## 1AC – ADA – Crypto-Colonialism

**Plan: The United States federal government should prohibit artificial centralization of distributed ledger technology networks as an anti-competitive business practice**

### Advantage 1 – Crypto-Colonialism

#### Blockchain is expanding faster than the law can keep up – this leads to a collapse in antitrust enforcement and legitimacy.

Schrepel 19 [Thibault, Assoc Prof of Law at VU Amsterdam Univ, Faculty Affiliate at Stanford Univ CodeX Center, blockchain expert appointed to the World Economic Forum, “Is Blockchain the Death of Antitrust Law? The Blockchain Antitrust Paradox,” *Georgetown Law Technology Review* 3.2, heinonline, JCR] \*edited for ableist language

Because the future evolution of blockchain is unknown, it is difficult to evaluate the scope of the practices that will develop along with it. This article has identified several unilateral anticompetitive practices. They are most likely to occur on private blockchains. However, most of the usual mechanisms of antitrust law will be ineffective in the face of blockchain. 2 3 8 Even with the "regulatory infiltration" proposed using a "law is code" approach, some of the instruments which are used today, such as emergency measures or commitments, will be ineffective in their current form. 239 In the face of blockchain, current antitrust law may well be eliminated. In fact, three factor corroborate this hypothesis. First, antitrust law will probably become ineffective without regulatory infiltration. For the first time in its history, antitrust law will have to be greatly supplemented by regulations taking the form of a "law is code" approach. Indeed, antitrust law will not have complete answers to three issues: how to detect the anticompetitive practices committed on the blockchain, how to identify the actor responsible for these practices, and finally, how to remedy them for the future. While the author of an anticompetitive blockchain can sometimes be identified, the effectiveness of sanctions and remedies may be ~~crippled~~ [undermined] by blockchain's immutability. Presciently, the home page of the Ethereum Project reads: "Build unstoppable applications."240 Thus, even where antitrust law finds a way to regulate blockchains, it may die because it is no longer a creator of welfare on its own. Think of it as the unfortunate death of jazz: the music still exists and has listeners, but jazz no longer creates debate or leads to any movement that ventures beyond its own framework. Second, public blockchains will limit monopolization even when new governance mechanisms are implemented. In particular, predatory pricing and refusal to deal appear to be exceedingly unrealistic, while tying, margin squeezing, exclusionary dealing, loyalty rebates, and exploitative and discriminatory abuses are unlikely to occur. Furthermore, because the transactions implemented on public blockchains are visible to all, the incentive to engage in anticompetitive practices is reduced since market surveillance and industry monitoring can easily root out illegal activity. However, some perpetrators will be protected by the "opacity effect" created by the characteristics of the technology. This is particularly true for private blockchains where entering it, absent regulation infiltration, is technically impossible. In short, anticompetitive practices are expected to be rare on public blockchains, but these practices could be plentiful on private blockchains that operate below authorities' radar. The same issues arise outside the scope of unilateral practices, namely, for collusive agreements where the identification of colluders and the unsuitability of existing mechanisms to stop and punish such practices is equally problematic.241 The third and final reason to expect the death of antitrust law is tied to its foundations. Without a doubt, regulators will find ways to submit blockchains to the law, whether it is by way of regulatory infiltration-which is recommended-or other ways that place the technology at risk, such as the regulation of end users, transportation layers, information intermediaries, blockchain intermediaries, transaction processors or code, architecture or hardware manufacturers-which is not recommended.m But even if antitrust law remains as a body of positive law,24 3 the regulator may end up protecting the existence of antitrust law even though its initial goals are no longer fulfilled. After all, modern antitrust law is built on the premise that the Sherman Act is concerned with trusts.2 44 Without trusts, are antitrust laws needed? This is the "blockchain antitrust paradox": antitrust laws' potential lack of legitimacy (and efficacity) on the one hand and the need to stop anti-competitive practices on the other. Furthermore, the death of antitrust law might not be solely linked to blockchain technicalities. The fate of antitrust law might also be determined by the inherent conflict between the logic of blockchain technology and the logic of antitrust law. Recall that there is no trustee in the sense of a third-party fiduciary within the framework of blockchain. In other words, the target of antitrust laws is absent.245 Blockchain challenges the raison d'etre of antitrust law. Conversely, antitrust law was created for, and is applied by, centralized regulatory agencies, such as the FTC, the DOJ, and the European Commission. Enforcing antitrust law amounts to imposing vertically designed rules and concepts on a technology built around the desire for decentralization.246 But blockchain is used not only for "philosophical" reasons related to its decentralized nature but also because it is practical, and in fact, blockchain's practicability results from its decentralization.247 In short, this opposition between the vertical nature of antitrust law and the horizontal or decentralized nature of blockchain raises a legitimacy concern. The cultural and sociological factors that led to the development of blockchain technology cannot be ignored by the law. As a consequence, on top of all the challenges related to blockchain technicalities, another concern is the legitimacy of antitrust law with respect to this technology. To address this concern, a way must be found to decentralize antitrust law and antitrust authorities.248 This will require a minima to design and implement new governance models using blockchain.250 Antitrust authorities can no longer rely on pyramidal structures nor continue to operate in a closed circle on the model of nation-state-led government. Antitrust law as we know it must die and be reborn. If not, it soon will be illegitimate.

