction between “digital natives” and “digital immigrants”; furthermore, such distinction might end up being harmful to their education); Matt Richtel, “Technology Changing How Students Learn, Teachers Say”, *New York Times*, November 1st, 2012, A18, <http://www.nytimes.com/2012/11/01/education/technology-is-changing-how-students-learn-teachers-say.html?emc=eta1&r=0> (technology may be changing student learning behaviors but no long-term studies support the claim that it is changing attention spans); Mark Pagel, “Brain Candy and Bad Mathematics”, in *Is the Internet Changing The Way you Think?, The Net’s Impact on Our Minds and Future*, edited by John Brockman (New York: Harper Collins Publishers, 2011), 70 (Based on evolutionary biology, Pagel concludes that we know the Internet has not changed the brain because people who do not have access to it think the same way we do); Steven Pinker, “Not at All”, in *Is the Internet Changing the Way You Think? The Net’s Impact on Our Minds and Future*, edited by John Brockman (New York: Harper Collins Publishers, 2011), 86, 87; Gregory Paul, “Hell if I Know”, in *Is the Internet Changing the Way You Think? The Net’s Impact on Our Minds and Future*, edited by John Brockman (New York: Harper Collins Publishers, 2011), 122 (The only way to know if the Internet is changing the way we think and learn is to run a controlled experiment, and it is unclear how we would even do that). Levy, “Teaching the Digital Caveman”, 244 (“Significantly, experts tell us it is unlikely the brain is even capable of the changes suggested by those who claim the existence of a so-called cognitive divide”).

84 Roger Schank, “The Thinking Process Hasn’t Changed in 50,000 Years”, *Edge*, last modification w. d., access August 8th, 2019, <https://www.edge.org/response-detail/11519> (“The Internet has not changed the way I think nor has it changed the way anyone else thinks”).

85 See: Gallagher, *Rapt*, 152; Levitin, *The Organized Mind*; Susan M. Ravizza, David Z. Hambrick, and Kimberly M. Fenn, “Non-academic Internet Use in the Classroom Is Negatively Related to Classroom Learning Regardless of Intellectual Ability”, *Computers & Education* 78, (2014): 109; Richtel, “Technology Changing”; Pinker, “Not at All”; Davis, *Caveman Logic*, 33-40.

to share and edit information, clickers, and cell phones contribute to achieving pedagogical aims usually pursued by law schools. A significant part of this literature assumes uncritically that these technologies effectively help to achieve such aims, or present anecdotal evidence, intuitions, or precise case studies that do not allow for general conclusions on their objects of study. The information available does not lead to conclude that technology has changed (or could change) the playing field, the structure of legal education. To be persuasive, response three would have to specify the ties that legal education (its aims, means, and agents) and technology have or could have. Likewise, it should move away from a radical and uncritical promotion of technology, which it presents as unquestionably positive for law schools.

Finally, the fourth criticism to response three, which is clearly connected to the Heideggerian critique of technology I used above, questions one of the general assumptions on which this response is based: technology is a neutral means of achieving the aims usually pursued by legal education. Heidegger shows that technology is not a mere neutral instrument to attain different types of individual or social aims.⁸⁶ According to Heidegger, in late modernity, technology is a mode of revealing being. From this perspective, technology is the contingent constellation of intelligibility that gives meaning to human beings and to the world we inhabit.⁸⁷ Nevertheless, in this final part of the text, I wish to examine another weakness of the argument that understands technology as neutral. This supposition obscures the ambiguous nature of technology, obscures the fact that technology may have simultaneously positive and negative, expected, and unexpected effects while it emerges and interacts with structures of power than may have problematic distributive effects. Technology, its creation, and use, does not arise in a vacuum; it always emerges in specific contexts where power relationships determine who has or does not have access to it, as well as the distribution of its negative and positive consequences.⁸⁸

Three examples can help me illustrate and establish my argument. The first example shows the links between class and technology. The class one belongs to determines access to, familiarity with, and ability to use technology.⁸⁹ Technology is not naturally distributed in an egalitarian way among all social classes. A man from the outskirts of Bogotá, for example, does not have the same access to or familiarity with technology as an upper-middle-class man from Bogotá or a man who comes from a rural area in the Putumayo department in southern Colombia. However, they may all attend the same public or private law school. The uncritical defense of the premise that understands technology as a neutral means can contribute to the perpetuation of class inequalities that should be eliminated or at least diminished through education. The use of technology promoted by response three does not recognize or reflect on the impact that the use of technology could have on classrooms with individuals from different social classes.

86 Heidegger, "The Question Concerning Technology", 12 ("Technology is therefore no mere means. Technology is a way of revealing.").

87 *Supra* note 40.

