INTRODUCTION

GOVERNING EMERGING TECHNOLOGIES THROUGH SOFT LAW: LESSONS FOR ARTIFICIAL INTELLIGENCE

Gary Marchant, Lucille Tournas, and Carlos Ignacio Gutierrez*

ABSTRACT: Artificial Intelligence (AI) is positioned to be a foundational technology in most industrial sectors, societal interactions, as well as in many other technological advantages. AI is rapidly evolving with the promise of bettering our businesses, keeping us safer, and transforming us into a better society. At the same time, we know there will be concerns, some anticipated, and many that will develop alongside the technology itself. Its ubiquitous nature and rapid pace of development make traditional governance structures difficult to impose. However, there are a number of "soft-law" or non-legally binding tools that offer the flexibility needed to foster innovation safely.

CITATION: Gary Marchant, Lucille Tournas, and Carlos Ignacio Gutierrez, *Governing Emerging Technologies Through Soft Law: Lessons for Artificial Intelligence—An Introduction*, 61 JURIMETRICS J. 1–18 (2020).

Artificial intelligence (AI) is being applied in a growing number of industrial sectors and societal applications. There are many different types and definitions of artificial intelligence.[1] In its most general definition, AI is "the capacity of computers or other machines to exhibit or simulate intelligent behavior."[2] Narrow, or weak, AI systems are limited to performing a specific task,

*Gary Marchant, Ph.D., J.D., is Regents Professor and Faculty Director of the Center for Law, Science & Technology at the Sandra Day O'Connor College of Law at Arizona State University. Lucy Tournas, J.D., is a lawyer who is currently undertaking a Ph.D. in the School of Life Sciences, Arizona State University. Carlos Ignacio Gutierrez, Ph.D., recently completed his Ph.D. on AI governance at the Pardee RAND Graduate School, and is currently the Governance of AI Fellow in the Center for Law, Science & Innovation at the Sandra Day O'Connor. This special issue looking at the past history of soft law in technology governance is the first stage of a project on Soft Law Governance of Artificial Intelligence funded by the Charles Koch Foundation.

1. *See* SOFIA SAMOILI ET AL., EUROPEAN COMM'N JOINT RSCH. CTR., EUR 30117 EN, AI WATCH: DEFINING ARTIFICIAL INTELLIGENCE (2020), https://publications.jrc.ec.europa.eu/repository/bitstream/JRC118163/jrc118163_ai_watch._defining_artificial_intelligence_1.pdf [https://perma.cc/M7WZ-3K27].

2. IEEE, ETHICALLY ALIGNED DESIGN FIRST EDITION GLOSSARY 8 (2019), https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/ead1e_glossary.pdf [https://perma.cc/E6JC-KHVM].

such as playing games, image recognition, or language translation.[3] Such systems represent represents the current status and development of AI.[4]

For example, the Apple-Siri unit that retrieves information from the internet on a specific topic is narrow AI.[5] When Siri is operating in this task, it is incredibly fast and efficient, often more so than a human. However, Siri cannot hold a conversation or understand any requests past those simple tasks. Other narrow AI—such as IBM Watson for health—may seem more complex, as it is synthesizing and making diagnostic and treatment claims for patients, surpassing human knowledge.[6] This is a result of its machine learning algorithms, in which the system can learn by itself from available data without direct human supervision.[7] While this is exciting, as Watson can perform some tasks superior to its human counterparts, it can only be applied in a narrow capacity at this time.

Artificial general intelligence (AGI), sometimes referred to as superintelligence, is when a computer system can operate at or above human capacity. Here, the machine would mimic human intelligence in a general manner and be able to solve many types of problems.[8] This type of AI is mentioned only briefly here to be comprehensive, but further discussion is otherwise outside the scope of the article. AGI is generally believed to not be feasible for several decades, if ever.[9]

AI is ubiquitous in almost all technologies today that rely on computing. Andrew Ng, former chief scientist of Baidu and cofounder of the online learning platform Coursera, has stated that "AI is the new electricity. It will transform every industry and create huge economic value."[10] Not to be outdone, Google CEO Sundar Pichai claimed at the 2020 World Economic Forum annual meeting in Davos that the impact of AI on the world will be more profound than fire

---

3. NAT'L SCI. & TECH. COUNCIL, EXEC. OFF. OF THE PRESIDENT, PREPARING FOR THE FUTURE OF ARTIFICIAL INTELLIGENCE 7 (Oct. 2016) [hereinafter NSTC], https://obamawhitehouse.archives.gov/sites/default/files/whitehouse_files/microsites/ostp/NSTC/preparing_for_the_future_of_ai.pdf [https://perma.cc/J9BJ-LEM9].

4. *Id.*

5. *Siri Does More Than Ever. Even Before You Ask*, APPLE, https://www.apple.com/siri/ [https://perma.cc/4MZ4-V2Y4].

6. Steve Lohr, *IBM Is Counting on Its Bet on Watson, and Paying Big Money for It*, N.Y. TIMES (Oct. 17, 2016), https://www.nytimes.com/2016/10/17/technology/ibm-is-counting-on-its-bet-on-watson-and-paying-big-money-for-it.html [https://perma.cc/6GLN-35UT]; *About Watson Health*, IBM, https://www.ibm.com/watson-health/about [https://perma.cc/9H8T-P36G].

7. Romaine Areste, *How AI and Quantitative Assessments Deliver Insights and Value for Medical Imaging*, IBM (Sept. 2, 2020), https://www.ibm.com/Watson-health/pictures-into-numbers [perma.cc/YR2A-NU49].

8. Bill Vorhies, *Artificial General Intelligence—the Holy Grail of AI*, DATA SCI. CENT. (Feb. 23, 2016, 3:00 PM), https://www.datasciencecentral.com/profiles/blogs/artificial-general-intelligence-the-holy-grail-of-ai [https://perma.cc/QD7W-YD7P].

9. Katja Grace et al., *When Will AI Exceed Human Performance? Evidence from AI Experts*, J. A.I. RSCH. 729, 731 (2018), https://www.jair.org/index.php/jair/article/view/11222/26431.

