## 1AC Part 2

### Regulations Advantage---1AC

Advantage 2 is Regulations.

Federal employment regulations impose burdensome compliance costs that choke out small businesses.

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John Kitching, “A Burden on Business? Reviewing the Evidence Base on Regulation and Small-Business Performance,” Environment and Planning C: Politics and Space, Vol. 24, No. 6, December 2006, https://journals.sagepub.com/doi/abs/10.1068/c0619

Compliance with regulation, like production of goods or provision of services, involves economies of scale. Every business must perform a mini- mum of monitoring, record keeping, and reporting in order to remain in regulatory compliance. These costs do not rise in proportion to produc- tivity, which means that small businesses will be relatively disadvantaged and in some cases may be precluded from entry into a market. The fact that small companies generally contribute proportionately less to the problems justifying regulation is often irrelevant to regulators, who treat all businesses alike, regardless of size. Thus the regulators essentially ignore the fact that the social impacts of noncompliance by large busi- nesses may exceed those of small businesses by several orders of magnitude.

The competitive disadvantages that small businesses suffer due to the lack of economies of scale are exacerbated by the politics of regulation. Because large businesses are better able to cope with regulation, they often become supporters of regulation because of the competitive advan- tage it provides them relative to smaller businesses. Advocates for free markets are often surprised and disappointed to find that the biggest of the regulated companies are the least supportive of deregulation, particu- larly where the regulatory agencies have been captured by the industry. While it is not unusual for businesses and their associations to support both sides of the political spectrum, I suspect that empirical study would evidence that big business is often supportive of the Democratic Party while small businesses overwhelmingly embrace the smaller government agenda of the Republicans.

Because of the competitive disadvantages that small businesses face, they are more likely to cut comers in regulatory compliance in an effort to remain competitive. For them, running the risk of an enforcement action is preferable to allowing the costs of compliance to drive them out of business. Even large businesses with well-financed compliance pro- grams find it very difficult to avoid noncompliance given the pervasive and complex regulatory climate. For small businesses, there simply is no way to avoid occasional, if not frequent, noncompliance. The monitoring, record keeping, and reporting requirements are beyond the capacity, both in terms of personnel and expertise, of many small businesses.

All of these factors contribute to the failure of small businesses, dis- courage the startup of new businesses, and encourage successful small businesses to merge with larger companies before an economic downturn or a significant regulatory violation leads to failure. Notwithstanding these disadvantages for small business, the American economy prospers because of the entrepreneurial efforts of small and emerging businesses. What we cannot know is how much our prosperity suffers because of a regulatory climate that is disproportionately burdensome for small business.

It is certainly reasonable to assume that innovation is stifled by a reg- ulatory system that requires large investments of time and capital before an idea can go to market. Large companies are able to cope with the costs and delays associated with the existing system by marketing some prod- ucts while others are in development. A small business with a single prod- uct may wither on the vine before the fruits of its innovation can be harvested.

That’s specifically true for compliance with labor law.

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Alexander Stöhr, “Small Business Exemptions in Labor Law: Necessity, Economic Analysis and Legal Structure,” Labor Law Journal, Vol. 69, No. 2, Summer 2018, https://www.proquest.com/docview/2051199706?pq-origsite=gscholar&fromopenview=true&sourcetype=Scholarly%20Journals

Legal regulation always incurs costs. Some of these costs are incurred by regulated fi rms. Th ese include costs resulting from monitoring and complying with regula- tions (compliance costs). Th e cost of legal regulation usually includes both variable and fi xed components, with the variable costs being dependent on the size of the regulated transaction.12

Steven Bradford illustrates this by the example of the regulation of basketball shoes:13 A fi ctitious regulation mandates that all basketball shoes must have restricted jumping ability to keep basketball players from being in- jured when they land. Each shoe manufacturer will incur information costs to determine the requirements of the regulation, and research and development costs to modify their shoes to comply. Th ose costs are fi xed, because they do not vary with the concrete output of shoes. In contrast, the cost of the additional materials needed to modify the shoes is variable, since it depends on the number of shoes each manufacturer produces. With regard to information costs, the U.S. Small Business Administration, Offi ce of Advocacy, noted the following:

“A significant body of knowledge must be gained by a firm do determine whether a regulation applies to it, whether it is in compliance, or what action must be taken to be in compliance. For example, a firm must first learn that a form is required by rule, determine if the firm is required to submit that form, and then determine how to complete the form correctly. These fixed information-gathering costs are the same for all firms, whether large or small.”¹⁴

It has been shown that, in particular, fixed costs hit small businesses proportionally harder than larger businesses.¹⁵ On average, a regulation that causes costs of one Euro per worker in large businesses causes costs of four Euros in medium-sized businesses and costs of up to ten Euros in small businesses.¹⁶

Hugh Karpen demonstrated that reporting and disclosure obligations forces firms with 50 or less employees to provide an additional half a job.¹⁷ The European Court of Justice also states that small businesses incur a relatively larger expenditures than larger businesses if they all have to fulfil the same requirements.¹⁸

A significant cost factor are rules designed to protect workers.¹⁹ This applies not only to direct payment obligations like continued remuneration in the event of sickness, but also to bureaucratic costs. These include, in particular, the time the employer or external employees have to spend in order to comply with regulations.²⁰ This is compounded by the lack of transparency, which is, for example, detected in German labor law.

Compliance costs are directly driving consolidation across industries. It’s reverse-causal.

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Chase C. Englund, “US Regulatory Complexity, Compliance Spending, and Market Structure,” US Treasury and Federal Reserve Board, 11/22/2025, https://papers.ssrn.com/sol3/papers.cfm?abstract\_id=5282859

Industry consolidation is an important and increasingly evident dynamic in many sectors of the US economy. To take one prominent example, the number of banks in the US has gone from nearly 24,000 in 1965 to less than 6,000 today (FDIC, US Bank Data, 2022). However, far from being an isolated phenomenon, similar patterns have played out across a significant share of the economy, ranging from industries as diverse as airline travel, beef packing, and communications. In many cases, a handful of firms may control over 80% of their respective markets in industries that were significantly more competitive merely a few decades ago (Boushey & Knudsen, 2021). While not all industry consolidation is necessary negative, the ongoing trend of concentration of economic influence across many areas of the economy has led researchers to look for causes to explain this phenomenon. While market factor such as technological advances1 and the natural lifecycle of maturing markets2 have been found to play important roles in enabling and encouraging greater consolidation, one of the primary drivers of consolidation in many industries is the cost and complexity of regulatory requirements, which disproportionately impact smaller firms.

This article develops a concept of “regulatory complexity”, which can be understood as a measure of the degree to which regulatory requirements create additional compliance costs. Regulatory complexity increases firms’ fixed and variable costs, and in doing so depresses margins. Regulatory cost has been found in a number of studies to create barriers to new firm entry and survival for this reason (Klapper et al., 2006; Dreher & Gassebner, 2013; Braunerhjelm & Eklund, 2014). Low margins often trigger industry consolidation as businesses seek to improve efficiency and market power by merging or acquiring competitors, or smaller firms die out (Bitzan & Wilson, 2007). For this reason, regulatory burdens have also been associated in some studies with market consolidation (Ollinger & Moore, 2009; Gaynor, 2011; Ryan, 2012; Calcagno & Sobel, 2014; Nations, Cole, & Hemley, 2022; Singla, 2023).