88 Kellner, "New Technologies/New Literacies" in general and at 248: "I have been developing what I call a critical theory of technology that criticizes uses or types of technology as tools of domination, that rejects the hype and pretensions of new technologies, that sees the limitations of pedagogy and educational proposals based primarily on technology without adequate emphasis on pedagogy, on teacher and student empowerment, that insists on developing educational reform and restructuring to promote multicultural democracy, and that calls for appropriate restructuring of technology to democratic education and society".

89 *Ibid.*, 247-249; Bosah Ebo, *Cyberghetto or Cybertopia? Race, Class, and Gender on the Internet* (Westport: Praeger, 1998).

Students with limited economic resources, for example, do not necessarily have access to personal computers in their daily life, do not necessarily use basic programs like Word, Excel, or PowerPoint, and do not necessarily manage tools like clickers or platforms to jointly edit documents. The uncritical use of technology in classrooms can put students who are not economically privileged at a disadvantage. There is no doubt that these students could learn to use the technology that is employed in class. Nevertheless, this fact would place an undue additional burden on them. However, it is not clear that poor students can access this technology; no matter how hard they try, they might not be able to buy the technological tools that are required of them in class to fulfill the learning objectives pursued.

The second example examines how some of the authors that offer response three call upon law schools to include coding classes in the curriculum.⁹⁰ The objective of these courses is not that lawyers become expert programmers. Rather, their aim is that lawyers may learn the basic concepts of coding or develop the skills to complete basic coding exercises. When these proposals are presented uncritically as neutral media for achieving valuable aims, like training lawyers who have the capacity to interact with clients from the many technology companies that require quality legal services, they lose sight of how these objects of study intersect with gender inequalities. There is a wide literature that shows how girls and young women are not interested in or do not easily access the academic disciplines related to computers.⁹¹ Historically, these disciplines have been fundamentally a masculine space.

The uncritical promotion of these courses in law schools can become a mechanism that reproduces inequalities between male and female law students. Female students will probably not be interested in this type of classes due to the historical relationship between gender and computer sciences or, if they are interested, they will probably not have the same knowledge or familiarity with coding as their male peers. Female law students will therefore have access to fewer academic spaces, or they will be at a disadvantage in these academic spaces. Likewise, once the male students graduate, they will have advantages in the labor market that female students will not, and they will have greater opportunities to interact with a segment of the demand for legal services that is economically and politically powerful.

Finally, the third example shows that the adoption and use of technology competes for scarce resources with other types of subjects or objects required for law schools' adequate operation such as books for the library, scholarships for students with limited economic resources, more full-time professors, and improvements in the institutions' infrastructure.⁹² Choosing technology over other possible areas of investment involves a political decision that ranks the different needs or aspirations these academic units have. In this case, technology is not a neutral means in that it requires the investment of scarce resources that could go elsewhere. Uncritically assuming the premise that technology is a neutral agent obscures this fact

90 *Supra* note 33.

91 See Zarrett and Malanchuk, "Who's Computing?"; Kay B. Warren and Susan C. Bourque, *Women, Technology, and International Development Ideologies: Analyzing Feminist Voices*, in *Gender at the Crossroads of Knowledge: Feminist Anthropology in the Postmodern Era* (California: University of California Press, 1991); Golnessa Galyani Moghaddam, "Information Technology and Gender Gap: Toward a Global View", *The Electronic Library* 28, n.º 5 (2010): 722-733.

92 Olubiyi, Olaniyan, and Odiaka, "The Role of Technology", 17 ("The high cost of technology is a major impediment to the use of technology").

and prevents it from being examined and criticized by the different law school's stakeholders. This tension may be less of an issue in Global North's law schools that have plenty of resources to invest in meeting their needs. In these cases, all needs and desires can reasonably be met at the same time. However, in the Global South's law schools, this is not usually the case. There are fewer resources available, and they only can satisfy a few needs. Technology is therefore not a neutral means that can and should be implemented in an immediate, urgent, and necessary manner at all law schools.

CONCLUSIONS

Technology is an inevitable and omnipresent fact in the legal practice and education of late modernity. Technology has changed or is changing the practice of law around the world. The market of legal services thus requires that legal education also be transformed. A significant part of the specialized legal literature argues that legal education should be reformed, adapted to changes in the professional practice. Likewise, this literature argues that legal education should be adjusted to the needs and requirements of the new generations of law students. Law schools should be adapted to the characteristics of generations Y and Z, which are the greater part of the demand of the contemporary educational services' market. In addition, legal education must use technology to achieve its aims. Technology is a necessary, important, and urgent instrument to meet the demands of the primary agents of the legal and educational services markets.

However, this literature loses sight of the profound weaknesses of the enframing it is based on; it loses sight of the limits of technology as the dominant constellation of intelligibility in late modernity. From this perspective, law students and professors, lawyers, and firms, as well as law schools, are mere resources without content that must be optimized for their efficient use. Likewise, part of this literature loses sight of the relationship between technology and power; it ignores the medical literature and the literature on education that is necessary for describing, understanding, and evaluating the relationship between technology and legal education; it bases some of its central contentions on dubious empirical assumptions; and it does not always connect specific technologies with the learning objectives pursued by law schools.