10. Catherine Jewell, *Artificial Intelligence: The New Electricity*, WIPO MAG. (June 2019), https://www.wipo.int/wipo_magazine/en/2019/03/article_0001.html [https://perma.cc/PYE-PLZT] (interviewing computer scientist Andrew Ng).

or electricity.[11] Further, Ginni Rometti, then CEO of IBM, said in 2019 that she "expect[ed] AI to change 100 percent of jobs within the next five to 10 years."[12] Lastly, the White House issued an Executive Order on AI in 2019 that began by stating that AI "promises to drive growth of the United States economy, enhance our economic and national security, and improve our quality of life."[13]

Even allowing that the hype surrounding AI may be greater than the one associated with other emerging technologies, there is no question that AI is profoundly changing our economy, our lives, and our world. From our cars, to our phones, watches, and even vacuums, we are becoming a world dependent on AI. The annual global AI software revenue is forecast to grow from $10.1 billion in 2018 to $126.0 billion by 2025.[14] Its rapid adoption across all industries suggests that AI will be the next great technological shift, as significant as the adoption of the computer.

While AI systems are already providing enormous commercial value and societal benefits,[15] with many more to come, they are also raising a variety of societal concerns. Examples include privacy threats,[16] potential for biased or discriminatory applications,[17] safety risks,[18] medical errors,[19] lack of transparency,[20] possibility of financial manipulation,[21] political interference,[22] impacts

---

11. Amy Thomson & Stephanie Bodoni, *Google CEO Thinks AI Will Be More Profound Change Than Fire*, BLOOMBERG (Jan. 22, 2020), https://www.bloomberg.com/news/articles/2020-01-22/google-ceo-thinks-ai-is-more-profound-than-fire [https://perma.cc/EC4X-B7DE].

12. Lori Ioannou, *IBM CEO Ginni Rometty: AI Will Change 100 Percent of Jobs Over the Next Decade*, CNBC (Apr. 2, 2019, 3:41 PM), https://www.cnbc.com/2019/04/02/ibm-ceo-ginni-romettys-solution-to-closing-the-skills-gap-in-america.html [https://perma.cc/AA5H-SZYN].

13. Exec. Order No. 13,859, 84 Fed. Reg. 3967, 3967 (Feb. 14, 2019).

14. *Artificial Intelligence Market Forecasts*, TRACTICA (2019), https://tractica.omdia.com/research/artificial-intelligence-market-forecasts/ [https://web.archive.org/web/20200330135054/ https://tractica.omdia.com/research/artificial-intelligence-market-forecasts/].

15. NSTC, *supra* note 3, at 13–14; Daniel Castro & Joshua New, *The Promise of Artificial Intelligence*, CTR. FOR DATA INNOVATION (Oct. 10, 2016), https://www.datainnovation.org/2016/10/the-promise-of-artificial-intelligence/ [https://perma.cc/KY3T-YHFV]; STANDING COMM. OF THE ONE HUNDRED YEAR STUDY on A.I., Stan. Univ., ARTIFICIAL INTELLIGENCE AND LIFE IN 2030 (Sept. 2016), https://ai100.stanford.edu/sites/g/files/sbiybj9861/f/ai100report10032016fnl_singles.pdf.

16. *See* Karl Manheim & Lyric Kaplan, *Artificial Intelligence: Risks to Privacy and Democracy*, 21 YALE J.L. & TECH. 106 (2019).

17. *See* Subbarao Kambhampati, *Why Are Artificial Intelligence Systems Biased?*, HILL (July 12, 2020), https://thehill.com/opinion/cybersecurity/506924-why-are-artificial-intelligence-systems-biased [https://perma.cc/8G2R-SS35].

18. Dario Amodei et al., Concrete Problems in AI Safety 1, 2–3 (July 25, 2016), https://arxiv.org/pdf/1606.06565.pdf (unpublished manuscript).

19. *See* W. Nicholson Price II et al., *Potential Liability for Physicians Using Artificial Intelligence*, 322 JAMA 1765, 1765 (2019).

20. Will Knight, *The Dark Secret at the Heart of AI*, MIT TECH. REV. (Apr. 11, 2017), https://www.technologyreview.com/2017/04/11/5113/the-dark-secret-at-the-heart-of-ai/ [https://perma.cc/88TX-REPM].

21. John Markoff, *As Artificial Intelligence Evolves, So Does Its Criminal Potential*, N.Y. TIMES (Oct. 23, 2016), https://www.nytimes.com/2016/10/24/technology/artificial-intelligence-evolves-with-its-criminal-potential.html [https://perma.cc/3B3Y-EDRX].

22. Vyacheslav Polonski, *How Artificial Intelligence Conquered Democracy*, CONVERSATION (Aug. 8, 2017), https://theconversation.com/how-artificial-intelligence-conquered-democracy-77675 [https://perma.cc/5J26-EGUR].

on human relationships,[23] technological unemployment,[24] and national security concerns.[25] The smooth and publicly acceptable implementation of AI will depend on effective solutions or strategies for addressing these societal concerns.[26]

The traditional recourse for addressing these types of technology impacts is government-enacted and government-enforced regulation. However, for a variety of reasons, comprehensive government regulation of AI is unlikely at this time. AI, like a number of other emerging technologies, presents a series of regulatory challenges.[27] Its speed of development and evolution makes it challenging to adopt static regulations for a rapidly moving target, known as the pacing problem.[28] The benefits, risks, and future trajectories of AI are all inherently uncertain, again making a regulatory response difficult.[29] The wide variety of applications, industry sectors, and regulatory authorities involved with AI makes a coordinated and comprehensive government response difficult, at least without the creation of some new regulatory entity.[30] Other regulatory impediments include the lack of jurisdiction over some AI concerns by existing agencies, insufficient in-house technical expertise and funding to address AI risks, and the dearth of political will or priority ranking to regulate AI.[31]

The net effect of these factors is that most of the concerns raised by AI today have not generated a robust government regulatory response to date, and are unlikely to do so for the foreseeable future.[32] Something else must fill these

---

23. Maggie Jackson, *Would You Let a Robot Take Care of Your Mother?*, N.Y. TIMES (Dec. 13, 2019), https://www.nytimes.com/2019/12/13/opinion/robot-caregiver-aging.html [https://perma.cc/MFA3-44RV]; Francis X. Shen, *Sex Robots Are Here, But Laws Aren't Keeping Up With the Ethical and Privacy Issues They Raise*, CONVERSATION (Feb. 12, 2019), https://theconversation.com/sex-robots-are-here-but-laws-arent-keeping-up-with-the-ethical-and-privacy-issues-they-raise-109852 [https://perma.cc/WFP5-P5N4].