Regulation may increase costs through several mechanisms. Increased costs for licensing, fees, or other regulatory expenses are one primary channel. Regulatory requirements for expensive equipment or safety measures are another common cause (Lee & Braden, 2007). However, this article will examine another primary and understudied cause, which is the cost of labor associated with understanding and completing compliance activities. This article argues that greater regulatory complexity contributes to market consolidation through the mechanism of labor costs associated with completing regulatory compliance activities. This article uses data from QuantGov, an initiative developed at George Mason university, to study the relative number and restrictiveness of regulation in several different sectors of the US economy, and the associated share of labor in those sectors that is devoted to compliance activities. Next, it uses data from the US Census Bureau to estimate the share of labor devoted to compliance activities (used as a proxy for compliance-related labor costs) as a mechanism linking the concept of regulatory complexity with market dynamics in that sector, such as market concentration and large firms’ share of revenue.

This article finds that greater regulatory complexity is associated with a greater share of overall labor devoted to compliance activities. These labor activities represent labor costs for firms that are directly resultant of regulatory requirements. It also finds that higher compliance labor share (i.e. greater compliance labor cost) is positively associated with several measures of industry consolidation. In doing so, this article makes several contributions to the existing literature on this subject. First, it helps to establish compliance share of labor as a useful alternative to other direct measures of regulatory burden, which often have more limited data. It also highlights the importance of regulatory complexity in contributing to market structure dynamics, namely leading to more consolidated markets and smaller market shares for small business. This is an important consideration for policymakers, and may recommend the use of tools such as regulatory tailoring to reduce the distortionary effects of regulatory regimes.

The rest of this article proceeds as follows: The next section reviews the literature on this subject and lays out several formal hypotheses to test the associations I describe here. The following section outlines the data collection strategy and provides a summary of the primary measures. The fourth section utilizes the data to test the hypotheses using several models. The next section employs alternative state-level data to generate additional robustness for the findings. Lastly, the article concludes by discussing the findings and implications, as well as outlining steps for future research.

Regulatory Complexity, Firm Costs, and Market Structure

This article posits the term “regulatory complexity” as a description of the overall complexity of the aggregated regulatory requirements for a particular economic activity, with the idea that greater complexity results in higher regulatory-related costs. Regulations can be “complex” in several different ways. For example, requirements may be simple to follow, but there may be a relatively high number of them. By contrast, a small number of regulations may be particularly restrictive or require more work to comply with. In either case, when the overall body of regulations applicable to a particular economic activity is more restrictive, this results in greater complexity. This article’s primary contention is that greater regulatory complexity results in lower price-cost margins that result in more consolidated markets, and specifically uses the cost of compliance labor to link these outcomes.

Mass consolidation bankrupts tech innovation and structural dynamism.

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Mark A. Lemley, Matthew T. Wansley, Associate Professor of Law at Cardozo School of Law, “Coopting Disruption,” Stanford Law and Economics Olin Working Paper, 12/10/2025, https://papers.ssrn.com/sol3/papers.cfm?abstract\_id=4713845

While there are many reasons for the tech giants’ continued dominance, we think an important and overlooked one is that they have learned how to coopt disruption. They identify potentially disruptive technologies, use their money to influence the startups developing them, strategically dole out access to the resources the startups need to grow, and seek regulation that will make it harder for the startups to compete. When a threat emerges, they buy it off. And after they acquire a startup, they redirect its people and assets to their own innovation needs.

In this paper, we identify the phenomenon of cooption and discuss the various forms it can take, from seemingly innocuous investments in startups to selective sharing of data access to more pernicious “killer acquisitions.” We show how these seemingly different acts are part of a pattern tech companies and other incumbents use to maintain their dominance in the face of disruptive new innovations. And we document how three important new technologies— artificial intelligence (AI), virtual reality (VR), and automated driving—are be- ing coopted. This is a critical legal issue right now. Indeed, after we wrote this paper, the Federal Trade Commission (FTC) announced that it would review incumbent investments into startups in one of the areas we identified – AI.2

Coopting disruption is a challenging problem for the law. Cooption can look a great deal like competition and innovation. And partnering with an in- cumbent can sometimes offer real benefits to both startups and their custom- ers. Nonetheless, we think incumbents coopting disruption is bad for both competition and innovation in the long run. At best, consumers receive incre- mental improvements to the tech giants’ existing products. They miss out on the more fundamental innovations that an independent company would have developed – both innovations that threaten an incumbent’s core business and those that a company locked into an existing mindset (and revenue stream) might simply not appreciate. And cooption cements incumbency, undermining the Schumpeterian competition – competition to become the next dominant firm – that drove innovation in the tech industry throughout the 20th century.

We suggest several ways the law can reduce the harm from coopting dis- ruption. We can revitalize a century-old law that prevents people from serving as officers or directors of their competitors, extending it to prevent incum- bents from controlling the direction of startups. We can make it illegal for incumbent monopolies to discriminate in the access they provide to their data or programs based on whether the company is a competitive threat. We can ensure incumbents cannot use regulation as a mechanism to undercut compe- tition from startups. And we should make it presumptively illegal for incum- bent monopolies to acquire startups developing innovations that might prove disruptive.

In Part I, we discuss innovation, competition, and the structural ad- vantages to incumbency in the tech industry that set the stage for cooption. In Part II, we discuss the various strategies tech incumbents use to coopt disrup- tive technologies. In Part III, we explore several case studies of cooption going on right now in important new industries. Finally, in Part IV we discuss the policy implications of cooption and consider ways to combat it.

I. THE THREAT TO INNOVATION

In this Part, we start by acknowledging the ways in which large incumbents are better equipped to innovate than smaller, less established firms. Next, we explain why large incumbents nonetheless usually focus their R&D on incre- mental improvements, miss out on disruptive innovations, and get leapfrogged by startups. Then, we ask: if large incumbents are susceptible to disruption, why have the tech giants sustained their dominance for two decades? We eval- uate possible theories before introducing our own.

A. Advantages of Large Incumbents

Schumpeter argued that large incumbents were better able to innovate than other firms.3 First, he argued, large incumbents can take advantage of econo- mies of scale.4 They have already paid some of the fixed costs necessary for innovation by investing in talent, facilities, equipment, computing power, and data. Therefore, their marginal cost of commercializing a new technology is lower. Relatedly, large incumbents have pre-existing relationships with cus- tomers, distributors, suppliers, and regulators.5 They have built a brand that gives them credibility in these interactions. Consequently, they can bring new products to market more quickly. He thought these advantages were so great that serial monopolies were the normal outcome. Competition, to Schum- peter, would come not in the form of rivals selling the same goods, but com- petition to take over the market itself and become the next monopoly in the series.