Technology can play a valuable role in legal education. Nevertheless, this role can only be materialized when recognizing, understanding, and transforming the web of meanings that has historically given it meaning; this role can only be materialized if it examines the relationship between power and technology, and if it recognizes that this is an inescapably interdisciplinary field.

BIBLIOGRAPHY

1. Acevedo Sánchez, Daniel Santiago. "Tecnología, derecho y la transformación de esta profesión: ¿por dónde empezar? (I)," *Ámbito Jurídico*, November 8th, 2018, <https://www.ambitojuridico.com/noticias/columnista-online/tic/tecnologia-derecho-y-la-transformacion-de-esta-profesion-por-donde>.
2. Allen, Jeffrey. "Technology for the Mobile Lawyer in All of Us." *GPSolo* 29, n.º 6 (2012): 4-5.

3. Alvi, Shahid. "Proceed with Caution: Technology Fetishism and the Millennial Generation." *Interactive Technology and Smart Education* 8, n.º 2 (2011): 135-144. <https://doi.org/10.1108/17415651111141849>.
4. américaeconomía.com. "Global Legal Tech Venture Day llega a México para buscar y apoyar nuevas empresas." *américaeconomía.com*, w. d., <https://mba.americaeconomia.com/articulos/notas/global-legal-tech-ventureday-llegamexico-para-buscar-y-apoyar-nuevas-empresas>.
5. American Bar Association [ABA]. "Report and Recommendations American Bar Association Task Force on The Future of Legal Education," report, 2014, https://www.americanbar.org/content/dam/aba/administrative/professional_responsibility/report_and_recommendations_of_aba_task_force.pdf.
6. Becker, David M. "Some Concerns About the Future of Legal Education." *Journal of Legal Education* 51, n.º 4 (2001): 469-486. <http://www.jstor.org/stable/42898323>.
7. Beckerman-Roday, Andrew. "Ethical Risks from the Use of Technology." *Rutgers Computer and Technology Law Journal* 31, n.º 1 (2004), 1-34
8. Beldarrain, Yoany. "Distance Education Trends: Integrating New Technologies to Foster Student Interaction and Collaboration." *Distance Education* 27, n.º 2 (2006): 139-153.
9. Benjamin, Walter. *Baudelaire*, edited by José Manuel Cuesta Abad, translated by Alfredo Brotons Muñoz. Madrid: Abada Editores, 2014.
10. Bennett, Sue; and Maton, Karl. "Beyond the 'Digital Natives' Debate: Towards a More Nuanced Understanding of Students' Technology Experiences." *Journal of Computer Assisted Learning* 26, n.º 5 (2010): 321-331. <https://doi.org/10.1111/j.1365-2729.2010.00360.x>.
11. Bennett, Sue; Maton, Karl; and Kervin, Lisa. "The 'Digital Natives' Debate: A Critical Review of Evidence." *British Journal of Educational Technology* 39, n.º 5 (2008): 775-786.
12. Black, Max. "The Gap Between 'Is' and 'Should'." *The Philosophical Review* 73, n.º 2 (1964): 165-181. <https://doi.org/10.2307/2183334>.
13. Bonilla, Daniel. "Los mandarines del derecho: el trabajo jurídico pro-bono en perspectiva comparada," in *Los mandarines del derecho: trasplantes jurídicos, análisis cultural del derecho y trabajo pro-bono*, 29-134. Bogotá: Siglo del Hombre Editores y Universidad de los Andes, Facultad de Derecho, 2017.
14. Bonnett, Michael. "Education in a Destitute Time." *Journal of Philosophy of Education* 17, n.º 1 (1983): 21-33. <https://doi.org/10.1111/j.1467-9752.1983.tb00013.x>.
15. Broussard, Camille. "Teaching with Technology: Is the Pedagogical Fulcrum Shifting?" *New York Law School Review* 53, (2009): 903-915.
16. Brown, Peter C.; Roediger, Henry L.; and McDaniel, Mark A. *Make It Stick: The Science of Successful Learning*. Cambridge: Belknap Press, 2014.
17. Bullen, Mark; Morgan, Tannis; and Qayyum, Adnan. "Digital Learners in Higher Education: Generation Is Not the Issue." *Canadian Journal of Learning and Technology* 37, n.º 1 (2011): 1- 24. <https://doi.org/10.21432/t2nc7b>.
18. Caron, Paul L. "Teaching with Technology in the 21st Century Law School Classroom." *The Future of Law Libraries*, (2006): <https://ssrn.com/abstract=896906>.
19. Caron, Paul L., and Rafael Gely. "Taking Back the Law School Classroom: Using Technology to Foster Active Student Learning." *Journal of Legal Education* 54, n.º 4 (2004): 551-569.