24. David Deming, *The Robots Are Coming. Prepare for Trouble*, N.Y. TIMES (Jan. 30, 2020), https://www.nytimes.com/2020/01/30/business/artificial-intelligence-robots-retail.html [https://perma.cc/8BDY-U9AJ].

25. Jayshree Pandya, *The Weaponization of Artificial Intelligence*, FORBES (Jan. 14, 2019), https://www.forbes.com/sites/cognitiveworld/2019/01/14/the-weaponization-of-artificial-intelligence/#ad4837236867 [https://perma.cc/4SLL-PJ8W].

26. *See generally* Carlos Ignacio Gutierrez Gaviria, The Unforeseen Consequences of Artificial Intelligence (AI) on Society (Jan. 2020) (Ph.D. dissertation, Pardee RAND Graduate School).

27. Gary E. Marchant & Wendell Wallach, *Introduction* to EMERGING TECHNOLOGIES: ETHICS, LAW AND GOVERNANCE 1–12 (Gary E. Marchant & Wendell Wallach eds., 2016).

28. Gary E. Marchant, *The Growing Gap Between Emerging Technologies and the Law*, *in* THE GROWING GAP BETWEEN EMERGING TECHNOLOGIES AND LEGAL-ETHICAL OVERSIGHT: THE PACING PROBLEM 19, 22–23 (Gary E. Marchant et al. eds., 2011).

29. Wendell Wallach & Gary Marchant, *Toward the Agile and Comprehensive International Governance of AI and Robotics*, 107 PROC. IEEE 505, 505 (2019).

30. *See* Ryan Hagemann et al., *Soft Law for Hard Problems: The Governance of Emerging Technologies in an Uncertain Future*, 17 COLO. TECH. L.J. 37, 47, 68 (2018).

31. NSTC, *supra* note 3, at 17; Bryan Naylor, *Not Just Airplanes: Why the Government Often Lets Industry Regulate Itself*, NAT'L PUB. RADIO (Apr. 4, 2019, 5:01 AM), https://www.npr.org/2019/04/04/709431845/faa-is-not-alone-in-allowing-industry-to-self-regulate [https://perma.cc/2KP7-JMHS]; Hagemann et al., *supra* note 30, at 69.

32. NSTC, *supra* note 3, at 17 ("The general consensus of the . . . commenters was that broad regulation of AI research or practice would be inadvisable at this time.").

governance gaps, and various "soft law" measures have been proposed or enacted. These programs, and their strengths and limitations, are reviewed in the next section. These soft law programs offer great flexibility; however, they are not directly enforceable. For them to be effective and credible, they must have indirect enforcement mechanisms to ensure that they are implemented successfully. After describing AI soft law programs, this article surveys various mechanisms that can be used to implement and enforce AI soft law programs. It then introduces a project to use previous examples of soft law programs in other domains to provide relevant lessons for the governance of AI via soft law.

I. AI SOFT LAW PROGRAMS

While there is no single consensus definition of soft law, it is defined here as a program that creates substantive expectations, but which are not directly enforceable by government.[33] Soft law can have a variety of forms and formats, such as a code of conduct, ethical statement, professional guidelines, statement of principles, certification program, private standard, public-private partnership program, or voluntary program.[34] Part I describes the rapidly growing landscape of AI soft law measures, and summarizes the advantages and deficiencies of soft law measures for governing an emerging technology like AI.

A. The Proliferation of AI Soft Law Programs

Given the prominence of AI methods and applications and the major regulatory gaps that have already emerged, it is perhaps not surprising that there has already been a proliferation of soft law programs and proposals.[35] Several projects are attempting to track and map this growing terrain of AI soft law measures. Jobin and her coauthors[36] identified 84 ethical statements or guidelines for AI, ranging from individual company ethical codes (e.g., Google) to multi-governmental declarations (such as the OECD Principles on Artificial Intelligence[37] that have been endorsed by at least 42 nations). These soft law measures express a convergence on five substantive ethical principles: transparency, justice and fairness, non-maleficence, responsibility, and privacy.[38]

---

33. Gary E. Marchant & Brad Allenby, *Soft Law: New Tools for Governing Emerging Technologies*, 73 BULL. ATOMIC SCI. 108, 108 (2017).

34. Hagemann et al., *supra* note 30, at 47.

35. *See* Gary Marchant, *"Soft Law" Governance of Artificial Intelligence*, AI PULSE 5–11 (Jan. 25, 2019) [hereinafter Marchant, *AI Soft Law*], https://aipulse.org/soft-law-governance-of-artificial-intelligence/?pdf=132 [https://perma.cc/5HZD-YKX8].

36. *See generally* Anna Jobin et al., *The Global Landscape of AI Ethics Guidelines*, 1 NATURE MACH. INTEL. 389 (2019).

37. *See generally OECD Principles on Artificial Intelligence*, OECD, https://www.oecd.org/going-digital/ai/principles/ [https://perma.cc/8CWR-KBJS].

38. Jobin et al., *supra* note 36, at 391.

AlgorithmWatch has identified over 160 AI ethics initiatives as of April 2020.[39] An analysis of these instruments finds a convergence on four key principles: respect for human autonomy, prevention of harm, fairness, and explicability.[40] The Principled Artificial Intelligence Project at the Berkman Klein Center at Harvard University has catalogued and characterized 36 AI soft law programs.[41] This database has identified eight common themes in these soft law programs: accountability, fairness and nondiscrimination, human control of technology, privacy, professional responsibility, promotion of human values, safety and security, and transparency and explainability.[42] In the fall of 2020, the Center for Law, Science & Innovation (LSI Center) at the Sandra Day O'Connor College of Law, Arizona State University will publish its findings stemming from the identification of over 640 soft law programs directed at AI.[43] Among their conclusions, the researchers found that roughly a third of programs possess some sort of enforcement or implementation tool, and that government entities are one of the main stakeholders that lead or implement those programs most likely to complement hard law alternatives.

The Institute of Electrical and Electronics Engineers (IEEE) has undertaken another noteworthy initiative to develop soft law governance of AI. The IEEE worked with several hundred AI experts across multiple disciplines to produce Ethically Aligned Design, a 200-plus page report on the ethical development and use of AI.[44] The IEEE is now taking the next step to develop over a dozen IEEE standards on various aspects of AI governance,[45] including an overview standard on the governance of AI.[46]

B. Pros and Cons of Soft Law Measures

Soft law governance tools for AI or other emerging technologies have advantages and disadvantages. This Section reviews these qualities as compared to traditional hard law government regulation.