Large incumbents can also take advantage of economies of scope.6 Inno- vation creates “involuntary spillovers”—new knowledge that has economic value beyond the specific product that the firm was developing.7 If a company sells a broader portfolio of products, it is more likely to take advantage of those spillovers. Imagine the value that Alphabet could extract from a machine learn- ing breakthrough in image classification—it might improve Google search, Google Maps, Android, YouTube, and other Alphabet products. The greater ex post value large incumbents can extract from innovation should make them more likely to innovate ex ante.

Perhaps most importantly, large incumbents can access capital at a lower cost.8 A profitable firm can use its internal cash flows to fund innovation rather than raising capital from outside investors. This means that the firm can avoid the conflicts of interest that outside investors can introduce. And they can re- tain a larger share of the profits that the innovation generates.

Some large incumbents may have another potential advantage—a longer investment time horizon. A secure monopolist might develop some insulation from market pressures and be able to invest in projects that will not come to fruition for many years. This is one reason offered to explain the research productivity of mid-century corporate R&D units like Bell Labs, IBM Re- search, and Xerox PARC.9 Startups, by contrast, must raise new rounds of capital every 12-24 months.10 And their VCs must exit within about five to seven years of their investment.11 But at the same time, large incumbents argu- ably face more pressure to deliver short-term profits than a startup would. Public companies must disclose their financial statements every quarter.12 Their executives must defend their investment decisions to analysts in quar- terly earnings calls. And public companies that make large, long-term invest- ments are vulnerable to attack by activist hedge funds.13 For these reasons, while some large incumbents may have a longer leash than other firms, that is not always true.

Still, time horizons aside, large incumbents appear to have significant ad- vantages in innovation. Why do they often lose out to new entrants riding an innovative idea? What happened to IBM? Chrysler? The answer is that large incumbents face predictable industrial organization problems that inhibit in- novation.

B. Disadvantages of Large Incumbents

Large incumbents struggle to innovate because (1) their success will can- nibalize their own market share, (2) their managers prefer to deliver incremen- tal innovations to their existing customers, (3) their single veto point decision- making structure encourages risk-aversion, and (4) they cannot appropriately compensate employees working on innovation projects.

1. Arrow’s Replacement Effect

The most important reason why large incumbents—and especially monop- olists—don’t innovate is that they don’t gain anything by stealing their own market share. To illustrate this point, consider a market with two firms, In- cumbent and Challenger.14 Suppose Challenger introduces a new product. Some of Incumbent’s existing customers will buy Challenger’s product instead of Incumbent’s product, so Challenger will “steal” some of Incumbent’s busi- ness. Incumbent might respond by lowering its prices. Or it might respond by adding new features to its existing products or introducing a new product of its own. Either way, consumers benefit.

Now suppose instead that Incumbent buys Challenger.15 After the deal, Incumbent no longer has to worry about Challenger stealing its business. And Incumbent could decide to sell the product that Challenger developed. But it has little incentive to do so because the sales of its former competitor’s product would simply replace sales of its own product. More generally, a monopolist has diminished incentives to introduce new products, improve product quality, or lower prices because any new sales generated replace its existing sales. This is Arrow’s replacement effect.16

The same applies to R&D.17 Suppose that another firm, Adjacent, develops R&D capabilities that overlap with Incumbent’s capabilities. Adjacent will not steal business immediately. But Incumbent will now expect that it is more likely that Adjacent will successfully commercialize a technology into a competing product that steals its business. Worse, R&D in a fast-moving industry might not just steal business; it might displace the market altogether by moving con- sumers to a new market. Ask the once-giant makers of photocopiers and film cameras how business is going.

Incumbent might respond by investing in its own R&D capabilities or by buying Adjacent.18 If Incumbent decides to invest in R&D, consumers gain a greater chance of benefitting from innovation. If Incumbent decides to buy Adjacent, the combined firm will internalize the business-stealing effects of the R&D capabilities. Incumbent might shut down one of the R&D divisions, reducing the chance that consumers will benefit from innovation. And even if Incumbent integrates the innovation into its own products, it is unlikely to do so in a way that eliminates or disrupts its core market.

The general lesson is, all else equal, the larger a firm’s market share and the less it is threatened by competition, the weaker its incentives to innovate. So we should expect large incumbents to not innovate much. And if they can dispense with the competitors rather than have to compete with them, they will do that.19

2. Bias Against Disruptive Innovations

Arrow’s theory focuses on firm-level incentives. It dovetails with Christen- sen’s theory of disruptive innovation, which focuses on the career incentives of middle managers.20 Many managers, Christensen says, have built relation- ships with their firm’s customers and have become attuned to satisfying those customers’ needs.21 They aim to protect and maybe modestly improve on the status quo, not to disrupt it. Incumbent managers have an incentive to deliver sustaining innovations—incremental improvements in quality to the firm’s exist- ing products that will please its existing customers.22 But they have substantial disincentives to pursue projects that upset the apple cart, even if doing so would bring new customers to the firm.

Startup managers, by contrast, are not beholden to existing customers, so they are more willing to pursue disruptive innovations that target new customers and new markets.23 These disruptive innovations may be inferior to the state- of-the-art products on some dimensions.24 Think about the quality of photos on early generations of mobile phones. But startups can refine their disruptive innovations and ultimately leapfrog incumbents.25 Middle managers at a cam- era company might be happy to improve their cameras if it meant their cus- tomers bought new ones. But it would never occur to them to do away with the camera altogether – and if it did, they would be horrified by the idea. This, Christensen says, is why creative destruction generally comes from outside.26 Christensen also argues that large incumbents face structural obstacles to information sharing.27 The employees who have innovative ideas—the engi- neers who work on developing the firm’s technologies—are often unable to convey those ideas up the chain of command. Again, the incentives of middle managers are to blame. They may not stand to benefit personally from the innovative ideas, or they may not simply realize the value of these ideas to the firm’s overall strategy.28 Either way, they can serve as an information bottle- neck that prevents information from reaching executives. The leadership at smaller firms with less hierarchical structures are more likely to learn about their employees’ innovative ideas.29

Even if senior management is interested in disruptive innovation – and they face many of the same incentives against it – large companies generally don’t succeed at building disruptive innovation in-house. Housing an innova- tion project inside a firm with diverse lines of business creates conflict with those other businesses.30 Some firm assets—cash, cloud computing, equip- ment, facilities, and engineers’ time—are rivalrous and finite, so executives must be willing to fight internal constituencies to devote those resources to innovation.

3. Veto Points

Another way in which large incumbents differ from startups is how they seek out funding. Inside a large incumbent, decisions about whether to fund an innovative project must pass through one veto point.31 In the venture cap- ital market, many competing investors independently decide whether to fi- nance an innovative idea.32 Inside a firm, an employee with an innovative idea must pitch an idea to managers who ultimately report to one executive gate- keeper. In the venture capital market, if a would-be startup founder pitches an idea to ten VC firms, and nine of them are not persuaded, the idea gets funded. The advantage of market-based finance over internal finance applies not just to the initiation but also the continuation of an innovation project. Inside a firm, an executive who has soured on a project can terminate it. In the venture capital market, when a startup’s initial investors grow skeptical, the company can still pitch outsiders on infusing more cash.