20. Chakraborty, Saikat; Chakraborty, Bidisha; Dahiya, Virender Singh; and Timajo, Louie. "Education as an Instrument of Social Change and Enhancing Teaching-Learning Process with the Help of Technological Development." *Journal of Emerging Technologies and Innovative Research* 5, n.º 10 (2018): 317-321 https://www.researchgate.net/publication/325143953_Education_as_an_instrument_of_social_change_and_enhancing_teaching-learning_process_with_the_help_of_technological_development.
21. Cicero, Nidia. "Innovar la enseñanza del derecho. ¿Solo se trata de tecnologías de la información y comunicación?" *Revista Pedagogía Universitaria y Didáctica del Derecho* 5, n.º 2 (2018): 91-110. <https://doi.org/10.5354/0719-5885.2018.51976>.
22. Correas, Carlos-Ignacio Massini. *Filosofía del derecho I. El derecho y los derechos humanos*. Buenos Aires: Abeledo Perrot 1994).
23. Courage, Mary L., Aishah Bakhtiar, Cheryl Fitzpatrick, Sophie Kenny, and Katie Brandeau. "Growing up Multitasking: The Costs and Benefits for Cognitive Development." *Developmental Review* 35, n.º 4 (2015): 5-41. <https://doi.org/10.1016/j.dr.2014.12.002>.
24. Cuban, Larry. *Teachers and Machines. The Classroom Use of Technology Since 1920*. New York: Teachers College Press, 1986.
25. Cunningham, Lawrence. "Digital Evolution in Law School Course Books: Trade-Offs, Opportunities and Vigilance," in *Legal Education in the Digital Age*, edited by Edward Rubin, 81. Cambridge: Cambridge University Press, 2012.
26. Davis, Hank. *Caveman Logic. The Persistence of Primitive Thinking in a Modern World*. New York: Prometheus, 2009.
27. DeGroff, Eric A. "Training Tomorrow's Lawyers: What Empirical Research Can Tell us about the Effect of Law School Pedagogy on Law Student Learning Styles." *Southern Illinois University Law Journal* 36, (2011): 251-285.
28. Dreyfus, Hubert. "Heidegger on Gaining a Free Relation to Technology," in *Readings in the Philosophy of Technology*, edited by David M. Kaplan, 2nd. ed., 25. Lanham: Rowman & Littlefield Publishers, 2009.
29. Dreyfus, Hubert. "Heidegger on the Connection between Nihilism, Art, Technology and Politics," in *The Cambridge Companion to Heidegger*, edited by Charles B. Guignon, 2nd ed., 345. Cambridge: Cambridge University Press, 2006.
30. Easton, Catherine. "An Examination of Clicker Technology Use in Legal Education." *Journal of Information Law and Technology*, n.º 3 (2009): <https://go.gale.com/ps/i.do?id=GALE%7CA217185439&sid=googleScholar&v=2.1&it=r&linkaccess=abs&issn=13614169&p=AONE&sw=w&userGroupName=anon%7Ef774eefe>.
31. Ebo, Bosah. *Cyberghetto or cybertopia? Race, Class, and Gender on the Internet*. Westport: Praeger, 1998.
32. "Educación y tecnología: de la mano." *Ámbito Jurídico*, November 11th, 2018, <https://www.ambitojuridico.com/noticias/tecnologia/educacion-y-cultura/educacion-y-tecnologia-de-la-mano>.
33. Eicks, Jeannette. "Educating Superior Legal Professional: Successful Modern Curricula Join Law and Technology," in *Educating the Digital Lawyer*, edited by Marc Lauritsen and Oliver Goodenough, 1-14. Cambridge: Harvard Law School Program on the Legal Profession, 2012, <https://papers.ssrn.com/abstract=2465977>.