#### U.S. companies are leading the push – business investments now are expected to project for years.

Kirimi 2/3 (Arnold Kirimi, Cointelgraph reporer, 2-3-2022, North America to lead growth in blockchain market, new report says, Cointelegraph, <https://cointelegraph.com/news/north-america-to-lead-growth-in-blockchain-market-new-report-says>) MAM

A new report indicates that the blockchain industry is set for astronomical growth in the next decade, with the North American market leading the way. The report by Fortune Business Insights, titled “Blockchain Market Analysis Research Report, 2021–2028,” mentions that the global blockchain market size is expected to reach a whopping $104.19 billion by 2028, exhibiting at a CAGR of 55.8% across the forecast period. The presence of major industry players such as IBM, Microsoft, Oracle, AWS, Digital Asset Holdings and others in the North American market is expected to have a significant impact during the forecast period. For comparison, the regional market was valued at $1.44 billion in 2020. According to the research, the pandemic has expedited demand for cloud-based services and software, resulting in a market ripe for blockchain innovation. The demand for secure and transparent data management is greater than ever, with more and more organizations seeking to establish virtual work platforms. The report highlights that blockchain's increasing popularity is due to enterprises' need for software as a service to maintain business continuity. According to the study, small business enterprises (SMEs) utilize Blockchain-as-a-Service solutions to protect their digital assets and validate human identities, implying that demand for BaaS services will continue to rise. The growing concern over data security is expected to drive demand for blockchain technology in the future. The technological demands, including cross-border transactions, clearing and settlements, trade finance platforms, digital identity verification and credit reporting, are expected to fuel future growth in the blockchain sector. Blockchain technology has seen initial implementation across several major industries such as banking and financial services, media and entertainment, logistics and transportation, healthcare, retail, public sector, food and beverages, energy, and utilities. Big tech companies are increasingly shifting focus to the blockchain space to capitalize on the increasing demand for distributed ledger technology. As Cointelegraph reported, Google's parent company, Alphabet, is looking into using the innovative technology in its core products and services, such as YouTube and Google Maps.

#### Unfettered access to the blockchain allows tech to escape regulation and decks governance.

Schrepel 21 [Thibault, Assoc Prof of Law at VU Amsterdam Univ, Faculty Affiliate at Stanford Univ CodeX Center, blockchain expert appointed to the World Economic Forum, *Blockchain + Antitrust: The Decentralization Formula*, p.238-9, JCR]