---

39. *AI Ethics Guidelines Global Inventory*, ALGORITHM WATCH (Apr. 2020), https://inventory.algorithmwatch.org/about [https://perma.cc/C8HK-MK3G].

40. Brent Mittelstadt, *Principles Alone Cannot Guarantee Ethical AI*, 1 NATURE MACH. INTEL. 501, 501 (2019).

41. *See generally* JESSICA FJELD ET AL., PRINCIPLED ARTIFICIAL INTELLIGENCE: MAPPING CONSENSUS IN ETHICAL AND RIGHTS-BASED APPROACHES TO PRINCIPLES FOR AI (2020), https://dash.harvard.edu/bitstream/handle/1/42160420/HLS%20White%20Paper%20Final_v3.pdf?sequence=1&isAllowed=y [https://perma.cc/M2B2-UP69].

42. *Id.* at 15.

43. Carlos Ignacio Gutierrez et al., *Preliminary Results of a Global Database on Soft Law Mechanisms for the Governance of Artificial Intelligence*, *in* PROCEEDINGS OF THE IEEE/ITU INTERNATIONAL CONFERENCE ON ARTIFICIAL INTELLIGENCE FOR GOOD (forthcoming 2020).

44. *See generally* IEEE, ETHICALLY ALIGNED DESIGN (2017), https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/ead_v2.pdf [https://perma.cc/42TG-V5TW].

45. *Explore Our Approved IEEE 7000™ Standards & Projects*, IEEE, https://ethicsinaction.ieee.org/p7000/ [https://perma.cc/BZV7-E89H].

46. *P2863–Recommended Practice for Organizational Governance of Artificial Intelligence*, IEEE, https://standards.ieee.org/project/2863.html [https://perma.cc/24F8-DFCM].

1. *Advantages of Soft Law*

Soft law provides a more agile and flexible form of governance than traditional government regulation, an important attribute for rapidly evolving emerging technologies such as AI.[47] For instance, it can be adopted and modified much more quickly and easily, because it is not required to comply with the various procedural and bureaucratic requirements of regulation.[48]

If traditional regulatory statutes or regulations were used to govern AI, they would likely become quickly outdated, as public authorities would struggle to keep laws up to date with evolving technologies. The result is either no regulation, or outdated regulation.[49] For example, the primary regulatory statute for electronic communications in the United States is the Electronic Communications Privacy Act (ECPA), which was enacted in 1986 before email, the world wide web, and smart phones even existed.[50]

Additionally, hard law's requirement of delegated statutory is not an issue with soft law. A traditional regulatory agency can usually only act within powers delegated to it by a statute.[51] New statutes are rare and difficult to enact without some type of crisis, while existing statutes were drafted without awareness of the unique issues or problems that AI may present.[52] Thus, using existing regulatory authority to govern AI is often like trying to fit a square peg into a round hole. Examples of such regulatory misfits include trying to regulate algorithmic bias under the Federal Trade Commission Act enacted in 1914,[53] and regulating "smart" medical devices using AI under the 1976 Medical Device Amendments to the Federal Food, Drug and Cosmetic Act.[54] Other AI issues are not covered by any existing regulatory authority or agency (e.g., technological unemployment or some of the autonomy concerns raised by AI systems).[55]

In stark contrast, soft law tools can be adopted by a wide variety of organizations, often with minimal or no administrative or bureaucratic obstacles or delays. Delegated regulatory jurisdiction is not needed, and soft law can address any and all issues it chooses.[56] Very little traditional regulation has been enacted

47. Kenneth W. Abbott et al., *Soft Law Oversight Mechanisms for Nanotechnology*, 52 JURIMETRICS J. 279, 301–02 (2012).

48. Hagemann et al., *supra* note 30, at 63–65, 104–06.

49. Marchant, *supra* note 28.

50. *EPCA Reform: Why Now?*, DIGIT. DUE PROCESS, https://digitaldueprocess.org/ [https://perma.cc/BNR7-AWMH].

51. The Administrative Procedure Act directs courts to invalidate any agency action that is "in excess of statutory jurisdiction, authority, or limitations." 5 U.S.C. § 706(2)(C) (2018).

52. Hagemann et al., *supra* note 30, at 67, 68–69.

53. The Federal Trade Commission Act, Pub. L. 63-203, 38 Stat. 717 (1914) (current version at 15 U.S.C. § 41).

54. The Medical Device Amendments of 1976, Pub. L. No. 94-295, 90 Stat. 539 (1976) (current version at 21 U.S.C. §§ 351 to 360n-1).

55. Marchant, *AI Soft Law*, *supra* note 35, at 2.

56. Hagemann et al., *supra* note 30, at 98.

for AI, resulting in large, growing governance gaps.[57] The only solutions currently in place to fill those gaps are dozens of soft law programs.[58] Thus, soft law governance of AI is an existing fact, not an aspirational goal.

Three other aspects of soft law provide further benefits. First, unlike hard regulation adopted by regulatory authorities that are legally restricted to specific geographical jurisdictions, soft law measures have no similar restrictions, and thus tend to be inherently international in scope.[59] This is important for a technology like AI that is being developed, and applies, globally.[60] Second, there is no limit on the number of soft law options and alternatives that can be attempted. Under traditional regulation, only one regulatory agency usually has authority to adopt a single approach for a particular problem. In contrast, many different types or coalitions of entities can adopt their own soft law instruments, allowing "a 1000 flowers bloom" experimentation.[61] Finally, soft law programs often (although not always) involve a collaborative approach between different types of stakeholders, in contrast to the adversarial and hierarchical structure of traditional regulation.[62] This collaborative spirit can foster longer-term understanding and partnerships between stakeholders that would otherwise be in an adversarial relationship under traditional regulatory programs.[63]

2. *Disadvantages of Soft Law*

While soft law offers many advantages for governance of AI, it also presents some major disadvantages, which in many cases are the flip sides of the advantages. One set of problems with soft law programs is the process by which they are adopted. As discussed above, soft law enactments are able to avoid many of the procedural and bureaucratic impediments of government regulation, but those procedural and bureaucratic requirements are there for a reason—to promote the transparency of, and participation in, regulatory decision-making.[64] Soft law programs are typically designed and adopted behind closed doors, often by a carefully selected or limited group of entities, frequently from

57. Marchant, *AI Soft Law*, *supra* note 35, at 1–2.

58. *Id.*

59. Abbott et al, *supra* note 47, at 302.

60. Kathleen Walch, *Why the Race For AI Dominance Is More Global Than You Think*, FORBES (Feb. 9, 2020, 1:00 AM), https://www.forbes.com/sites/cognitiveworld/2020/02/09/why-the-race-for-ai-dominance-is-more-global-than-you-think/#11a938a4121f [https://perma.cc/YYK9-ALCK].