34. Farrell, Lindsey; and Hurt, Andrew C. "Training the Millennial Generation: Implications for Organizational Climate." *Journal of Organizational Learning and Leadership* 12, n.º 1 (2014): 47-60.
35. Feenberg, Andrew. *Questioning Technology*. New York: Routledge, 1999.
36. Feenberg, Andrew. "Constructivism and Technology Critique: Replies to Critics." *Inquiry*, 43, n.º 2 (2000): 225-237.
37. Feenberg, Andrew. "The Ontic and the Ontological in Heidegger's Philosophy of Technology: Response to Thomson." *Inquiry* 43, n.º 4 (2000): 445-450.
38. Fitzsimons, Patrick. "Enframing Education," in *Heidegger, Education, and Modernity*, edited by Michael Peters. London: Rowman & Littlefield Publishers, 2010.
39. Foer, Joshua. *Moonwalking with Einstein: The Art and Science of Remembering Everything*. New York: Penguin Books, 2011.
40. Frand, Jason. "The Information Age Mindset: Changes in Students and Implications for Higher Education." *Educause Review*, (2000): 15-24. <https://er.educause.edu/-/media/files/article-downloads/erm0051.pdf>.
41. Friedman, Ron. "The Future Law Office: Going Virtual." *LAW PRAC. MGMT.* 30 (2004).
42. Galanter, Marc and Henderson, William D. "The Elastic Tournament: The Second Transformation of the Big Law Firm." *Stanford Law Review* 60, n.º 6 (2008): 1867-1929.
43. Gallagher, Winifred. *Rapt: Attention and the Focused Life*. Nueva York: Penguin Books, 2010.
44. Galves, Fred. "Will Video Kill the Radio Star? Visual Learning and the Use of Display Technology in the Law School Classroom." *Illinois Journal of Law, Technology & Policy*, (2004): 195-198.
45. Gerdy, Kristin B.; Wise, Jane H.; Craig, Alison. "Expanding Our Classroom Walls: Enhancing Teaching and Learning through Technology." *Legal Writing* 11 (2005): 263-294.
46. Glenn, David. "Divided Attention." *The Chronicle of Higher Education*, February 28, 2010, <http://chronicle.com/article/Scholars-Turn-Their-Attention/63746/>.
47. Goldman, Pearl. "Legal Education and Technology: An Annotated Bibliography." *Law Library Journal* 93, n.º 3 (2001): 423-468.
48. Goldman, Pearl. "Legal Education and Technology II: An Annotated Bibliography." *Law Library Journal* 100, n.º 3 (2008): 415-528.
49. Granat, Richard. "The Many Faces of e-Lawyering: Everyday Law for Everyday People." *Law Practice Management*, n.º 30 (2004): 36.
50. Grisdela, Margaret. "Overview of the U.S. Legal Market." *HG Legal Resources*, w. d., <https://www.hg.org/marketing-us-market.html>.
51. Harris, Nikos. "The Risks of Technology in the Law Classroom: Why the Next Great Development in Legal Education Might Be Going Low-Tech." *University of British Columbia Law Review* 51, n.º 3 (2018): 773.
52. Harvard Law School. "Programming for Lawyers." *Harvard Law School*, last modification 2017, access August 11th, 2019, <https://hls.harvard.edu/academics/curriculum/catalog/default.aspx?O=71516>.

53. Haun, Daniel. *Is the Internet Changing the Way You Think? The Net's Impact on Our Minds and Future*, edited by John Brockman, 293. New York: Harper Collins Publishers, 2011.
54. Heidegger, Martin. "The Question Concerning Technology," in *The Question Concerning Technology and Other Essays*, translated by William Lovitt, 3-13. New York: Harper Torchbooks, 1977.
55. Helsper, Ellen J.; and Eynon, Rebecca. "Digital Natives: Where Is the Evidence?" *British Educational Research Journal* 36, n.º 3 (2010): 503-520.
56. Howe, Neil; and Strauss, William. *Generations: The History of America's Future, 1548 to 2069*. New York: Quill, 1991).
57. Hume, David. "Treatise of Human Nature," in *The Philosophical Works of David Hume*, Book III, Part I, Section I, vol. 2. Edinburgh: Adam Black and William Tait, 1826.
58. "Interview Clifford Nass." *Frontline*, February 2, 2010, <https://www.pbs.org/wgbh/pages/frontline/digitalnation/interviews/nass.html>.
59. Jacobson, M. H. Sam. "Paying Attention or Fatally Distracted: Concentration, Memory, and Multi-Tasking in a Multi-Media World." *Journal of Legal Writing Institute* 16, (2010): 419.
60. Johnson, Stephen M. "www.lawschool.edu: Legal Education in the Digital Age." *Journal of Legal Education* 50, n.º 3 (2000): 393-397.
61. Johnson, Stephen. "Teaching for Tomorrow: Utilizing Technology to Implement the Reforms of MacCrate, Carnegie, and Best Practices." *Nebraska Law Review* 92, n.º 1 (2013):46-85.
62. Jones, Chris; Ramanau, Ruslan; Cross, Simon; and Healing, Graham. "Net Generation or Digital Natives: Is there a Distinct New Generation Entering University?" *Computers & Education* 54, n.º 3 (2010): 722-732.
63. Jones, Chris; and Shao, Binhui. "The Net Generation and Digital Natives: Implications for Higher Education." *Higher Education Academy* (2011).
64. Kahneman, Daniel. *Thinking, Fast and Slow*. New York: Straus and Giroux, 2011.
65. Kaplan, Ari. "Reimagining Innovation in Legal Education (Interview with Gebe Teninbaum)." *Above the Law*, January 11th, 2019, <https://abovethelaw.com/career-files/reimagining-innovation-in-legal-education/>.
66. Katz, Martin J. "Facilitating Better Law Teaching – Now The 2012 Randolph W. Thrower Symposium: Innovation for the Modern Era: Law, Policy, and Legal Practice in a Changing World." *Emory Law Journal* 62, n.º 4 (2012): 823-850.
67. Kellner, Douglas. "New Technologies/New Literacies: Reconstructing Education for the New Millennium." *International Journal of Technology and Design Education* 11, (2001): 67-81.
68. Kimbro, Stephanie. "Receiving a Digital Legal Education." *Lawyerist (Blog)*, 2010, <https://lawyerist.com/receiving-a-digital-legal-education/>.
69. Lambeir, Bert. "Comfortably Numb in the Digital Era: Man's Being as Standing-Reserve or Dwelling Silently," in *Heidegger, Education, and Modernity*, edited by Michael Peters. London: Rowman & Littlefield Publishers, 2010.
70. Larson, Joni. "Turning the Tables: Is It Time for Professors to Stop Fighting the Presence of Students' Technology in the Classroom and Instead Use It to Enhance Student Learning?" *The Northern Kentucky Law Review* 43, (2016): 231.

