



The Effect Of Technological Disruption On The Asean Economic Community: An Regulatory Analysis Of Legal Education In Indonesia

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Abstract

The implementation of the provisions of the ASEAN Economic Community (MEA) and the influence of Artificial Intelligence (AI) in analyzing legal issues are essential points that must be considered by legal education in Indonesia. Soekarno thought that education is the main priority to be implemented because it is a determining factor for the development of humanity. There is no way to fix the downturn of the people other than to form an education rooted in humanity's values, principles, and goals. This article discusses the relevance of Soekarno's thoughts regarding the importance of education in facing the rapid development of society and how educators and the legal profession should respond to these developments. AI can not just have the idea to create the latest technological sophistication alone. However, it is necessary to consider its usefulness in the future regarding the concept of the AI system. Concerns arise when people may believe whether AI will reflect human values?

Keywords: ASEAN Economic Community; Indonesian Legal Education; Technology Disruption.

A. Introduction

It is undeniable that with the enactment of the provisions of the ASEAN Economic Community (MEA) since December 31, 2015, we as a lecturer in the law faculty are also concerned about the future of our students, especially law school students, whether they are ready and able to compete in the face of world economic liberalization. Economic liberalization in the context of the MEA is not only the free flow of goods (liberalization of trade in goods) but also includes: Free flow of services (liberalization of benefits), Free flow of investments (liberalization of investment), Free flow of capital (liberalization of wealth), Free flow of skilled labour (liberalization of educated workers).¹ These items play a critical role in producing academically qualified graduates with a steel mentality to compete in the global market.

Indonesia, which has an area of 1,910,930 km² and a population of 273,879,750 people (as of 2021), is an inseparable part of the MEA (integrated region). Regional integration will eliminate barriers based on state sovereignty. Indonesia will become an area of free movement of trade in goods, services, capital, investment, and an educated workforce. Each process of these activities will certainly require support from the human resources of the country concerned

¹ Heri Widodo Smkn and Wonosari Caruban Madiun, "Potret Pendidikan Di Indonesia Dan Kesiapannya Dalam Menghadapi Masyarakat Ekonomi Asia (MEA)," *Cendekia: Jurnal Kependidikan Dan Kemasyarakatan* 13, no. 2 (April 4, 2016): 293–308, <https://doi.org/10.21154/CENDEKIA.V13I2.250>.

for how to serve and be involved in launching the MEA movement's activities.² As lecturers in the law faculty, of course, the role of the academic community, such as faculty leaders, lecturers, and education staff, play an essential role in how to form an up-to-date and marketable curriculum so that when students graduate, they will be ready to work and compete with foreign graduates who are working in Indonesia.

The development of MEA's transnational business activities is always related to the legal profession. Economic actors will always need information on legal certainty in business in the destination country. Therefore we need law graduates who are reliable in academic aspects and communication and have a warrior mentality because our graduates will be faced with graduates from foreign law faculties who may have studied the development of law in this country more or less.

In the context of the advocate profession, for example, transnational companies in developed countries, such as America and European countries, generally use or even grow together with large law firms headquartered in these developed countries. The process of investment movement, for example, from America or Western Europe to the Asian region, has been strongly followed by a tendency towards expanding legal services by large law firms based in developed countries to the Asian region through a merger model. The establishment of branches or joint operations. As Chew Sengkok and Yeap Suan Hong (international business law analysts) have stated "International law firms are taking the cue from their clients-multinational corporations- the US and European corporations are increasingly expanding their investments into Asia. The Rapid and Sustained growth of trade and investment flows into Asia in recent years has been accompanied by an explosion of interest in merger, alliances, or other combinations between law firm around the world. Between 2010 and 2011, law firm merger activities increased 65%."

A brief review of decades ago, in 1967, President of the American Bar Association, Charles S. Rhyne, was confident that computers would not replace the legal profession by saying: "To allay unfounded fears, it should be stated that the computer will never replace the trained legal mind. The computer is incapable of original thought, reasoning and creative achievement".³ But revolution 4.0. With its digital advances and the presence of artificial intelligence machines and big data, it changed the paradigm and way of law enforcement to become an "alarm" for disruption to the legal profession, especially the offices of advocates, notaries, and courts that were previously untouched.⁴ Responding to the signs of the disruptive era, academics and legal practitioners had a chance to discuss Techlaw Fest 2018 at the Suntec Singapore Convention. Their concern is that one day the litigants will no longer need lawyers, notaries, and legal consultants as

² Dewi Sita, "Bonus Demografi Di Indonesia: Suatu Anugerah Atau Petaka," *Journal of Information System, Applied, Management, Accounting and Research* 2, no. 3 (2018): 23.