Opting for a confrontational approach will put blockchain ecosystems at risk. Let me generalize my findings and return to the MOAF approach to explain why that is. First, a confrontational approach would not be desirable from the regulators' point of view. Aggressive law enforcement would indeed threaten the fundamental principles of encryption and immutability. While that might deter some illegal behaviors, it would also threaten all sorts of beneficial practices that rely on either of these two principles. Thus, the accuracy level would remain low because it would entail numerous false positives and eventually deprive regulators of blockchain's contribution to the common good. In terms of manageability, a confrontational approach would put blockchains under the regulator's control. Enforcing and monitoring costs would be extremely high. This approach would require costly deanonymization services and expansive practices altering the registers, stopping smart contracts and carrying out forks. Second, this approach would also be detrimental to blockchain communities. In terms of objectivity, regulations of this sort could be relatively predictable for private actors, but objectivity would suffer from the resistance of certain blockchain communities. Technical innovations would rapidly emerge to escape regulation, forcing the regulator to continually adapt its regulations and apply them inconsistently. In terms of flexibility, this confrontational regulation would open the blockchain fortress with a tank. It would be highly coercive. New regulations would forcibly impose enforcement mechanisms on all blockchain communities — or, at the very least, on a (large) part of them — by eliminating some of the technology core characteristics. In other words, implementing regulations of this sort would be like using a sledgehammer to crack a nut. This is not a pretty picture." Blockchain is still a burgeoning technology and adopting a confrontational approach would end up removing some essential features for its survival against other species (i.e., centralized ecosystems). Alternatively, these regulations would be ineffective, as communities would work to escape the rule of law. If confrontational law lags behind the technology, its enforcement will partially be held in check for the reasons I have discussed. If, on the contrary, confrontational law is ahead of technology, the latter will circumvent and escape it by eliminating control mechanisms and changing governance and incentives (not always for the better). This will be limited, as only the most advanced part of the community would succeed; but that fraction would take a chunk of the users with it. The rule of law would not regain its full primacy. In fact, we have seen this already. When the New York State Department of Financial Services imposed a requirement to obtain a "BitLicense" before engaging in Bitcoin activities?' several startups moved to New Jersey. If developers cannot vote with their computers, they vote with their feet by relocating their operations. This affects all users. In a nutshell, one must reject the confrontational approach because it allows neither the law (here, antitrust) nor the technology (here, blockchain) to fully achieve its objective. One must find another way to enter blockchain ecosystems. I offer an alternative option in that regard.

#### Blockchain is being used as a mechanism for “green grabbing” as an extension of neo-colonial control – results in the abstraction of the environment, destruction of North-South trade flows, and geographies of inequality.

Howson 20 (Peter Howson, Senior Lecturer in the Social Science Department at Northumbria University, 5-13-2020, Climate Crises and Crypto-Colonialism: Conjuring Value on the Blockchain Frontiers of the Global South, Frontiers, <https://www.frontiersin.org/articles/10.3389/fbloc.2020.00022/full>) MAM

Green Grabs for Cryptocarbon

Blockchain technology is being leveraged to address the multiple technical faults of global carbon-offsetting mechanisms like Reducing Emissions from Deforestation and Forest Degradation (REDD +). The REDD + mechanism was established by the UN in 2007 to incentivize conservation and make tropical forests more valuable standing than cut down. However, since its inception many REDD + initiatives have become implicated in “green grabbing” (Howson, 2018). Green grabbing can be understood as part of an on-going debate on neo-colonial “land grabbing” more generally (Pearce, 2013), involving the appropriation of land and resources with pro-environmental motives. This form of appropriation includes the transfer of land as property, use rights and control over natural resources that were once publicly or communally owned – or not the subject of ownership – from marginalized groups into the hands of the powerful (Fairhead et al., 2012). Green grabbing is not the same as a simple, agreed transfer of ownership or sale. It is a central characteristic to processes of accumulation and dispossession (Harvey, 2005). It is an emotive term because it is unjust. This form of grabbing often entails the expulsion of existing land claimants in order to release resources for private capital (Fairhead et al., 2012).