71. Lasso, Rogelio. "From the Paper Chase to the Digital Chase: Technology and the Challenge of Teaching 21st Century Law Students." *Santa Clara Law Review* 43, n.º 1 (2002): 1-62.
72. Latrup-Pedersen, Tom. "Trends in Legal Education in the Learning Society —The Challenge of Information Technology." *International Journal of the Legal Profession* 9, n.º 2 (2002): 165-186.
73. Law Geex. "LegalTech Hits \$1 Billion Investment as Lawyers Embrace Automation." *The Law Geex Blog (Blog)*, December 3, 2018, <https://blog.lawgeex.com/legaltech-hits-1-billion-investment-as-lawyers-embrace-automation/>
74. Lee, Jennifer; Lin, Lin; and Robertson, Tip. "The Impact of Media Multitasking on Learning." *Learning Media and Technology*, n.º 1 (2012): 94-104.
75. Levitin, Daniel J. *The Organized Mind: Thinking Straight in the Age of Information Overload*. New York: Dutton, 2014.
76. Levy, James B. "Teaching the Digital Caveman: Rethinking the Use of Classroom Technology in Law School." *Chapman Law Review* 19, n.º 1 (2016): 241-306.
77. Lohr, Steve. "Where Non-Techies Can Get with the Programming." *The New York Times*, April 4, 2017, <https://www.nytimes.com/2017/04/04/education/edlife/where-non-techies-computer-programmingcoding.html>.
78. "Los abogados y la tecnología," *Universidad Externado de Colombia*, last modification: w. d., access August 8th, 2019, <https://www.uexternado.edu.co/Derecho/los-abogados-y-la-tecnologia/>.
79. Lui, Kelvin F. H.; and Wong, Alan C. N. "Does Media Multitasking Always Hurt? A Positive Correlation between Multitasking and Multisensory Integration." *Psychonomic Bulletin and Review* 19, n.º 4 (2012): 647-653.
80. Maharg, Paul; and Muntjewerff, Antoinette J. "Through a Screen, Darkly: Electronic Legal Education in Europe." *The Law Teacher* 36, n.º 3 (2002): 307-332.
81. Marcus, Richard L. "The Electronic Lawyer." *DePaul Law Review* 58, n.º 2 (2008): 263-310.
82. McGinnis, John O.; and Pearce, Russell G. "The Great Disruption: How Machine Intelligence Will Transform the Role of Lawyers in the Delivery of Legal Services Colloquium: The Legal Profession's Monopoly on the Practice of Law." *Fordham Law Review* 82, n.º 6 (2013): 3041-3066.
83. Medina, John. *Brain Rules: 12 Principles for Surviving and Thriving at Work, Home, and School*. Washington: Pear Press, 2008.
84. Moghaddam, Golnessa Galyani. "Information Technology and Gender Gap: Toward a Global View." *The Electronic Library* 28, n.º 5 (2010): 722-733.
85. Moppett, Samantha. "Control-Alt-Incomplete? Using Technology to Assess 'Digital Natives'." *Chicago Kent Journal of Intellectual Property* 12, n.º 1 (2013): 77-129.
86. Morris, Jason. "How Programming Can Make the Law More Accessible," Tedx Talks (YouTube video, May 8th, 2018), <https://www.youtube.com/watch?v=d5Mt-q9k7tu>.
87. Murray, Kristen E. "Let Them Use Laptops: Debunking the Assumptions Underlying the Debate over Laptops in the Classroom." *Oklahoma City University Law Review* 36, (2011): 185-239.