³ Charles S. Rhyne, "The Computer Will Speed a Law-Full World," *American Bar Association Journal* 53, no. 5 (1967): 420-24.

⁴ Daniel Susskind and Richard E. Susskind, *The Future of the Professions: How Technology Will Transform the Work of Human Experts* (Oxford University Press, 2018), https://books.google.co.id/books?hl=en&lr=&id=iYpmCgAAQBAJ&oi=fnd&pg=PP1&dq=Richard+Susskind,+et+al.,+2015,+The+Future+of+The+Professions:+How+Technology+&ots=utrBcBBctX&sig=AYKnQVL087_2RAy56Kn0wNagrKI&redir_esc=y#v=onepage&q=Richard+Susskind%2C+et+al.%2C

legal services providers. Users of legal services, ranging from legal consultations, and making business contracts to taking proceedings in court cases, can choose a variety of artificial intelligence that is starting to be widely developed.

Like in the business sector, technology crushes anyone who is not innovative and efficient, including the world of lawyers and notaries who have become business-industry. Previously, legal opinions and advice seemed complicated for many ordinary people, so the presence of a legal consultant is very much needed for those who deal with the law. Now, artificial intelligence is available that provides all data, regulations, and jurisprudence so that litigants do not need to consult by coming to the law office. Just click on artificial intelligence (hereinafter named AI) to get information and opinions on legal matters. There is also artificial intelligence capable of drafting a complete contract; by processing input data, terms and conditions, the parties can prepare the contract independently.⁵

The writing of this article has a "basic assumption", which sees a society that continues to develop so that new problems emerge.⁶ In connection with the development of society in the Asean region which forms an ASEAN Economic Community which is faced with the disruption of information technology, the author would like to see the thoughts of the Proclaimer of the Nation, President Soekarno (hereinafter Soekarno), are still relevant to be applied in the current era of globalization, especially legal education. Soekarno's thesis saw that "Indonesian independence can only be achieved through revolution, and revolution will succeed if it is supported by nationalism. Thus, independence without nationalism is impossible, and vice versa. And to instill and awaken nationalism, it must be taught to the Indonesian people through educational institutions in a systematic and structured manner". Reflecting on Soekarno's thoughts, there are progressive "ways" that need to be applied to our higher education so that our law students can still collaborate with the times, but without leaving the "Indonesian" character behind.

B. Indonesian students moral degradation: the values and ideological resilience in Indonesia are experiencing a downward trend

According to Soekarno, education is the main priority to be implemented because in fact it is a determining factor for the development of mankind. There is no other way to fix the downturn of the people other than to form an education rooted in the values, principles, and goals of humanity. Reviewing the 77th anniversary of the birth of Pancasila, we as educators should reflect on the journey of our national life in order not to let the results of encouraging infrastructure development not be matched by the quality of the effects of human resource development. Mainly in what is often referred to as the nation's character (character building), which is experiencing degradation. In the last decade, the National Resilience Institute (Lemhannas) stated that indicators regarding the quality of the nation's character in the National Resilience Index include essential variables, namely tolerance, equality in law, and equal rights to social life, and

⁵ Widodo Dwi Putro, "Disrupsi Dan Masa Depan Profesi Hukum," *Mimbar Hukum - Fakultas Hukum Universitas Gadjah Mada* 32, no. 1 (February 15, 2020): 19–29, <https://doi.org/10.22146/JMH.42928>.