Transformative innovation is key to existential risk mitigation. Stagnation locks it in.

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Suzanne Sadedin, PhD in Evolutionary Biology, Forbes, Will Human Innovation Save Us From Future Extinction?, 9 October 2017, https://www.forbes.com/sites/quora/2017/10/09/will-human-innovation-save-us-from-future-extinction/#1452dd86c659

Will human innovation save us from future extinction? Yes and no. Currently, innovation reduces our chance of extinction in some ways, and increases it in others. But if we innovate cleverly, we could become just about immune to extinction. The species that survive mass extinctions tend to share three characteristics. They're widespread. This means local disasters don't wipe out the entire species, and some small areas, called refugia, tend to be unaffected by global disasters. If you're widespread, it's more likely that you have a population that happens to live in a refugium. They're ecological generalists. They can cope with widely varying physical conditions, and they're not fussy about food. They're r-selected. This means that they breed fast and have short generation times, which allows them to rapidly grow their populations and adapt genetically to new conditions. Innovation gives humans the ability to be widespread ecological generalists. With technology, we can live in more diverse conditions and places than any other species. And while we can't (currently) grow our populations rapidly like an r-selected species, innovation does allow us to adapt quickly at the cultural level.

Specifically, consolidation crushes biotech innovation.

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Anoop Manjunath, “Illegal interlocks among life science company boards of directors,” Journal of Law and the Biosciences, 04/13/2024, https://law.stanford.edu/wp-content/uploads/2024/09/2024-09-30\_The-Illegal-Interlocking.pdf

Competition between life science companies is critical to ensure innovative therapies are efficiently developed. Anticompetitive behavior may harm scientific progress and, ultimately, patients. One well-established category of anticompetitive behavior is the ‘interlocking directorate’. It is illegal for companies’ directors to ‘interlock’ by also serving on the boards of competitor. We evaluated overlaps in the board membership of 2,241 public life science companies since 2000. We show that a robust network of interlocking companies is present among these firms. At any given time, 10–20 percent of board members are interlocked; the number of interlocks has more than doubled in the last two decades. Over half of these interlocked firms report over $5 million in historical revenue, exceeding a legal threshold that makes an interlocking directorate a violation of antitrust law. Those interlocks are only illegal if the companies compete, even in part. Using the disease categories for which companies have sponsored clinical trials, we discover that a few markets are responsible for a large fraction of interlocks. We show that in dozens of cases, companies share directors with the very firms they identify as their biggest competitive threats. We provide a data-driven roadmap for policymakers, regulators, and companies to further investigate the contribution of anticompetitive behavior to increased healthcare costs and to enforce the law against illegal interlocks between firms.

Investment in bioprocesses solves every single existential, non-linear planetary boundary. It preserves resources, reduces consumption, removes pollutants, reduces pesticides, provides food security, stops oil spills, sucks carbon, bolsters plants, and prevents disasters.

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Talissa Reato, Paulo Hartmann, Professor of Ecology at University of the Southern Border, “Bioprocesses and biotechnologies for reducing the impacts of climate change and socio-environmental disputes,” RBCIAMB, 07/08/2024, https://www.rbciamb.com.br/Publicacoes\_RBCIAMB/article/view/1935/1018

Planetary boundaries are described in categories of environmental adversities, the first of which is climate change, followed by ocean acidification, depletion of the ozone layer, atmospheric aerosol load, interference in the global phosphorus and nitrogen cycles, rate of biodiversity loss, global use of freshwater, change in the soil system, and, finally, chemical pollution (Richardson et al., 2023; Sarlet et al., 2023). These environmental disturbances are not separate issues, although it is common to approach them as isolated issues. There are nonlinear interactions among them and aggregate effects resulting from the general state of the global system. It turns out that several regional climatic points, relevant for the stabilization of the global system, have already been or are close to being transgressed, weakening the global resilience capacity (Richardson et al., 2023).

According to Steffen et al. (2015), although the integrity limits of the biosphere provide a restriction on the amount and pattern of system change in all biomes on the Earth (forests, woodlands, etc.), the frontier of changing it is more directed toward a specific threat: the biogeophysical processes in the systems that directly regulate the climate (exchange of energy, water, and momentum between the Earth's surface and atmosphere).

Thus, analyzing the various interactions between the limits, it is observed that two of them, climate change and the integrity of the biosphere, are emergent and integrated phenomena at the system level that, obviously, are linked to all the others. In this sense, the structure of planetary boundaries arises from the fact that the planet is a single, complex, and integrated system, so that the limits operate as an interdependent set (Steffen et al., 2015).

Furthermore, planetary boundaries go beyond obvious physical, chemical, and biological parameters, as they must consider justice, especially in its socio-environmental aspect. Rockström et al. (2023) recognize, with regard to the limits of the planet, that although the damage to humans themselves is caused, in part, by greater exposure to biophysical changes, such problems are a function of socioeconomic vulnerability and the inability to adapt of people.

When approaching the limits of the Earth, it is clear that the stability of the Holocene has been removed. Humanity is in the Anthropocene, with significant social impacts already felt. The most critical thing is that changes can trigger tipping points that irreversibly destabilize the Earth system. The changes under discussion are generally driven by socioeconomic systems that operate based on the unsustainable extraction and consumption of resources (Rockström et al., 2023).

The planet has already exceeded 1.5°C of warming and studies indicate that rates of climate change are expected to continue throughout the 21st century (Montràs-Janer et al., 2024). It is noteworthy that in the 2015 Paris Climate Agreement, nations agreed not to exceed 1.5°C, a protection against climate change (Nogrady, 2024). Ferrajoli (2023, p. 9) is clear when he asserts that "because of the ecological catastrophe, for the first time in history, the human race is at risk of extinction: […] a senseless mass suicide due to irresponsible activity of humans themselves."

According to Bennett (2020), in the Anthropocene, the appreciation of ruin changed the architectural focus to the deterioration of the planet. The ruin contemplated the reconquest of the environment built by nature, and now the carbon-intensive infrastructures of global capitalism transform nature into ruin. Therefore, it is clear that scientists, civil society, and local communities, in an atmosphere of mutual respect, must combine their knowledge with equitable collaboration (Kothari, 2021; Dryzek, 2022), avoiding the ruin of the Earth.

This scenario provokes the need to thrive efficient mechanisms to move away from dependence on finite fossil resources, which consequently attracts focus to so-called renewable resources, which are becoming increasingly important in the total supply of primary energy (Gernaat, 2021).

Bioprocesses and biotechnologies at the service of society

With regard to concerns about sustainability, especially industrial processes, related to the use and reuse of energy resources, the demand for bioprocesses and biotechnology grows considerably (Viera, 2022). The interest focused on the conservation of natural resources, as well as renewable resources and lower costs associated with energy consumption lead to evolution, including the use of technologies and bioprocess development strategies (Fraga et al., 2020).