61. Marchant, *AI Soft Law*, *supra* note 35, at 4.

62. Hagemann et al., *supra* note 30, at 50–51.

63. Wallach & Marchant, *supra* note 29, at 506.

64. Hagemann et al., *supra* note 30, at 107–08.

industry.[65] Whereas any individual or organization can actively follow and participate in the enactment of government regulations, these participants will often be kept in the dark during the adoption stages of soft law programs.

The biggest deficits of soft law programs, however, relate to their effectiveness and credibility. Their provisions are often phrased in broad and general terms, making compliance difficult to objectively determine, especially without any type of reporting or monitoring requirement.[66] This problem is compounded by the lack of any direct enforcement by government regulators. This creates the potential for "greenwashing" or "ethics washing," where participating entities give lip service to their adherence to the soft law program without substantially changing their actual practices.[67] Or, even if some entities do take their commitments under soft law programs seriously, other entities might not, and those "bad actors" are usually the ones most in need of real oversight. This lack of effectiveness, or at least the inability to objectively determine effectiveness, is probably the greatest weakness of soft law programs.[68]

A related limitation of soft law programs is that they lack credibility with the public.[69] The lack of direct enforceability and the industry's ability to write or agree to its own requirements creates suspicion that soft law programs are self-serving and untrustworthy.[70] These concerns have been stoked and validated by high-profile examples of failed attempts of self-regulation. Some recent examples include the Boeing 737 Max and the Facebook-Cambridge Analytica fiascos.[71] These and other high-profile incidents have created a so-called "techlash" that has soured the public's tolerance for industry self-regulation, which encompasses most soft law approaches.

II. MECHANISMS FOR MAKING SOFT LAW MORE EFFECTIVE AND CREDIBLE

It is becoming increasingly clear that simply adopting or signing onto an AI soft law program will not suffice to ensure its effectiveness and credibility for addressing problems and concerns associated with AI. More is needed. There is a growing awareness and consensus that AI governance must move beyond principles to establishing processes for implementing or operationalizing those principles.[72] Fortunately, there are a number of mechanisms that are available for

65. *See* Gary E. Marchant & Kenneth W. Abbott, *International Harmonization of Nanotechnology Governance Through "Soft Law" Approaches*, 9 NANOTECHNOLOGY L. & BUS. 393, 398 (2013).

66. Marchant, *AI Soft Law*, *supra* note 35, at 4.

67. *Id.*

68. Abbott et al., *supra* note 47, at 302–03.

69. Marchant & Abbott, *supra* note 65, at 398–99.

70. *See* Marchant, *AI Soft Law*, *supra* note 35, at 4.

71. *Scandals Suggest Standards Have Slipped in Corporate America*, ECONOMIST (Apr. 4, 2019), https://www.economist.com/business/2019/04/06/scandals-suggest-standards-have-slipped-in-corporate-america [https://perma.cc/H3JZ-NSHX].

72. Wallach & Marchant, *supra* note 29, at 506; JESSICA CUSSINS NEWMAN, DECISION POINTS IN AI GOVERNANCE: THREE CASE STUDIES EXPLORE EFFORTS TO OPERATIONALIZE AI PRINCIPLES 3–4 (2020), https://cltc.berkeley.edu/wp-content/uploads/2020/05/Decision_Points_AI_Governance.pdf.

making soft law programs more effective and credible. None of these are magic bullets, but their combination can provide at least a Band-Aid, if not a bridge, for the growing governance gaps in AI, and can help advance the beneficial applications of AI while addressing the concerns and problems that this technology may create. Part II briefly catalogues some available strategies, starting with mechanisms that can be implemented internally within an entity that develops or uses AI, followed by a longer list of mechanisms that use outside influences.

A. Internal Measures

1. *Corporate Boards*

Corporate boards of directors, acting on behalf of shareholders in public companies, have become more active in overseeing corporate management implementations of critical aspects of company futures,[73] which for many corporations will increasingly involve AI. Corporate boards, or committees of the board set up for such oversight, could actively monitor the implementation and compliance with any soft law measures corporations have committed to follow. A number of guidance documents have now been produced to advise boards of directors on effective oversight of their respective company's AI implementation.[74]

2. *Ethics Committee*

An organization may establish an ethics committee to oversee compliance with standards, policies, and rules of conduct concerning AI. These committees can be comprised of executives and experts from various departments within or outside the organization.[75] They may be established early in a company's development to set up initial guidelines and processes, as well as navigate the conflicts surrounding them. They can then be charged with periodic review of AI policies, industry standards, regulatory review, or new technological developments to recommend policy changes. These committees provide accountability

73. Rebecca Henderson, *The Unlikely Environmentalists: How the Private Sector Can Combat Climate Change*, FOREIGN AFFS., May/June 2020, at 47.

74. WORLD ECON. F., EMPOWERING AI LEADERSHIP: AN OVERSIGHT TOOLKIT FOR BOARDS OF DIRECTORS (2019), https://wef-ai.s3.amazonaws.com/WEF_Empowering-AI-Leadership_Oversight-Toolkit.pdf [https://perma.cc/5H2S-KVJP]; RICK HAYTHORNTHWAITE & NATALIE PIERCE, ARTIFICIAL INTELLIGENCE, ROBOTS, RESKILLING & ETHICS—FOURTH REVOLUTION BOARD OF DIRECTOR IMPERATIVES & THE CHAIR'S EVOLVING ROLE (2019), https://www.littler.com/files/fourth_revolution_littler_report.pdf [https://perma.cc/D5DU-V9A6]; Rebecca S. Eisner & Brad L. Peterson, *Smart Board Level Questions to Ask About AI*, *in* MAYER BROWN, ARTIFICIAL INTELLIGENCE & FINANCIAL SERVICES 27–28 (Spring 2019), https://www.mayerbrown.com/-/media/files/perspectives-events/events/2019/04/article-booklet.pdf [https://perma.cc/UM6L-W9VX].