⁶ Soetandyo Wignjosoebroto, *Konsep Hukum, Tipe Kajian Dan Metode Penelitiannya* (Makassar, 1994).

national unity. The index concludes that national values and ideological resilience in Indonesia are experiencing a downward trend.⁷

We can observe, for example, that in the middle of the Covid-19 pandemic, based on data from the Yogyakarta Special Region Regional Police for "klitih" street crimes that occurred from 2019 to early 2020, the majority of perpetrators were still underage students. The role of the family and school is in the spotlight because overcoming the problem of klitih, and there must be participation from various parties, one of which, besides family institutions, is educational institutions.⁸

Muhammad Nur Rizal (2022) revealed that the changes and pressures that emerged due to the pandemic could be one of the triggers for the klitih action by the teenager. We notice that some teenagers face changing dynamics in their families, schools, friendships and social circles.⁹ Humans need self-actualization. However, recently, teenagers do not have any space to express themselves at school, in the family or the community. The influence of learning to switch to online can reduce student activity.¹⁰ Students spend most of their time studying only at home, but many families do not have good relationships. If this phenomenon is ignored, these students who will become students in the future can become a fundamental problem for universities which will "freeze more freedom of expression" for their students on campus. Will universities be better prepared to educate their students to face the era of economic globalization and disruptive information technology?¹¹

If it is related to legal education, the next question is how ready are our law graduates who work as advocates, judges, prosecutors, and notaries to be able to seize the opportunity of the ASEAN economic globalization movement? Of course, apart from being determined by their "network" ability, their chances to compete in the global market must be fully supported by law faculties that provide up-to-date and marketable curricula. This up-to-date and commercial curriculum must also be supported by qualified lecturers (high teaching and research hours) and totality in educating and teaching students. Lecturer activities outside campus in terms of working on "outside projects" should be managed better so that they do not sacrifice student lecture hours.

Second, the ratio between the number of students and lecturers needs to be proportional so that teaching and learning activities can run effectively. Third, open international classes by carrying out teaching and learning activities in total

⁷ Hikam, "Globalisasi Dan Pemetaan Kekuatan Strategis Pertahanan Maritim Indonesia Dalam Menghadapi Ancaman Transnasional: Berdasarkan Analisis Model Element Of National Power," *Jurnal Pertahanan & Bela Negara* 5, no. 2 (2018): 53–70.

⁸ Irwan Syambudi, "Pelajar Di Jogja Jadi Pelaku Klitih, Salah Keluarga Atau Sekolah?," accessed August 16, 2022, <https://tirto.id/pelajar-di-jogja-jadi-pelaku-klitih-salah-keluarga-atau-sekolah-exgu>.

⁹ Eko Nurisman, "Analisis Penegakan Hukum Pidana Kejahatan Klitih Dan Anarkisme Jalan Oleh Remaja," *Jurnal Pendidikan Kewarganegaraan Undiksha* 10, no. 1 (February 1, 2022): 415–28.

¹⁰ "Sekolah Daring, Keluarga, Dan Pemicu Klitih Di Jogja - JPNN.Com Jogja," accessed August 16, 2022, <https://jogja.jpnn.com/jogja-terkini/2356/sekolah-daring-keluarga-dan-pemicu-klitih-di-jogja>.

¹¹ Mu'mina Kurniawati S J Kahar, Nina Zulida Situmorang, and Siti Urbayatun, "Hubungan Antara Regulasi Emosi Dengan Perilaku Agresif Pada Siswa SMA Di Yogyakarta," *Psyche 165 Journal*, February 2, 2022, 7–12.

international languages (English, Mandarin), bringing in international students to study and foreign lecturers through collaboration to teach.¹² It seems complicated for universities to open this international class because, in addition to requiring enormous costs, another factor is the availability of credible human resources (lecturers) to teach fluently using international languages.

However, the author believes that for our law graduates to compete in providing legal services, they must be supported by good international language communication skills.¹³ Don't let the golden opportunity of our undergraduates be taken by foreign law scholars who work at the same time doing business in this country; it's just a matter of language.

C. The Legal Profession in a regulatory trap

In the context of the legal profession as an advocate, the movement of foreign lawyers in the Indonesian market is a business assistance activity for their clients who enter the Indonesian market. Indeed their clients need not only services or the provision of non-litigation legal services but also legal assistance in the form of aid or defence before the court. Business people will usually first consult the problem with international-level law firms and large networks about their business interests in the country where become an objective.¹⁴

In the context of the Law on Advocates, Article 23 of Law Number 18 of 2003 concerning Advocates stipulates that foreign advocates are prohibited from opening their practice or opening a branch of a foreign law firm or partnering with Indonesian advocates to provide legal services and assistance in Indonesia. Foreign advocates are only allowed to practice as employees or foreign legal experts employed in Indonesian law offices. They cannot provide legal services or opinions on issues based on Indonesian law or represent disputing parties to litigate in Indonesian courts. Therefore, foreign lawyers need to synergize with Indonesian lawyers in helping to build the potential of their clients (transnational companies) in the Indonesian market. With good synergy (alliance) cooperation, these foreign lawyers can be employed at Indonesian law firms.