Maiorano (2018) explains that microorganisms, enzymes, and their genetically modified forms form the basis of bioprocesses, so the use of renewable resources and environmentally friendly, clean, and safe production processes is crucial to achieving sustainability. Thus, the combination of sustainability and "green chemistry" culminates in processes and products that minimize waste, GHG, etc., favoring industrial biotechnology.

Bioprocesses find driving force in social issues, especially due to the demand for new technologies, new products, and environmental preservation, as well as in the business area, based on biotechnological products with greater profit, less cost, and smaller ecological footprint. Furthermore, they provoke government actions, especially due to regulatory pressures and the need to replace fossil fuels. Finally, they are catalyzed due to available scientific knowledge (Maiorano, 2018). In this context, bioprocesses are seen as important mechanisms to eliminate dependence on fossil resources. Bioprocesses and biotechnologies play a fundamental role in mitigating the environmental impacts associated with the extraction and burning of fossil resources. Therefore, biomass, agricultural residues, and microorganisms can be used in an efficient and ecologically appropriate way, for example, to the detriment of the use of oil.

José Eli da Veiga (2023) warns that issues such as climate change, loss of biodiversity, among other problems, are global emergencies. In turn, the author says that to achieve sustainability, global actions are necessary, that is, new initiatives combined with old development actions are not enough. Precisely for this reason, it is understood that the stimulation of bioprocesses is so relevant today. An example is the production of biofuels, in the sense that bioprocesses transform biomass into fuel, which reduces the emission of GHGs and also reduces dependence on fossil resources.

In this sense, bioprocesses and biotechnologies can be understood as mechanisms that aim to reduce impacts and promote adaptations to climate change. Despite understanding the difficulty, bioprocesses appear as instruments capable of minimizing socio-environmental disputes and climate change, contributing to reducing the tension between the implementation of sustainability (as a guarantee of a healthy environment for present and future generations), pointed out in article 225 of the Federal Constitution of Brazil (Brasil, 1988a), and the global neoliberal reality, which maximizes economic power. At this point, it is important to emphasize biotechnologies aimed at improving living conditions on the Earth, such as bioenergy (production of energy through biomass and renewable biomass derivatives), bioremediation (the use of microorganisms to remove pollutants from the soil and water), among many others.

As for bioenergy, Nogueira et al. (2021) state that it represents a strategic option for the desired energy transition to renewable and sustainable systems. The motivations for the increasing use of bioenergy to replace fossil fuels are GHG reduction and energy security. Thus, there are several sources of biomass used in energy production. Resources can be direct (produced specifically for energy purposes, such as sugarcane used to produce ethanol), indirect (biomass as a by-product of agro-industrial and forestry processes), or recovered (biomass produced from materials already used, such as wooden boxes and cardboard, and urban liquid and solid waste).

It is important to highlight, in this sense, that the use of bioenergy from biomass has several advantages, such as benefits for the environment, reducing dependence on non-renewable resources, social improvements (such as the creation of jobs), prevention of forest fires, productivity improvement, and rural development (Ferreira, 2015). In specific terms regarding biofuels, these can be used in the transport sector (in the case of bioethanol, biodiesel, and biomethane, for example) (Nogueira et al., 2021). In legal terms, it is noteworthy that Brazilian legislation corroborates such actions, through RenovaBio, which is the National Biofuels Policy, established by Law No. 13,576/2017, which, among others, aims to promote the expansion of biofuels in the energy matrix (Brasil, 2023).

Biofuels arise from renewable raw materials, especially those of plant origin. Thus, they can have a neutral balance in relation to carbon, that is, the CO2 emitted during burning can be reabsorbed by plants in the photosynthesis process. However, there are arguments that condemn the expenditure of fossil energy in production, planting, and harvesting; even so in the case of sugarcane, for example, 8–10 times more energy is produced than that is spent in the production process. In addition to sugarcane, corn and other cultivars are used in the production of biofuels (Mota and Monteiro, 2013).

Bioremediation is a process in which living organisms (plants or microorganisms) are used technologically to reduce or remove (remediate) pollutants from the environment. The process is a very interesting and viable alternative for treating contaminated environments, such as surface water, groundwater, and soil, waste, and industrial effluents in landfills or containment areas (Gaylarde et al., 2005). Interest in bioremediation has been aroused to rehabilitate many contaminated areas, including by petroleum hydrocarbons. It is noteworthy that Brazil has suitable soil to use this technique, considering its physical–chemical characteristics for the degradation of contaminants, such as environmental factors, nutrients in the soil, and climate conditions (Andrade et al., 2010).

Furthermore, another interesting example stands out, in the sense that biotechnology can generate plants that are more resilient to climate change. Climatic events (drought, heat, excessive rain, etc.) lead to food risk. Thus, the expectation is that biotechnology will benefit humanity in terms of health and nutrition, guaranteeing quality and variety of food, reducing pesticides, and providing greater food security (FAPESP, 2003).

Another example of biotechnology concerns biomaterials, with an emphasis on the search for and use of plant fibers. Many adverse environmental effects, such as GHG emissions, are being reduced by reinforcing plant fiber with polymeric material, as they are alternative materials to conventional ones that are petroleum-based, using renewable carbon as raw material (Ramesh et al., 2022).

We can also highlight what concerns carbon sequestration, which is a technology for absorbing and storing carbon dioxide with the intention of reducing its impacts on the environment. The purpose of the process is to contain and reverse the accumulation of atmospheric CO2. Carbon sequestration can occur through forestry (which is the most common way) or through chemical removal of exhaust gases from thermoelectric plants, among others (Barreto et al., 2009).

Therefore, we highlight, as an example, the possibility of photobioreactors, which are used to produce microorganisms outside their natural environment. The microalgae can be used in civil construction and in architecture and urban planning, contributing to the sequestration of carbon dioxide and other GHGs (Frandoloso et al., 2023).

Hence, it is important to highlight that the bioprocesses and biotechnologies mentioned, among others, are related to the Sustainable Development Goals (SDGs) of the 2030 Agenda, in particular, SDG 2 in achieving food security through the promotion of agriculture sustainable, SDG 3 on health and well-being, SDG 7 on affordable and clean energy, SDG 9 in fostering innovation, SDG 12 in ensuring sustainable production and consumption patterns, SDG 13 in taking urgent action to combat climate change, and, finally, SDG 15 on ecosystem protection (ONU, 2023). In this context, bioprocesses and biotechnology can help reduce climate change, so they need to be increasingly studied and encouraged, especially to survive on a large scale. The environmental and energy crises demonstrate that it is essential to establish alternatives that replace oil. Biofuels, as noted, have this potential.

Arnold Demain (2009) asserts that there are solutions to energy problems and many of them are based on microorganisms, as in the case of the production of bioethanol, biobutanol, biodiesel, biohydrocarbons, and biomethane. In this sense, he concludes that these alternatives aim to reduce GHG emissions, improve the environment, and boost the economy.