75. NEWMAN, *supra* note 72, at 5, 13–20.

for a company's behavior and a tool in mitigating misbehavior, as well as recommending adoption and ensuring compliance with various soft law measures the company has signed up for.

3. *Ethics Officer*

An ethics officer is responsible for ensuring that each facet of the organization's procedures is consistent with its code of ethics.[76] This position is particularly important in the realm of AI. The ethics officer would likely help establish and implement major AI policy guidelines for the company, such as its position on digital privacy. Additionally, the officer would need to understand the consequences of new technology and guide the company and CEO towards developing technology that adheres to its core values. Monitoring compliance with applicable AI soft law commitments would be a natural extension of the corporate ethics officer's responsibilities.

4. *Ombudsman or Whistleblower Mechanism*

Another useful internal mechanism is the provision of a confidential channel for employees to voice concerns about corporate or individual actions through an independent ombudsman or other company official. The mechanisms should be confidential, so employees need not worry about their job security or reprisals for initiating a report. For example, the police technology company Axon has a designated ombudsperson on their external ethics advisory committee to whom employees may raise concerns.[77]

B. External Measures

1. *Supply Chain*

Business partners could require certification with applicable AI soft law programs by both upstream suppliers and downstream customers as a condition of doing business with that company.[78] Obviously, the higher the market power of a company, the more capability it has to impose compliance with soft law measures on its upstream and downstream business partners. Although requiring such supply chain compliance may come at the expense of some business deals and financial losses, these consequences and detriments are likely to be outweighed by the prevention of bad publicity and legal liability resulting from partnering with an irresponsible supplier or customer.[79]

---

76. Henry Adobor, *Exploring the Role Performance of Corporate Ethics Officers*, 69 J. BUS. ETHICS 57 (2006).

77. *Axon AI Ethics Board*, AXON, https://www.axon.com/axon-ai-and-policing-technology-ethics [https://perma.cc/Z6LE-PXDW].

78. *See* George Baryannis et al., *Supply Chain Risk Management and Artificial Intelligence: State of the Art and Future Research Directions*, 57 INT'L J. PROD. RSCH. 2179, 2179 (2019).

79. Verónica H. Villena & Dennis A. Gioia, *A More Sustainable Supply Chain*, HARV. BUS. REV., Mar–Apr. 2020, at 87, 87–93.

2. *Government Procurement*

Because governments are often purchasers and users of many emerging technologies, compliance with applicable AI soft law programs could be mandated as prerequisites for contracts and purchases of technologies. Proposals have already been put forward for guidelines promoting ethical AI in government procurement efforts.[80]

3. *NGO Monitors*

Nongovernmental organizations (NGOs), think tanks, or journalists could monitor and report publicly on companies' compliance with specific soft law programs or provisions.[81] There may be limitations on an NGO's or journalist's ability to measure a company's performance, but one of the criteria for the rating system could be transparency in demonstrating compliance. NGOs and journalists have a different value structure than companies, making them a useful and independent counterweight for assessing soft law compliance. Sometimes the NGO can also be involved in the development of the soft law program—the participation of a variety of prominent NGOs in the Partnership for AI serves as such a counterweight, which can help build public confidence.[82]

4. *Auditing/Certification*

Certification bodies could create programs to certify that a company or other entity is adhering to a particular set of soft law guidelines or principles.[83] The independence and trustworthiness of the certification body is essential for building trust in this auditing and certification process. When structured properly, third-party inspections create strong economic incentives for firms to comply with applicable soft law standards.[84]

---

80. SABINE GERDON ET AL., WORLD ECON. F., AI PROCUREMENT IN A BOX 3 (June 2020), http://www3.weforum.org/docs/WEF_AI_Procurement_in_a_Box_Project_Overview_2020.pdf [https://perma.cc/3AX3-DTG3].

81. An example of NGO oversight is the major environmental group Environmental Defense Fund, which has participated in dozens of partnerships with companies to promote more sustainable practices. *About EDF+Business*, ENV'T. DEF. FUND, https://business.edf.org/about/ [https://perma.cc/DV77-QFHZ].

82. *Meet the Partners*, PARTNERSHIP ON AI, https://www.partnershiponai.org/partners/ [https://perma.cc/4AJ5-ZWG9] (over half of the 100+ partners of the Partnership on AI are nonprofits).

83. Gary E. Marchant et al., *A New Soft Law Approach to Nanotechnology Oversight: A Voluntary Product Certification Scheme*, 28 UCLA J. ENVTL. L. 123, 125 (2010).

84. Howard Kunreuther et al., *Third-Party Inspection as an Alternative to Command and Control Regulation*, 22 RISK ANALYSIS 309, 309 (2002).

5. *Trade Associations*

In some industry sectors, trade associations play a major role in representing the industry on public policy, but also in compiling and sharing data, standards, and other resources critical for a company operating in that industry.[85] Trade associations can therefore exert considerable influence over their member countries to adopt and comply with private standards or codes of conduct that promote safer operations and public assurance. An example of such positive results is the voluntary Health and Safety Partnership Program the insulation industry trade association (NAIMA) implemented in partnership with OSHA, which achieves far greater worker protection than a regulatory program could have accomplished.[86]

6. *Professional Societies*

Whereas trade associations usually have companies as members, most professional societies have individual experts as members. These professional societies can and do impose various forms of ethical codes or guidelines on their membership.[87] Noncompliance with these professional guidelines can result in various disciplinary actions, including expelling an individual from the society. This can often impede or prevent such a disbarred individual from practicing their profession, which gives professional societies substantial influence in supervising the ethical and professional conduct of their members.[88] To the extent individual professionals are subject to soft law measures, such as professional society guidelines, this oversight can help ensure soft law compliance.

7. *Liability Insurers*

Liability insurers could require the implementation of appropriate AI risk management programs as a condition of coverage.[89] Such risk management strategies were employed with nanotechnology, which like AI presents insurers with the prospect of longtail liabilities without any experience to estimate or price risk.[90]

---

85. Thomas A. Hemphill, *Self-Regulating Industry Behavior: Antitrust Limitations and Trade Association Codes of Conduct*, 11 J. BUS. ETHICS 915, 916 (1992).