In its implementation, all of our AEC and Bachelor of Law issues stem from developing quality higher education institutions (Universitas) where our law students study law. Besides that, legal career development and development must always be carried out and monitored to strengthen the relationship between universities and alumni.

D. Competition between Artificial Intelligence and Human Legal Workers

Once considered a "downstream" artificial product, technology is now competing with humans. In the first study found in competition, the accuracy of artificial intelligence machines was more accurate than human support. An artificial intelligence tool called LawGeex played against 20 top US attorneys, identified 30 legal issues, and took four hours to resolve. Legal issues range from

¹² Sida Liu, "The Legal Profession as a Social Process: A Theory on Lawyers and Globalization," *Law & Social Inquiry* 38, no. 3 (December 27, 2013): 670–93.

¹³ Edward D. Re, "The Causes of Popular Dissatisfaction with the Legal Profession," *St. John's Law Review* 68 (1994), <https://heinonline.org/HOL/Page?handle=hein.journals/stjohn68&id=97&div=&collection=>.

¹⁴ Jonathan Zittrain, "Law and TechnologyThe End of the Generative Internet," *Communications of the ACM* 52, no. 1 (January 2009): 18–20.

arbitration dispute resolution to redress issues.¹⁵ This study evaluates how accurate Lawgeex is in identifying legal and attorney problems. Studies show that human lawyers achieve an average accuracy of 85%, and Lawgeex ensures accuracy in examining and identifying up to 94% of legal issues. This study also compares in terms of time, namely how quickly the artificial intelligence machine can review 5 (five) Non-Disclosure Agreements compared to experienced advocates to evaluate the object of the same agreement. As a result, human advocates took an average of 92 minutes, while Lawgeex only took 26 seconds. On the site, the artificial intelligence tool pokes fun at advocates for why it's faster, joking: "robots don't need coffee."¹⁶

Human skills have become less relevant and have therefore been replaced by systems, in some cases algorithms. Why are artificial intelligence tools more innovative than human-run legal professions, and can artificial intelligence tools replace the role of legal work? First, technological developments such as digital documents and chatbots will accelerate disruption in the legal field. State-of-the-art specialised tools are programmed to adapt to all legal and regulatory requirements, even being able to offer various legal opinions on legal issues various legal issues raised.¹⁷ Second, the next potential victims are notaries and legal consultants. As for the legal profession, there are strict regulations, such as special requirements to become a notary and a lawyer. It can be said that the current intelligence machine is not suitable for notaries because the law stipulates the validity of notarial request agreements, such as the establishment of a limited liability company and the creation of contracts. Let's assume the meaning of a notary if the future law does not determine the validity of a particular agreement that must go through a notary. Artificial intelligence machines will easily replace technical legal work such as making deeds and contracts. In the last few years, those in the investment world must be familiar with Smart Contracts. One of the technologies that utilize Blockchain is Smart Contracts. Smart Contracts are the same as regular contracts. As a document that binds an agreement or agreement between many parties, what distinguishes an intelligent contract from a regular arrangement is its form. Smart contracts take the form of code stored on the blockchain, but smart contracts are not always about programming code because, in essence, smart contracts are about who we are and trusting others.¹⁸ However, of course, this smart contract is borderless, so the possibility of a violation that harms one party, especially the consumer, exists. For example, if someone in Indonesia has a wrong contract, suing a party abroad is difficult to resolve.¹⁹ However, this matter needs to be considered carefully by advocates or legal scholars as a whole because it has a significant impact on their future. Advocacy based on the collection, understanding, or analysis of the meaning of terms or

¹⁵ Lawgeex, "AI vs. Lawyer: The Ultimate Showdown," accessed October 28, 2020, <https://www.lawgeex.com/AIvsLawyer/>.

¹⁶ Ertel Wolfgang, "Introduction to Artificial Intelligence" (Springler, 2018).