In addition to the potential to provide environmental solutions, bioprocesses and biotechnologies also help reduce socio-environmental conflicts, since by offering innovative approaches and tools, they not only promote greater sustainability but also mitigate damages and natural disasters, such as exacerbated burning of CO2 and the oil spill, just to illustrate.

It is important to highlight that the 2023 Synthesis Report on Climate Change from the Intergovernmental Panel on Climate Change presents many warnings regarding global climate change. Antonio Guterres, current Secretary-General of the United Nations, announced an Acceleration Agenda to comply with the Climate Solidarity Pact. In the aforementioned Agenda, it is proposed to end the use of coal as an energy source, net zero emissions in the electricity sector by 2035 for developed countries and by 2040 for others. Furthermore, it indicates the need to stop licensing or financing new oil and gas companies, and any expansion of oil and gas exploration (ONUBR, 2023).

On the contrary, in March 2023, the President of the United States, Joe Biden, approved the Willow Project, one of the largest oil exploration plans in history in Alaska. This authorization generated several protests and legal actions, so that recently the court in that country released the oil company ConocoPhilips to continue drilling the Willow project (Ruddy, 2023). The objective of these examples is to demonstrate that this is an issue with a strong political bias and that although job creation is important, it is impossible to justify any environmental benefit, especially in the face of climate change, which means we are facing yet another socio-environmental dispute that could be avoided if investments were focused on bioprocesses and biotechnologies, to the detriment of fossil fuels, given the damage they have proven to cause to nature.

Therefore, biotechnology and bioprocesses emerge as agents to reduce socio-environmental disputes and, in turn, play an essential role in reducing and controlling climate change. Biotechnology proves to be an excellent alternative to face challenges related to environmental degradation (which includes avoiding conflicts and environmental litigation related to climate change), so it is capable of acting at different times: in prevention, monitoring, and restoration (Jesus, 2017). The Anthropocene presents environmental challenges of broad complexity, so innovative approaches are essential to promote sustainability and mitigate conflicts related to climate change.

In this area, it is observed that bioprocesses are capable of producing energy sources that replace fossil fuels, which helps reduce GHG emissions. Thus, biotechnology is understood as fundamental in the drive to build a more sustainable future, especially considering the limits of the planet and ethical approaches from a social and regulatory point of view, ensuring that they are used in a responsible and sustainable manner, avoiding conflicts and damages monetarily compensated but environmentally non-recoverable.

Conclusion

Based on the investigation on how bioprocesses and biotechnologies can act to avoid socio-environmental disputes and help mitigate climate emergencies, the conclusion reached concerns the need for new incentives in science and technology, so that knowledge on bioprocesses and biotechnology is expanded. It cannot be said that solutions to socio-environmental adversities do not exist; on the contrary, bioenergy, bioremediation, and carbon sequestration are part of scientific culture, but they need – increasingly – support and breadth.

The fact is that to decarbonize the energy matrix, decision-makers and those in power need to support each other and encourage the use of environmentally healthy technologies. Social relations are complex, that is, government, society, and companies should be aligned in paying attention to the planet's limits. However, a range of socio-environmental disputes, disrespect for legislation, and the duty of care was observed. In this sense, some of the factors behind a possible socio-environmental collapse are related to the inappropriate use of technology. It should be noted that, even if these technologies have the potential to solve current environmental problems, they will only make sense if they are developed and used with a strong social justice bias.

Despite the various pacts, agreements, and global objectives created in favor of sustainability, the notion of responsibility needs to be highlighted. Responsibility also involves selecting the most appropriate technologies, so investing in bioprocesses and biotechnologies over non-sustainable options is part of a choice for survival.

Bioprocesses and biotechnologies can be fundamental tools for balancing the social, economic, and environmental dimensions of sustainability and for reducing dependence on fossil fuels. The use of bioprocesses and biotechnologies tends to strongly reduce conflicts and, consequently, socio-environmental disputes. Adequate technology exists, or can be developed, but it does not receive the encouragement it should, since power relations (political and economic) often refuse to accept that the planet has limits.

It is essential to expand knowledge about the characteristics of raw materials (enzymes or microorganism cultures) capable of promoting bioprocesses with potential for wide-scale application, based on renewable resources. Biotechnology, therefore, presents itself as an innovation that requires investment to be better utilized. From the moment bioprocesses become dominant, many socio-environmental disputes can be avoided, especially those related to fossil fuels.

Independently, allowing certain rights to be conditionally waivable curbs frivolous lawsuits, maximizes bargaining leverage, and spurs Congress to enact data privacy protections.

Corbett 24 – Endowed Professor of Law, LSU; peer-reviewed by several other labor law professors, incl. Estlund

William R. Corbett, Frank L. Maraist, Wex S. Malone & Rosemary Neal Hawkland Professor of Law, Paul M. Hebert Law Center of Louisiana State University, and reviewed by Profs. Cynthia Estlund, Matthew W. Finkin, Stewart J. Schwab, and Steven L. Willborn, “The Case for Waivable Employee Rights: A Contrarian View,” 72 Buff. L. Rev. 179 (2024), available at: https://digitalcommons.law.buffalo.edu/buffalolawreview/vol72/iss1/3