Blockchain projects, including Infinite Earth’s Veridium Labs, a Hong Kong-based private company working in partnership with IBM and Stellar, are developing a platform to sell REDD + carbon off-sets as crypto-tokens. The value of Veridium’s token, Verde, will be derived from the platf orm’s ability to facilitate micro-payments of carbon credits produced mainly from Infinte Earth’s Rimba Raya forest in Central Kalimantan (Howson, 2019). Despite the coordinated appearance of this vertically integrated consortium, the Rimba Raya project office in Indonesia remains uninformed of this approach to trading local people’s forest resources. It is not clear how many options for future off-sets have been sold. There also remains no plan to offer financial compensation to local people. According to Enrici and Hubacek (2018), the Rimba Raya reserve is the only project of its kind in Indonesia to secure funding from global carbon markets. None of this income is shared with those paying the highest costs, such as those displaced by conservation efforts. Another cryptocarbon initiative, Impact Earth, have stated their intent toward incentivizing forest communities living in and around Zimbabwe’s Kariba conservation area, via payments of their Ethereum-based Earth Token. Impact Earth state that, “People just like you can invest in a sustainable future and share in the success of this enormous opportunity” (in Howson et al., 2019, p. 6). However, no transfer of tokens could ever be made within the current global governance regime of crypto-commodity markets. Impact Earth specifically excludes investors from “high-risk” jurisdictions, as defined by the US Department of the Treasury’s Financial Action Task Force and Office of Foreign Assets Control, which includes Zimbabwe (Lang, 2018b; Sullivan, 2018).

Athelia3, a private fund based in the tax haven of Luxembourg, is providing carbon credits associated with the Cordillera Azul National Park to its strategic Maltese partner, Poseidon, for use on their Ocean platform. Poseidon’s platform allows consumers and retailers to track and offset their carbon footprints. Poseidon has also partnered with Liverpool City Council and the London store of Ben & Jerry’s ice cream. The Rimba Raya reserve, as well as the Cordillera Azul National Park were established in 2007 and 2014 respectively. Off-setting one’s emissions via the protected areas’ blockchain platform enables the sale of carbon credits which have therefore already been produced. The profits from these sales repay the projects’ private investors based overseas, rather than their local host communities. They do not directly incentivize any additional tree planting activities, or carbon “additionality.” As Lang (2018a) suggests, with many market-based conservation projects, there is an unnecessary level of complexity in the funding arrangement, along with opportunities for only a small group of financiers, auditors, and consultants in the Global North to cash in along the way.

Blockchain for Clean Development

Environmental assets (or natural capital), are a monetized representation of the services natural systems provide for free. Off-sets and any crypto-tokens associated with them, derive their value from the health of conserved biophysical systems. Due to the dynamic nature of atmospheric CO2, in the context of the global climate system, it does not matter where in the world emissions are avoided. Global markets for saved carbon can be used to ensure net emissions are reduced at the cheapest price. For this reason, most of the world’s carbon-offset initiatives are located in the Global South, where land, labor and other necessary inputs can be sourced cost-effectively for maximum potential profit (Howson, 2018). The problem with producing environmental derivatives in this way is that an abstract “nature,” people and their livelihoods are arranged as underlying assets for the “real” source of value in the neoliberal green economy (Büscher, 2010). For-profit companies such as Adaptation Ledger, Climate Trade and Climate Futures have launched blockchain platforms for carbon off-setting, green financing and sustainable investments. The 1Planet blockchain platform developed by Climate Futures enables purchases of environmental assets from energy efficiency initiatives in Africa, Latin America and India. Individuals and companies can purchase carbon credits as blockchain tokens to reduce their net emissions by supporting, for example, the installation and distribution of fuel-efficient cooking stoves in Zambia. The value of these credits are derived from the assumption that concrete stoves reduce wood-use for cooking compared to traditional open fires. The projects’ carbon offsets are certified through the UN Clean Development Mechanism and are marketed toward international airlines specifically, to help them meet climate change obligations under the UN Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). The implication here is that forest communities in the Global South, collecting dry wood for cooking and often living with a near neutral carbon footprint (Gazull and Gautier, 2014), are framed as more responsible for climate change, compared to frequent flyers and large multi-national corporations in the Global North.