86. Angus E. Crane, *NAIMA's Health and Safety Partnership Program*, INSULATION OUTLOOK (Oct. 1, 1999), https://insulation.org/io/articles/naimas-health-and-safety-partnership-program/ [https://perma.cc/K8DG-DA57].

87. *See, e.g.*, Don Gotterbarn et al., *ACM Code of Ethics: A Guide for Positive Action*, 61 COMMC'NS ACM 121, 121 (2019).

88. *See, e.g.*, Jonathan Kimmelman et al., *Global Standards for Stem-Cell Research*, 533 NATURE 311, 313 (2016).

89. Omri Ben-Shahar & Kyle D. Logue, *Outsourcing Regulation: How Insurance Reduces Moral Hazard*, 111 MICH. L. REV. 197, 209 (2012).

90. Gary E. Marchant, *'Soft Law' Mechanisms for Nanotechnology: Liability and Insurance Drivers*, 17 J. RISK RSCH. 709, 716–17 (2014).

8. *Grant/Funding Agencies*

Many entities involved in AI may seek grant funding, such as research or small business development grants, from the federal government.[91] These funding provisions provide leverage for the federal agency to require compliance with specific AI guidelines or codes of conduct as a condition of initial or continued funding. For example, researchers funded by the National Institutes of Health (NIH) must comply with various guidelines that are not otherwise binding or enforceable on private entities, such as the NIH Recombinant DNA guidelines or the Common Rule for human subject protections.[92]

9. *Market Forces*

The market can often be the ultimate regulator of industry. Here, consumers may be drawn to companies that have a strict adherence to safety, privacy, and consumer protection in the use of AI. For example, Apple advertises its privacy-first approach to innovation.[93] This may serve to promote its own image and products, as well as imply that other companies may lack the same standards. On the other hand, a major system error may dissuade consumers, and such distrust can plague a company in the long-term. This type of pressure may be responsible for delays in deploying autonomous vehicles.[94]

10. *Labeling*

Labels have often been used to indicate that a product conforms with a voluntary performance standard. Examples include dolphin-free tuna,[95] Energy Star,[96] USDA organic foods,[97] or wood products with the Forest Stewardship Council or the Sustainable Forestry Initiative certification.[98] If consumers are interested in supporting the underlying performance indicated by the label, and

---

91. The National Science Foundation alone spends over $500 million annually on AI research. *See Artificial Intelligence at NSF*, NAT'L SCI. FOUND., https://www.nsf.gov/cise/ai.jsp#:~:text=%22NSF%20invests%20more%20than%20%24500,competitiveness%20for%20decades%20to%20come.%22 [https://perma.cc/Y4KQ-FRUS].

92. *Compliance with the NIH Guidelines for Research Involving Recombinant DNA Molecules, Notice: NOT-OD-02-052*, NAT'L INST. HEALTH, (May 28, 2002), https://grants.nih.gov/grants/guide/notice-files/not-od-02-052.html [https://perma.cc/7S2L-6JYP].

93. *Privacy*, APPLE, https://www.apple.com/privacy/ [https://perma.cc/83W3-6BG7].

94. *Driverless Cars Are Taking Longer Than We Expected. Here's Why*, N.Y. TIMES (July 14, 2019), https://www.nytimes.com/2019/07/14/us/driverless-cars.html [https://perma.cc/T4YX-JKTW].

95. *Dolphin Safe Fishing*, INT'L MARINE MAMMAL PROJECT, http://savedolphins.eii.org/campaigns/dsf [https://perma.cc/8MNJ-L7A4].

96. U.S. ENV'T PROT. AGENCY, ABOUT ENERGY STAR®—2019 (Apr. 2020), https://www.energystar.gov/sites/default/files/asset/document/2020_EPA_ES_Factsheet_About_EnergyStar_v3_For508.pdf [https://perma.cc/3WDM-MCV7].

97. *Organic Labeling*, U.S. DEP'T AGRIC., https://www.ams.usda.gov/rules-regulations/organic/labeling [https://perma.cc/GTH4-DMZG].

98. FOREST STEWARDSHIP COUNCIL, FOREST STEWARDSHIP COUNCIL VS. SUSTAINABLE FORESTRY INITIATIVE: A COMPARISON OF THE STANDARDS 1 (May 2012), https://www.nrcm.org/wp-content/uploads/2013/09/FSCvSFIstandards.pdf [https://perma.cc/2FRD-RHBD].

believe it accurately identifies such performance, they may be more likely to buy products with relevant labels. Companies may be incentivized to adopt and comply with the underlying voluntary guidelines or standards. The inclusion of a certification process helps build consumer confidence in the label. An "ethical AI" label has already been proposed for AI.[99] Such a labeling system could be used to inform the consumer that the AI system has been tested for bias, respects consumer data privacy, or has been validated as safe.

11. *Professional Journals*

Professional journals could require compliance with certain best practices or guidelines provided by soft law instruments as a condition of publication. Some journals have already begun to undertake such measures with respect to other emerging technologies. For example, the *Nature* journals have stated that they will not publish any articles involving stem cells or human genome editing that fail to comply with the International Society for Stem Cell Research Guidelines for Stem Cells.[100] One could imagine that journals in the AI field may require as a condition for publication that authors certify compliance with specified AI soft law instruments.

12. *Multi-Stakeholder Processes*

Multi-stakeholder processes involve the participation and cooperation of stakeholders in the design and implementation of a soft law program for a technology.[101] By including all interested parties (or their representatives) in a consensus process, the multi-stakeholder forum can enhance the objectivity, trust, and credibility of the resulting soft law mechanism.[102] A good example of multi-stakeholder mechanisms are the efforts of the National Telecommunication and Information Administration to create codes of conduct or best practices on several emerging technologies, including drones, facial recognition, and cybersecurity vulnerabilities.[103]

13. *FTC Enforcement*

The Federal Trade Commission (FTC), under its general authority to take enforcement actions against deceptive and unfair business practices,[104] could take action against a company that publicly commits to comply with a certain code of conduct or best practices, but then fails to live up to its commitment.[105]

---

99. *Ethics at First Glance: The AI Ethics Label*, IRIGHTS.LAB, https://irights-lab.de/en/aiethics label/ [https://perma.cc/7W8Q-V739].

100. Editorial, *Human Embryo and Stem-Cell Research*, 557 NATURE 6, 6 (2018).

101. Hagemann et al., *supra* note 30, at 49–50.

102. *Id.* at 99–100.