Which Rights Would Be Conditionally Waivable? No commentator who has urged consideration of expanding waivable rights has suggested that all statutory rights should be made waivable.406 One approach would be for Congress to experiment with this device prospectively and apply it to only newly created rights. However, if this regulatory device were added to Congress’s repertoire, it should not be so limited. There are good reasons to consider conversion of existing nonwaivable rights. First, if Congress had considered the possibility of waivable rights at the time it enacted some laws, it might have chosen that approach for some. Second, there are some existing statutory rights that seem particularly appropriate for a flexible approach that permits adjustments for particular workplaces.407 Finally, making more rights waivable should generate greater bargaining power for worker representatives and concomitantly more interest on the part of employers in bargaining for waivers. What then should be the guidelines or standards for determining which rights are made waivable? Commentators have offered several factors for consideration. Perhaps the most overarching is whether making the right waivable is consistent with the rationale for enacting the law in the first place.408 This seems appropriate as a general and overarching standard, but it should be supplemented with some more specific considerations. One such consideration should be that some employment rights are conferred to ensure human dignity409 and “personhood and citizenship in a free society,” 410 and this characteristic militates against conditional waivability. A second consideration, in many cases related to the first, is that some rights are designed, at least in part, to change prevailing norms, and permitting waiver might impede that societal mission. 411 Third, legislators should be hesitant to permit waiver of rights that are conferred, at least in part, to protect third parties. 412 A fourth consideration, and perhaps one of the most important, is that for some rights/protections, society and lawmakers should be concerned with the majority having the power to trade the right away to the detriment of a minority. 413 Two arguments that support creating some conditionally waivable rights also could provide guidance on which rights are appropriate for such treatment: rights about which lawmakers are uncertain what the right should be; and rights that lawmakers have difficulty tailoring to diverse workplace settings.414 Legislators should take all of these considerations into account when considering whether a statutory employment protection should be made waivable as well as the general standard of consistency with the rationale for enacting the law. Most commentators who have discussed waivable rights and possible expansion have stated that federal antidiscrimination laws should remain nonwaivable.415 So, let us consider federal antidiscrimination rights as the ostensibly strongest candidate among existing rights to remain nonwaivable. Many of the considerations mentioned above seem to support this conclusion, particularly the concern with a majority trading away a protection needed by a minority. Although realizing that antidiscrimination rights are fundamental and perhaps should remain unwaivable, some scholars have been unwilling to categorically declare that all the rights protected under the antidiscrimination statutes should be beyond consideration for waivability. While stating that the “core” of antidiscrimination law is a primary candidate for continued nonwaivability, Professor Estlund notes that there are some tradeoffs already permitted within the existing law.416 Consider, for example the OWBPA waivers available under the ADEA.417 Professor Sunstein seems to favor nonwaivability of core antidiscrimination rights because of both the thirdparty effects that waivers could have and the need for collective action to change societal norms and preferences. 418 However, he also recognizes that employers may be willing or eager to obtain waivers of these rights, not because they wish to discriminate, but because they wish to be free of frivolous lawsuits. 419 But more to the point, whether frivolous or meritorious claims, antidiscrimination laws generate a large volume of charges of discrimination420 and lawsuits. 421 Additionally, there are other burdens, risks, and costs that the antidiscrimination laws impose on employers beyond lawsuits. To obtain relief from those burdens, employers may be willing to exchange terms and conditions of considerable value. On the other hand, it may impede the objectives of the antidiscrimination laws to permit employers to be relieved of some of those burdens, such as having HR departments develop strategies to prevent discrimination and train employees. Even if an employer obtained waivers regarding discrimination, I think most employers would be reluctant to engage in discrimination and suffer the opprobrium and reputational damage among employees, potential applicants, customers, and perhaps shareholders.422 The societal norm may have shifted sufficiently to guard against such discrimination. Nonetheless, waivers may enable employers to become less vigilant about eradicating invidious discrimination in the workplace. For antidiscrimination rights, I think it is facile to generalize regarding the case for nonwaivability. Rather, it is important to recognize that there are numerous rights and several protected characteristics included within federal antidiscrimination law. The Supreme Court has made clear, for example, that age discrimination differs in significant ways from race and sex discrimination and should be treated differently by law, 423 and Congress has permitted waivers of existing age discrimination claims.424 Thus, a more nuanced approach should be employed to determining whether some antidiscrimination rights should be waivable. The OWBPA waiver provision in the ADEA suggests another factor that should be considered—rights for which Congress already has provided for some form of waiver. Another is the overtime pay requirement in the FLSA for which Congress recognizes a waiver for public employees who freely agree to compensatory time lieu of overtime425 and a waiver by unions under some circumstances.426 It seems that for statutory rights for which Congress already has provided for a limited waiver, it would be reasonable to consider permitting a negotiated broader waiver. In my introductory hypothetical, I gave an example of two different types of privacy rights that Congress could enact as waivable rights. I think various privacy rights are good candidates for such treatment. Congress has fallen far behind in protecting privacy rights. The federal statutory claims that employees assert for electronic privacy invasions are under laws enacted in 1986. 427 Information technology and electronic communication have outpaced the law. This is understandable. The bundle of privacy rights is diverse and complex. Employers and employees have significant countervailing interests and these vary greatly among different workplace settings. It is difficult for Congress to confer statutory minimum rights regarding privacy that are appropriate for all situations. The possibility of creating waivable rights might prompt Congress to pass laws that it would not with only nonwaivable rights. Finally, legislators considering which statutory rights should be made waivable should consider the value of the bargaining chip. Congress should consider the trade value that any particular right would add. Some rights might be made waivable because they would confer significant bargaining power on the worker representative and would create a strong incentive for employers to engage in such bargaining. I realize that skeptics may object that the most valuable rights conferred by Congress should remain nonwaivable. Some probably should. Nonetheless, it is important to remember that this proposal envisions a less paternalistic labor law in which workers are empowered to take care of themselves as they see fit. I have not attempted to determine all rights that should be made conditionally waivable. Rather, I have set forth some of the considerations that should be taken into account. No one factor should be dispositive. It does seem that legislators should begin this project cautiously, but I do not think that means applying it to only new rights. As discussed, there are some good candidates for conversion among existing rights. 3. Not Necessarily All or Nothing Flexibility is one of the chief positive attributes of conditionally waivable rights, just as rigidity is one of the principal weaknesses of the nonwaivable rights approach. Even greater flexibility can be created in such a system by avoiding the all-or-nothing dichotomy. Professor Sunstein recommends a two-tier approach in which Congress could specify a first tier of nonwaivable minimum rights and a second tier of waivable rights.428 In other words, Congress could create hybrid rights. This indeed might be the best approach for some rights. It is a logical extension of a regime in which there are both nonwaivable rights and conditionally waivable rights. 4. Federal/State I have proposed this approach to statutory rights at the federal level because I have been concerned with reconceiving the federal labor and employment law of the U.S. Unions currently have the power to bargain and trade some federal and state statutory rights.429 States could also create statutory rights that are waivable under the system I propose. One candidate is noncompetes. Given the volume of litigation and the concern with 428 Sunstein, supra note \_\_, at 251-52. 429 See Finkin, Union Dispossession, supra note \_\_, at 6-8; Schwab, supra note\_\_ at 259-60. Electronic copy available at: https://ssrn.com/abstract=4322051 110 employer overreach regarding noncompetes, state legislatures could commit noncompetes to this system. Thus, state lawmakers could end their quest for the appropriate substantive constraints for enforceability of noncompetes and instead submit them to the procedural constraints outlined in this proposal. The controversy, disputes, and lack of predictability regarding noncompetes might be avoided with a system permitting negotiated collective waiver. Employers agreeing in bargaining to give something of value in exchange for noncompetes would be more akin to garden leave in the United Kingdom than to the current array of standards in the U.S., which have generated much dissatisfaction and political activity. 430 V. CONCLUSION The labor and employment law regime of the U.S. is rife with problems and deficiencies. The most overarching is the lack of coordination among the common law, the collective bargaining law, and the individual minimum rights law and the dichotomy of labor law and employment law. An underexplored approach to labor and employment law that would better coordinate these parts is conditionally waivable rights. It is established in U.S. law for waiver of some federal labor rights under the NLRA and some state statutory rights. The law could be greatly improved by expanding the use of waivable rights and developing a new model of constraints. Employees can be protected against employer confiscation of rights by procedural or substantive constraints. Procedural protections in the form of representation and bargaining could achieve the laudable goals of empowering workers to trade for the terms and conditions that they want and need, providing them with knowledge and understanding of their rights, and giving them greater voice and participation in workplace governance. The structures for employee representation and bargaining over waivable rights are feasible under U.S. law with some amendments of current law. Unions would have a significant role under any version of the proposal articulated in this Article. Although paternalism has a significant role to play in employment law, empowerment does as well, and that role is becoming more significant in the economy and job markets of the twenty-first century. The paternalistic approach of imposing/conferring defined and inalienable protections on large groups of workers and inflexible burdens on employers is no longer providing either adequate protection or appropriate terms and conditions of employment to many workers. It is time to wave goodbye to some nonwaivable rights of employees.

