AI Insurance: Risk Management 2.0

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Artificial intelligence (AI) allows a computer program to supplement or, in many cases, replace the role of human decision-making or action [1]. This often includes gathering and analyzing data to make more efficient and/or accurate decisions. While some AI is fairly simple, other AI applications rely on sophisticated machine learning (ML) that allow machines to learn and improve from experience without being continually reprogrammed by humans [2].

AI has become ubiquitous in most industries and technologies, including smartphones, automobiles, healthcare, home appliances, and major machinery [3]. As it continues to develop, no sector will be left untouched and there are unique risks associated with AI applications and tools. Many of which will be unknown *a priori* to decision and policy makers as they shape the regulatory framework. Specifically, AI may leave organizations liable for physical harm, data breaches, property or brand damage, and business failure without an adequate system to catch and rectify these repercussions [4]. The combination of fast-paced, ever-changing technology with new and potentially unknown risks makes effective regulation challenging. In this way, AI can be viewed as a "wicked" problem for policy makers who wish to regulate the technology and the tools that it enables [5]. In planning and policy, a wicked problem is one that is difficult or impossible to solve because of incomplete, contradictory, and changing requirements that are often difficult to recognize [6]. At the same time, AI is rapidly evolving, making it difficult for legislatures to pass laws that successfully govern the technology in the medium- to long-term. This pacing problem known as "legal lag" is further compounded by the breadth of applications that the emerging technology enables and the fact that it does not respect national or supranational borders [7]. Given these characteristics, traditional state-based command-and-control mechanisms such as legislation and binding rules are unlikely to serve as an immediate solution to manage AI's effects on society.

This article argues that alternative mechanisms that draw upon the concept of "soft law" will be needed to manage the risks associated with AI deployment and build confidence and trust in those who interface with these systems. In particular, it focuses on the role that the insurance sector may play in mitigating risks associated with AI. While often not a focus of scholarship writ large, insurance groups (for the purposes of this article meaning both primary insurance and re-insurance) are frequently at the forefront of rulemaking, thus shaping organizational behavior.

Soft law: A primer

Limitations of legislation and regulations—commonly referred to as command-and-control instruments—have resulted in policy makers, regulatory scholars, and practitioners to increasingly explore "softer" mechanisms to shape the behavior of individuals, entities, and/or sectors [8]. As defined by Marchant, soft law refers to frameworks that "set forth substantive expectations but are not directly enforceable by government" [9]. These mechanisms include, for example, codes of conduct, certification schemes, and industry standards. Soft law mechanisms can be initiated and implemented both

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by private sector actors as well as governments to encourage or discourage certain behaviors as illustrated by the issuance of guidance documents and voluntary calls for data [10]. These instruments are created in a more agile way than traditional rulemaking, can evolve and pivot in response to a changing landscape, and are arguably less resource-dependent than legislation or rules. As such, it has been argued that soft law should play a central role in the governance of emerging technologies [11], [12].

Soft law is not without its critics. Commentators have noted that these mechanisms may lack legitimacy and that the limited—if any—enforcement provisions can result in varied and/or tokenistic compliance, which can create an uneven playing field for market participants [13]. However, such mechanisms appear to be ideal for governing rapidly evolving technologies, such as AI, due to the ability to test different approaches across industries and jurisdictions. Outcomes of this type of experimentation can be utilized to better inform the design and execution of subsequent instruments. It is also important to note that soft law instruments do not operate in a governance vacuum; rather, they exist alongside legal frameworks and often work to supplement the perceived deficiencies of hard law.

While often not thought of as a soft law mechanism *per se*, the insurance and reinsurance sectors have an important role to play in governing emerging technologies such as AI. Between 2019 and 2021, the Center for Law, Science, and Technology at the College of Law at Arizona State University (ASU) compiled a database of 634 current global soft law programs focused on AI[1] [14]. In this database, insurance had no representation. This is, in many ways, counterintuitive given the primary role of regulation—to mitigate risk—combined with the fact that the insurance sector is often the primary controller of risk assessment and a key gatekeeper for accessing the market. In this way, it easily fits with Marchant's soft law definition, as it set substantive expectations on companies who which to participate in the market without governmental enforcement.

As noted by Trump et al. [15], "the role of insurance as a risk management strategy has not changed significantly in concept over several hundred years," with the calculation of risk being at the very heart of their business. This holds true even when there is a high degree of uncertainty over risks and known–unknowns. Given the ways in which the sector can shape behavior through premium setting or denial of coverage, this article argues that insurance will play an important role in shaping the AI landscape and rollout of certain applications. Some risks associated with AI already fit easily into the tools offered by the insurance sector; others, though, will need more creative approaches. Nonetheless, the insurance market may offer pathways for entities to innovate to mitigate potential financial loss.