88. Ohm, Paul. "Computer Programming and the Law: A New Research Agenda." *Villanova Law Review* 54, (2009): 117-132.
89. Olubiyi, Ifeoluwa; Olaniyan, Ayobami; Odiaka, Ngozi. "The Role of Technology in the Advancement of Legal Education and Practice in Nigeria" (Conference: Nigerian Association of Law Teachers, 2015), https://www.researchgate.net/publication/280566346_The_Role_of_Technology_in_the_Advancement_of_Legal_Education_and_Practice_in_Nigeria.
90. O'Neil, Megan. "Confronting the Myth of the 'Digital Native'." *The Chronicle Higher Education*, April 21st, 2014, <http://chronicle.com/article/Confronting-the-Myth-of-the/145949/>.
91. Pagel, Mark. "Brain Candy and Bad Mathematics," in *Is the Internet Changing the Way You Think? The Net's Impact on Our Minds and Future*, edited by John Brockman. New York: Harper Collins Publishers, 2011.
92. Palfrey, John. "Smarter Law School Casebooks," in *Legal Education in the Digital Age*, edited by Edward Rubin. Cambridge: Cambridge University Press, 2012.
93. Paul, Gregory. "Hell if I Know," in *Is the Internet Changing the Way You Think? The Net's Impact on Our Minds and Future*, edited by John Brockman. New York: Harper Collins Publishers, 2011.
94. Pinker, Steven. *How the Mind Works*. New York: W. W. Norton & Company, 1997.
95. Pinker, Steven. "Not at All," in *Is the Internet Changing the Way You Think? The Net's Impact on Our Minds and Future*, edited by John Brockman. New York: Harper Collins Publishers, 2011.
96. Pistone, Michele. "Law Schools and Technology: Where We Are and Where We Are Heading." *Journal of Legal Education* 64, n.º 4 (2015): 586-604.
97. Pivovarov, Valentin, and Dolm, Nick. "713% Growth: Legal Tech Set an Investment Record in 2018." *Forbes*, January 15th, 2019, <https://www.forbes.com/sites/valentinpivovarov/2019/01/15/legaltechinvestment2018/>
98. Prensky, Marc. "Digital Natives, Digital Immigrants Part 1." *On The Horizon* 9, n.º 1 (2001): 1-6.
99. Priest, Stephen. *The British Empiricists*, 2nd ed. New York: Routledge, 2007.
100. Ratey, John J. *A User's Guide to the Brain*. Nueva York: Vintage, 2001.
101. Ravizza, Susan M.; Hambrick, David Z.; and Fenn, Kimberly M. "Non-academic Internet Use in the Classroom Is Negatively Related to Classroom Learning Regardless of Intellectual Ability." *Computers & Education* 78, (2014): 109-114.
102. Richtel, Matt. "Technology Changing How Students Learn, Teachers Say," *New York Times*, November 1st, 2012, A18, https://www.nytimes.com/2012/11/01/education/technology-is-changing-how-students-learn-teachers-say.html?emc=eta1&_r=0.
103. Riquelme, Rodrigo. "LegalTech: el valor y los retos de la tecnología en el mundo del derecho." *El Economista*, March 1st, 2019, <https://www.economista.com.mx/tecnologia/Legal-Tech-el-valor-y-los-retos-dela-tecnologia-en-el-mundo-del-derecho-20190228-0148.html>.
104. Rubin, Edward (ed.). *Legal Education in the Digital Age*. Cambridge: Cambridge University Press, 2012.
105. Saw, Yénéé. "Putting technology in its Place: Are Law Schools the Right Place to Teach Coding?" *Thompson Reuters Legal Insight*, July 12th, 2017, <http://insight.thomsonreuters.com.au/posts/law-schools-teach-coding>.