Strong protections for personal data prevent nanocracy.

Solove 25 – Eugene L. and Barbara A. Bernard Professor of Intellectual Property and Technology Law at George Washington University Law School.

Daniel J. Solove, “PRIVACY IN AUTHORITARIAN TIMES: SURVEILLANCE CAPITALISM AND GOVERNMENT SURVEILLANCE,” SSRN, 1/19/25, https://papers.ssrn.com/sol3/papers.cfm?abstract\_id=5103271

An essential reason why privacy matters—perhaps the most important one— is to guard against authoritarian power. In Europe, the strong commitment to protecting privacy stems in significant part due to its tragic history with authoritarianism – the use of personal data by the Nazis to identify Jews and others as well as the oppressive surveillance of the Stasi.34 If the privacy protections in our laws cannot stand up to authoritarianism, then they have flunked their most important test.35

1.Personal Data is Essential to Power and Control

Privacy is fundamentally about power.36 As Timothy Snyder observes in On Tyranny, “We are free only insofar as we exercise control over what people know about us, and in what circumstances they come to know it.”37 He further notes: “Whoever can pierce your privacy can humiliate you and disrupt your relationships at will.”38 As Neil Richards argues, “Information is power, and information about other people can bring power over those other people.”39

Efforts to frighten, discredit, or purge people with disfavored identities or beliefs often involve finding personal data about them – their health, activities, beliefs, location, and more. The government can use surveillance technology and data gathering to find out information about people engaging in research, expression, beliefs, or activities involving these disfavored viewpoints. Another technique is more subtle and bureaucratic, a practice Margaret Hu calls “big data blacklisting” – using data and algorithms to deny people benefits, put them on suspicious persons lists (the No Fly List or Terrorist Watch List), or otherwise deprive them of rights and liberties.40

U.S. nanocracy multiplies X-risks.

Cribb 17 – Professor at the University of Technology, Sydney, Co-Founder of the Council for the Human Future, Fellow at the Australian Academy of Technological Sciences and Engineering

Julian Cribb, “The Urbanite (Homo Urbanus),” *Surviving the 21st Century*, Springer, Cham, pp. 147–169, Springer

\*Edited for problematic language

Th ese are, of course, no less than the enabling technologies for a global surveillance state—though nobody is admitting as much. While it is logical that a complex society of ten billion people requires more laws, regulations and enforcement that a nineteenth century world of half a billion humans, the advent of quantum surveillance will over-ride and eliminate most aspects of individual freedom. Without strict safeguards, transparency and public oversight, it could potentially render everyone, in effect, state property. On present trends, this will probably be accomplished with the co-operation of the private sector, via internet companies and banks, and with the gullible consent of voters reassured by government claims that spying on everyone is ‘essential to national security’. With many transnational corporations now larger, wealthier and more powerful than individual countries or governments, one of the chief and most intrusive objectives of universal surveillance will be marketing—to precisely target every individual with an avalanche of products and services to anticipate their every whim, before they even know they have it. And finally, political parties and religious bodies may exploit the technology not only to spy on their opponents but to ensure the loyalty of supporters, who may then be coerced by threats to expose aspects of the private lives. This is the dawn of the nanocracy, the rule of the Dwarf Lords (see Pamlin et al. 2015 ).

Like all advanced technologies—and despite all the self-serving hype by the scientists working on it—there is no guarantee such omnipotence will be used wisely, benignly, ethically or well, be regulated, publicly supervised or even its details widely known. Indeed, the odds are it will first be employed by political, economic and religious elites to spy on and control those they deem a threat to their power, beliefs, wealth or freedom of action—or else an opportunity to spot customers, recruits or agents of infl uence. Edward Snowden, who witnessed the birth of the secretive age of universal espionage and blew the whistle on it, told Australia’s ABC in May 2015 that the power to search both our content and metadata is “incredibly empowering for governments, incredibly disempowering for civil society”. It could lead to what he termed a ‘turnkey tyranny’ in which governments claim to follow due process but secretly ratchet-up their level of intrusion into private lives without disclosing it. “Th ey are collecting information about everyone, in every place, regardless of whether they have done anything wrong,” he warned (Snowden 2015).

While most people will regard such electronic intrusion mainly as threats to individual liberty or privacy, there is in fact a far more dangerous aspect to them, which affects the fate of our species. One of the most striking lessons from communism, Nazism, McCarthyism, Jacobinism or the religious fanaticism of the past two centuries is the way they enforced surveillance on their societies, compelling citizens to inform on one another, and driving individuals to self-censor even to the point of suppressing private thoughts contrary to the prevailing doctrine.

The risk such a development on a universal scale poses to the human future in the twenty-first century is its potential to chill or prevent the very debate and change which are vital to our survival. Evidence that surveillance can discourage public discussion or the expression of opinion has already appeared in a study by Wayne State University’s Elizabeth Stoycheff which found “the ability to surreptitiously monitor the online activities of … citizens may make online opinion climates especially chilly”, adding “While proponents of (mass surveillance) programs argue surveillance is essential for maintaining national security, more vetting and transparency is needed as this study shows it can contribute to the silencing of minority views that provide the bedrock of democratic discourse” (Stoycheff 2016 ).

Many people are by nature explorers of new ideas, adventurers, challengers of accepted opinion, reformers, liberals, researchers, conservationists, pioneers, creators and innovators. These gifted individuals have led every major social and technological transformation since civilization began. They are the foil to our natural conservatism and apathy, the navigators and sources of inspiration in the human ascendancy. Progressive, prosperous and dynamic societies rely on such individuals to inspire and lead us to greater, bolder, wiser futures.

However, under the nanocracy such people will be easily picked out and ‘discouraged’, especially if the changes they propose threaten those who most profit from the status quo. Even if they are not directly censored, most people will self-censor rather than invite scrutiny. Historically, reformers, visionaries and dissidents from Socrates and Jesus to Galileo, Martin Luther King and Nelson Mandela often pay a high personal price. Under the nanocracy such people won’t even have the opportunity. Th ey will be quietly identified by AI and hushed long before they have a chance to cause trouble.

A human race deprived of its radicals, visionaries, liberals, evangelists, innovators and adventurers will be a [destroyed] species, more like a termite mound than a society. It may be stable, organised and industrious—but it will also be less progressive, less creative and less resilient, because it would tend to suppress warning voices and views that contest social norms or which argue for reform. It will be a species less able to avoid the main existential threats because—as with climate change and pandemic poisoning—to do so may threaten the self-interest of ruling elites.

The advent of quantum computers and universal surveillance may thus herald a profound fork in the path of human evolution, creating a species less wise, less fit for survival at the precise moment in history when that survival is most in play (Cribb 2016 ).