Nanotechnologies provide a case-in-point. As detailed by Bowman, early concerns over the potential risks posed by nanomaterials resulted in substantial innovation across market sectors, organizations, and jurisdictions in relation to the design and implementation of soft law mechanisms [10] [16]. While their level of success varied, the true value of these heterogeneous approaches is that they were designed during periods of high scientific and societal uncertainty and implemented in parallel with the technology's development and commercialization—not after the fact [10], [17], [18]. As highlighted in the following section, the global insurance sector was a pivotal player in the development of this technology's governance.

Insurance as a soft law instrument for nanotechnologies

The increasing commercialization of nanotechnology-based products in the early 2000s occurred against a backdrop of scientific uncertainty over potential risks presented by nanomaterials to human and environmental health and safety [19]. Within the scientific community, little data existed in relation to, for example, the potential toxicity of certain families of nanomaterials, potential exposure pathways, and the appropriateness of conventional risk assessment protocols for determining toxicity of certain nanomaterials [20]–[21]. Given the scale of the global investment and the increasing integration of nanomaterials into products across every sector, the technology presented a complex and somewhat unique challenge to the global insurance sector given that risk is a fundamental variable used in calculating premiums.

It is, therefore, not surprising that some of the earliest reports focused on how the technology should be commercialized and governed were published by large global insurance firms. In their 2002 report, Munich Re noted the uncertainties posed by the technology,

[1]As of August 2021.

suggesting that these unknowns "could bring about a whole new dimension in personal injury, property damage and pure financial losses as well as third-party liability risks, for instance, in product, environmental and third-party liability" [22]. In acknowledging these challenges, Munich Re went on to highlight that the significant role insurance would have in facilitating the positive impact of the nascent technology in parallel with risk mitigation activities [22].

Swiss Re and Lloyds of London similarly produced comprehensive reports exploring the evolving state of the science and the role that the insurance sector could have in managing uncertainties. In their report, Swiss Re argued that nanomaterials should not be considered *de facto* harmful and advocated for the use of the precautionary principle [23]. The state of the science had significantly evolved by the time that Lloyds of London's published their reports in 2007 and 2009, resulting in a more nuanced approach to their discussion of benefits and risks. The authors stressed, for example, the need to differentiate between actual and perceived risk and called for additional funding to help address the scientific uncertainties [24]. Lloyds also expressed the need to view nanotechnologies as being heterogeneous, with different nanomaterials and applications having varying levels of risk [24]. This sentiment is important when looking at risk and AI.

Taken collectively, these reports largely focused on the potential for mass tort litigation and the need to avoid an analogous situation created by asbestos fibers and their relationship to asbestosis and mesothelioma [25]–[27]. The importance of robust research was viewed as being crucial for informing their underwriting activities and crafting of insurance policies. For the most part, existing policies and instruments were utilized, with some tweaks where needed. However, some insurance companies did innovate. For example, Lexington Insurance Company, a Boston-based company owned by AIG, rolled out their Lex NanoShield Policy in 2010. NanoShield was designed specifically for entities whose principal business was manufacturing nanomaterials [28]. It appears that this type of coverage is no longer offered, perhaps suggesting a lack of need. This may be in part because, as of the time of this writing, there had been no public reports of significant claims relating to nano-related harms to human health.

While nanotechnologies and AI are associated with different potential risks profiles, the former illustrates that the early role insurance can play when looking at risk linked to a rapidly evolving and economically significant technology. When the market leads in development, liability and insurance quickly become the initial gatekeepers, especially in the absence of command-and-control regulation.

AI WILL DISRUPT, albeit to varying degrees, almost every aspect of society—from how and where we work, how we shop and move from place to place, through to how we diagnose and treat disease. All sectors will be affected as this rapidly evolving technology continues to permeate society. The lack of explicit regulatory tools should not imply that rules and guidance do not exist to govern their use.

As demonstrated with nanotechnologies, the insurance sector can be one of the first "quasi-regulators" with a powerful role to play in the management of a technology. We argue that this is likely the case with AI. Specifically, insurance companies (including reinsurers) can wield notable power in shaping and influencing the trajectory of how AI is developed and brought into the market. Global companies such as Lloyds, Swiss Re, and AIG—among others—will be powerful actors in developing the AI landscape in light of the ever-increasing body of claims data that they hold relating to AI-based technologies. As new claims are reported, these policies and premiums will continue to evolve.

Inherently, liability and insurance policies balance innovation and risk with consumer safety. Liability serves as a sword, while insurance provides a shield. Uniquely disruptive of this balance, AI forces market participants to create new systems to cope with the technology's risks. As such, we argue that insurance schemes will play a pivotal role in the development of these technologies going forward. ■

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