103. Joseph Wright, *Feds Embrace Multistakeholder Approach to Tech Policy*, 15 Priv. & Sec. L. Rep. (BNA) 945 (May 9, 2016).

104. 15 U.S.C. § 45 (2018).

105. Wallach & Marchant, *supra* note 29, at 506; Hagemann et al., *supra* note 30, at 105.

The FTC has already used its power against companies that fail to comply with their voluntarily adopted privacy policies.[106]

14. *Liability*

Compliance or lack of compliance with applicable soft law provisions, such as codes of conduct or best practices, may also be relevant evidence in liability lawsuits to determine whether a company exercised reasonable care.[107] In evaluating whether an AI entity is liable for harm caused by its products or activities a judge or jury may consider the reasonableness of the entity's actions, which can often be affected by the compliance (or lack thereof) with soft law programs. For example, a tort defendant may voluntarily comply with programs or standards not only to reduce its risk of litigation, but to use as evidence of due care if litigation arises.[108] Even if the defendant is held liable, such steps would protect it from punitive damages.[109]

III. MAKING AI SOFT LAW MORE EFFECTIVE AND CREDIBLE

AI is already ingrained in most technologies and industries and is evolving at a rate faster than traditional methods of law and rulemaking. Laws cannot be made fast and flexible enough to manage systems that are continually changing and whose uses are multiplying. Methods and applications of AI offer significant enhancement to almost all industries, including manufacturing, customer service, health care, media, and education. These benefits should be fostered. At the same time, they offer unique risks for consumers, many of which are only realized after the use has entered the market. As such, a well-managed soft law paradigm would be best for encouraging innovation and growth, while simultaneously reacting and protecting consumers and the public as a whole.

While the criticisms over soft law include lack of oversight and public support as well as bias towards industry, the initial survey in the previous section indicates the existence of mechanisms to strengthen effectiveness and credibility. While more flexible and agile than traditional governance, soft law measures must be thoughtfully and rigorously managed to ensure a thorough program. It is not enough to just have AI companies sign onto a list of ethical principles. Rather, these principles must be operationalized into effective practices and credible assurances.

---

106. FED. TRADE COMM'N, FTC'S USE OF ITS AUTHORITIES TO PROTECT CONSUMER PRIVACY AND SECURITY 2 (2020), https://www.ftc.gov/system/files/documents/reports/reports-response-senate-appropriations-committee-report-116-111-ftcs-use-its-authorities-resources/p065404reportprivacydatasecurity.pdf.

107. Marchant, *supra* note 90, at 713–16.

108. Edward R. Glady et al., *Nanotechnology Liability: Do We Steer or Just Go Along for the Ride?*, 52 JURIMETRICS J. 313, 330–31 (2012).

109. David G. Owen, *Problems in Assessing Punitive Damages Against Manufacturers of Defective Products*, 49 U. CHI. L. REV. 1, 40 (1982) ("In a typical case, compliance with a universal industry custom should be held conclusively to establish good faith against a punitive damage claim.").

To contribute to making AI soft law more effective and credible, the LSI Center has launched a project with this objective, which is funded by the Charles Koch Foundation. The project has three phases—past, present, and future. The *Past* phase looks at past examples of soft law implementation for other technologies and seeks to identify factors that make such applications more or less credible. It also draws lessons from this historical analysis. The *Present* phase collects, categorizes, and analyzes existing AI soft law programs, and seeks to go beyond existing datasets to specifically assess whether and how these programs include provisions for promoting, ensuring, and measuring real world governance benefits. The *Future* phase will recommend specific strategies for making AI soft law more effective and credible going forward.

The work product from the *Past* phase is published in this special issue of *Jurimetrics*, while those of the *Present* and *Future* phases will be available at a later date. In this phase, we asked four scholars to select soft law examples from the following emerging technology fields: (1) Environmental Technologies; (2) Nanotechnology; (3) Information and Communication Technologies (ICT); and Life Sciences (4). In each case study, our contributors briefly describe soft law mechanisms within their field of expertise, evaluate their successes or failures, and identify factors that might explain their outcomes.

The case studies begin with an evaluation of environmental soft law by Cary Coglianese, the Edward B. Shils Professor of Law and Professor of Political Science at the University of Pennsylvania Carey Law School and Director of the Penn Program on Regulation. In this article, three international standards are examined: ISO 14001 environmental management systems; private standards for sustainable forestry; and LEED standards for green building design.[110]

Diana Bowman, Associate Dean for International Engagement at the Sandra Day O'Connor College of Law, Arizona State University, focuses on nanotechnology initiatives. She describes the role of a unilateral code of conduct, a bilateral risk assessment framework, government sponsored voluntary requests for data, and labeling activities on the governance of this technology.[111]

Adam Thierer, Senior Research Fellow at the Mercatus Center at George Mason University, surveys the development of multi-stakeholder-based soft law mechanisms in ICT. In this article, he writes about the emergence of the Internet Corporation for Assigned Names and Numbers as an offshoot of the United States government, content moderation initiatives in the entertainment sector to protect children from adult-oriented information, digital privacy efforts, and cybersecurity protocols.[112]

Lastly, Yvonne Stevens, Faculty Associate at the Sandra Day O'Connor College of Law, tackles soft law in the life sciences. Her article discusses four

110. *See generally* Cary Coglianese, *Environmental Soft Law as a Governance Strategy*, 61 JURIMETRICS J. 19 (2020).

111. *See generally* Diana M. Bowman, *The Role of Soft Law in Governing Nanotechnologies*, 61 JURIMETRICS J. 53 (2020).

112. *See generally* Adam Thierer, *Soft Law in U.S. ICT Sectors: Four Case Studies*, 61 JURIMETRICS J. 79 (2020).

important mechanisms: the NIH recombinant DNA guidelines, gene synthesis self-regulatory programs, professional guidelines for stem cell researchers, and several UNESCO declarations.[113]

These four analyses of different technology fields are rich with lessons for making AI soft law more effective and credible. The successes, failures, and factors responsible for both are discussed within each chapter. This special issue ends with a concluding article that synthesizes the lessons from these historical applications of soft law in other technologies for the future role of soft law in AI governance.

113. *See generally* Yvonne A. Stevens, *Soft Law Governance: A Historical Perspective from Life-Science Technologies*, 61 JURIMETRICS J. 121 (2020).