¹⁷ Sarah Finch, "5 Technological Disruptions In The Legal Sector," 2022, <https://disruptionhub.com/5-technological-disruptions-in-the-legal-sector/>.

¹⁸ Mark Giancaspro, "Is a 'Smart Contract' Really a Smart Idea? Insights from a Legal Perspective," *Computer Law & Security Review* 33, no. 6 (December 1, 2022): 825–35, <https://doi.org/10.1016/J.CLSR.2017.05.007>.

¹⁹ Yuanyu Zhang, "Smart Contract-Based Access Control for the Internet of Things," *IEEE Internet of Things Journal* 6, no. 2 (April 1, 2019): 1594–1601, <https://doi.org/10.1109/JIOT.2018.2847705>.

events tied to structured and measurable historical data, including interpretation and analysis of standard commercial contracts, has begun to be advocated by computer-based artificial intelligence in recent years.²⁰

Examining the various problems of our legal education that go hand in hand with economic globalization and the disruption of information technology, the author returns to Soekarno's thought which stated, "The Indonesian nation must have life-content and life-direction. We must have levensinhoud and levensrichting. A nation that does not have a content- life and direction of life is a nation whose life is not deep, a shallow nation, a shallow nation, a nation that has no levensdiepte at all. It is a nation of gold-plated fans, not the mind's gold. It marvels at the power of the club, not the moral power. He loves the joy of being born, not for the light of truth and justice. He is sometimes strong, but his strength is the skin's strength, even though he is empty inside."²¹ There are important points still not owned by the computer algorithm-based artificial intelligence, namely the values of justice and conscience. The European Union hopes to promote the development of trusted artificial intelligence through measures such as developing essential requirements, implementing large-scale AI pilots, and building international consensus on "integrity". Human-centred artificial intelligence.²² This point will be the homework of researchers on how artificial intelligence advocates will produce proportional and fair decisions on legal issues faced.

E. Conclusion

Based on the discussion of this paper, anyone, both private and public actors, cannot create AI without the idea of making the latest technological sophistication. However, it is necessary to consider its usefulness in the future regarding the concept of the AI system. Concerns arise when people may believe that AI reflects human values. A typical example often studied is when the AI makes ethical decisions when the bus tries to avoid a collision, but when the left turn hits our baby, the right turn hits the parents. Does AI? This has to be done completely without a proper program, leading to prejudice. Machines can become biased when the trained data set does not represent what it is intended to teach. Again, quoting Soekarno's statement, "He loves the joy of birth, not the nature of truth and justice. It is sometimes strong, but it is the skin's strength, even though it is empty inside." Concerning AI, in the end, the moral power (truth and justice) in law is vital homework on how to pair educators - the human legal profession with artificial intelligence to be able to complement each other.

References

- Bünz, Benedikt. "Zether: Towards Privacy in a Smart Contract World." *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, n.d., 423–43. https://doi.org/10.1007/978-3-030-51280-4_23/COVER.
- Finch, Sarah. "5 Technological Disruptions In The Legal Sector," 2022. <https://disruptionhub.com/5-technological-disruptions-in-the-legal-sector/>.

²⁰ Benedikt Bünz, "Zether: Towards Privacy in a Smart Contract World," *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, n.d., 423–43, https://doi.org/10.1007/978-3-030-51280-4_23/COVER.

²¹ "Soekarno Dan Pendidikan Karakter Bangsa," n.d., <https://kumparan.com/faozan-amar/soekarno-dan-pendidikan-karakter-bangsa-1tZRiEori6Y>.