106. Schank, Roger. *Teaching Minds: How Cognitive Science Can Save Our Schools*. New York: Teachers College Press, 2011.
107. Schank, Roger. "The thinking Process Hasn't Changed in 50,000 Years." *Edge*, last modification w. d., access August 8th, 2019, <https://www.edge.org/response-detail/11519>.
108. Schiltz, Patrick J. "On Being a Happy, Healthy, and Ethical Member of an Unhappy, Unhealthy, and Unethical Profession." *Vanderbilt Law Review* 52, n.º 4 (1999): 871-951.
109. Shell, Duane F.; Brooks, David W.; Trainin, Guy; Wilson, Kathleen M.; Kauffman, Douglas F.; and Herr, Lynne M. *The Unified Learning Model: How Motivational, Cognitive, and Neurobiological Sciences Inform Best Teaching Practices*. New York: Springer, 2010.
110. Sherwin, Richard K.; Feigenson, Neal; Spiesel, Christina. "Law in the Digital Age: How Visual Communication Technologies are Transforming the Practice, Theory, and Teaching of Law." *Boston University Journal of Science & Technology Law* 12, n.º 2 (2006): 227-270.
111. Sieckmann, Jan R. "La Sociología del derecho en la formación jurídica." *Academia. Revista sobre Enseñanza del Derecho*, n.º 12, (2008): 117-133.
112. Sites, Brian. "The Influence of Algorithms: The Importance of Tracking Technology as Legal Educators." *The Law Teacher* 23, n.º 1 (2016): 21-28.
113. Sk, Esahaque. "Education as an Instrument of Social Change." *International Research Journal of Multidisciplinary Studies* 3, (2017).
114. Skiba, Diane J.; and Barton, Amy J. "Adapting Your Teaching to Accommodate the Net Generation of Learners." *The Online Journal of Issues in Nursing* 11, n.º 2 (2006).
115. Slomanson, William R. "Blended Learning: A Flipped Classroom Experiment." *Journal of Legal Education* 64, n.º 1 (2014): 93-102.
116. Standish, Paul. "Only Connect: Computer Literacy from Heidegger to Cyberfeminism." *Educational Theory* 49, n.º 4 (1999): 417-435.
117. Steele, Thomas M. "The MacCrate Report: Its Impact on Education in Law Firm Management." *Pace Law Review* 23, n.º 2 (2003): 613-654.
118. Steiner, George. *Martin Heidegger*, 4th. ed. New York: Open Road Media, 2013.
119. Sylwester, Robert. *A Celebration of Neurons: An Educator's Guide to The Human Brain*. New York, Assn for Supervision & Curriculum, 1995.
120. The Irish Times Content Studio. "Technology Drives Change and Creates New Solutions for Legal Clients." *The Irish Times*, January 31st, 2019, <https://www.irishtimes.com/special-reports/innovation-inlaw/technology-driveschange-and-creates-new-solutions-for-legal-clients-1.3769572>.
121. "The University Map of Legal Tech: Who Teaches it in the World." *The Technolawgist*, March 18th, 2019, <http://www.thetechnolawgist.com/2019/03/18/the-university-map-of-legal-tech-who-teaches-it-in-the-world/>.
122. Thompson, Penny. "The Digital Natives as Learners: Technology Use Patterns and Approaches to Learning." *Computers and Education* 65, (2013): 12-33.
123. Thomson, Iain D. *Heidegger on Ontotheology: Technology and the Politics of Education*. Cambridge: Cambridge University Press, 2005.

124. Thomson, Iain. "Ontotheology? Understanding Heidegger's *Destruktion* of Metaphysics." *International Journal of Philosophical Studies* 8, n.º 3 (2000): 297-327.
125. Threedy, Debora L.; and Dewald, Aaron. "Re-Conceptualizing Doctrinal Teaching: Blending Online Videos with in-Class Problem-Solving." *Journal of Legal Education* 64, n.º 4 (2015): 605-621.
126. Troksa, Lauren. "The Study of Generations: A Timeless Notion within a Contemporary Context". Thesis, University of Colorado, 2016.
127. USC Gould School of Law. "The Rise of Virtual Law Practices and 'e-Lawyering'," *Online International LLM Degree Program (Blog)*, 2017, <https://onlinellm.usc.edu/blog/elawyering-and-virtual-law-practices/>.
128. Waddington, David I. "A Field Guide to Heidegger: Understanding 'The Question Concerning Technology'." *Educational Philosophy and Theory* 37, n.º 4 (2005): 567-583.
129. Wallace, James E. "Philosophy and the Future Law School Curriculum." *Denver Law Journal* 44, n.º 5 (1967): 24-35.
130. Wang, Shiang-Kwei; Hsu, Hui-Yin; and Coster, Daniel. "An Investigation of Middle School Science Teachers and Students Use of Technology Inside and Outside of Classrooms: Considering Whether Digital Natives Are More Technology Savvy than Their Teachers." *Educational Technology Research and Development* 62, n.º 6 (2014).
131. Warner, Richard; Sowle, Stephen D; Sadler, Will. "Teaching Law with Computers." *Rutgers Computer and Technology Law Journal* 24, (1998): 107-185.
132. Warren, Kay B.; and Bourque, Susan C. *Women, Technology, and International Development Ideologies: Analyzing Feminist Voices, in Gender at the Crossroads of Knowledge: Feminist Anthropology in the Postmodern Era*. California: University of California Press, 1991.
133. Willis, Miguel. "8 Law Schools on Cutting Edge of Tech + Innovation," *Innovative Law Student (Blog)*, April 28th, 2016, <https://www.innovativelawstudent.com/2016/04/7-law-schools-cutting-edge-tech-innovation/>.
134. Wolf, Maryanne. *Proust and the Squid: The Story and Science of The Reading Brain*. New York: Harper Perennial, 2007.
135. Zarrett, Nicole R.; and Malanchuk, Oksana. "Who's Computing? Gender and Race Differences in Young Adults Decisions to Pursue and Information Technology Career." *New Directions for Child and Adolescent Development*, n.º 110 (2005): 65-84.