- Giancaspro, Mark. "Is a 'Smart Contract' Really a Smart Idea? Insights from a Legal Perspective." *Computer Law & Security Review* 33, no. 6 (December 1, 2022): 825–35. <https://doi.org/10.1016/J.CLSR.2017.05.007>.
- Hikam. "Globalisasi Dan Pemetaan Kekuatan Strategis Pertahanan Maritim Indonesia Dalam Menghadapi Ancaman Transnasional: Berdasarkan Analisis Model Element Of National Power." *Jurnal Pertahanan & Bela Negara* 5, no. 2 (2018): 53–70.
- Kahar, Mu'mina Kurniawati S J, Nina Zulida Situmorang, and Siti Urbayatun. "Hubungan Antara Regulasi Emosi Dengan Perilaku Agresif Pada Siswa SMA Di Yogyakarta." *Psyche 165 Journal*, February 2, 2022, 7–12.
- Lawgeex. "AI vs. Lawyer: The Ultimate Showdown." Accessed October 28, 2020. <https://www.lawgeex.com/AIvsLawyer/>.
- Liu, Sida. "The Legal Profession as a Social Process: A Theory on Lawyers and Globalization." *Law & Social Inquiry* 38, no. 3 (December 27, 2013): 670–93.
- Nurisman, Eko. "Analisis Penegakan Hukum Pidana Kejahatan Klitih Dan Anarkisme Jalan Oleh Remaja." *Jurnal Pendidikan Kewarganegaraan Undiksha* 10, no. 1 (February 1, 2022): 415–28.
- Putro, Widodo Dwi. "Disrupsi Dan Masa Depan Profesi Hukum." *Mimbar Hukum - Fakultas Hukum Universitas Gadjah Mada* 32, no. 1 (February 15, 2020): 19–29. <https://doi.org/10.22146/JMH.42928>.
- Re, Edward D. "The Causes of Popular Dissatisfaction with the Legal Profession." *St. John's Law Review* 68 (1994). <https://heinonline.org/HOL/Page?handle=hein.journals/stjohn68&id=97&div=&collection=>.
- Rhyne, Charles S. "The Computer Will Speed a Law-Full World." *American Bar Association Journal* 53, no. 5 (1967): 420–24.
- "Sekolah Daring, Keluarga, Dan Pemicu Klitih Di Jogja - JPNN.Com Jogja." Accessed August 16, 2022. <https://jogja.jpnn.com/jogja-terkini/2356/sekolah-daring-keluarga-dan-pemicu-klitih-di-jogja>.
- Sita, Dewi. "Bonus Demografi Di Indonesia: Suatu Anugerah Atau Petaka." *Journal of Information System, Applied, Management, Accounting and Research* 2, no. 3 (2018): 23.
- Smkn, Heri Widodo, and Wonosari Caruban Madiun. "Potret Pendidikan Di Indonesia Dan Kesiapannya Dalam Menghadapi Masyarakat Ekonomi Asia (MEA)." *Cendekia: Jurnal Kependidikan Dan Kemasyarakatan* 13, no. 2 (April 4, 2016): 293–308. <https://doi.org/10.21154/CENDEKIA.V13I2.250>.
- "Soekarno Dan Pendidikan Karakter Bangsa," n.d. <https://kumparan.com/faozan-amar/soekarno-dan-pendidikan-karakter-bangsa-1tZRiEori6Y>.
- Susskind, Daniel, and Richard E. Susskind. *The Future of the Professions: How Technology Will Transform the Work of Human Experts*. Oxford University Press, 2018. https://books.google.co.id/books?hl=en&lr=&id=iYpmCgAAQBAJ&oi=fnd&pg=PP1&dq=Richard+Susskind,+et+al.,+2015,+The+Future+of+The+Professions:+How+Technology+&ots=utrBcBBctX&sig=AYKnQVL087_2RAy56Kn0wNagrki&redir_esc=y#v=onepage&q=Richard+Susskind%2C+et+al.%2C

- Syambudi, Irwan. “Pelajar Di Jogja Jadi Pelaku Klitih, Salah Keluarga Atau Sekolah?” Accessed August 16, 2022. <https://tirto.id/pelajar-di-jogja-jadi-pelaku-klitih-salah-keluarga-atau-sekolah-exgu>.
- Wignjosoebroto, Soetandyo. *Konsep Hukum, Tipe Kajian Dan Metode Penelitiannya*. Makassar, 1994.
- Wolfgang, Ertel. “Introduction to Artificial Intelligence.” Springer, 2018.
- Zhang, Yuanyu. “Smart Contract-Based Access Control for the Internet of Things.” *IEEE Internet of Things Journal* 6, no. 2 (April 1, 2019): 1594–1601. <https://doi.org/10.1109/JIOT.2018.2847705>.
- Zittrain, Jonathan. “Law and TechnologyThe End of the Generative Internet.” *Communications of the ACM* 52, no. 1 (January 2009): 18–20.