The Green Assets Wallet has been developed to help scale the green debt market, primarily in Africa. The blockchain platform functions as a tool for green bond validation and impact reporting and has been developed by a consortium including the German International Development Agency (GIZ) and the German Federal Ministry for Economic Cooperation and Development (BMZ) (Green Assets Wallet, 2019). Green bonds operate just like conventional debt instruments, with similar calculations of risk and credit rating. However, dividends are actioned against contracted sustainability outcomes, usually including a calculation of achieved emissions reductions from the associated investment. As a debt instrument, Green bonds in Africa are generally high-risk due to the poor credit ratings of recipient countries. Using blockchain to bring trust to these transactions risks **maintaining pre-existing North-South trade and investment flows** and neo-colonial geographies of inequality that render much of the global south increasingly marginalized. Scaling up green debt markets in Africa restricts the organic growth of green enterprises as they risk their returns disappearing to international investors, whose income may be guaranteed by public sector entities (Bracking, 2019). The most environmentally-effective solution for companies and individuals with high carbon footprints, whose sites of production are located in the Global North, is obvious – prevent excessive pollution at source. The most cost-effective solution is usually more creative, requiring innovative financial instruments and accounting methodologies, and the ongoing externalization of environmental costs toward the Global South.

In opposition to traditional North-South investment flows, rather than monetizing removals only from the Global South, the Nori Marketplace uses blockchain technology to incentivize land-owners in the Global North. Farmers in the US can receive rewards for adopting regenerative practices that mitigate climate change and improve the carbon content of soils. Individuals and businesses can purchase NORI tokens that are tradable via cryptocurrency exchanges (Siegel, 2019). Tokens represent verified Nori Removal Tonnes (NRTs), which each represent one tonne of CO2 removed from the atmosphere for a minimum of 10 years. Retirement of the NRTs is immediate and generates a certificate that is permanently recorded on the Ethereum blockchain. The platform’s developers suggest that Nori enables a win-win outcome for consumers and the climate (Gambill, 2019). However, as with any carbon off-set, these assets are a fetishized abstraction of an unfathomably complex biophysical system (Howson et al., 2019). Blockchain tokens are not capable of representing much more than a rough estimate concerning temporarily removed carbon over time. Knowing what will happen from one year to the next, or what might have happened in the absence of a farmer’s intervention is impossible. To add to the uncertainty, Nori’s verification methodology also requires the input of trusted third party intermediaries. Which begs the question, why use a blockchain at all?

#### This extension of market expansion accelerates climate change, structural violence, and extinction – preventing market expansion and business deregulation allows for the acceleration of inequality and disproportionate destruction.

Sparke 16 (Matthew Sparke is Professor of Geography, International Studies and Global Health at the University of Washington, USA, where he also serves as the Director of Integrated Social Sciences, “Health and the embodiment of neoliberalism: pathologies of political economy from climate change and austerity to personal responsibility,” in *The Handbook of Neoliberalism*, pgs. 237-247)

Neoliberalism is commonly understood in terms of the expanding global influence of disembodied market forces and rationalities. However, unlike the invisible hands and competitive calculations it unleashes on the world, neoliberalism’s implications for health are neither intangible nor abstract. Instead, they are materially embodied in ways that are deeply consequential for life and death (Navarro 2007). Evoked in book titles such as The Deadly Ideas of Neoliberalism, Dying for Growth, Sickness and Wealth, Infections and Inequalities, Pathologies of Power, Blind Spot, and, in the aftermath of the 2008 financial crisis, The Body Economic: Why Austerity Kills, neoliberalism and associated forms of inequality, austerity and precarity have been tied by health scholars to a vast variety of embodied suffering, disease-vulnerability and low life expectancy right across the planet (Rowden 2009; Kim et al. 2000; Fort et al. 2004; Farmer 2001, 2005; Keshavjee 2014; Stuckler and Basu 2013). Rallying against these lethal links, a gathering of the World Social Forum in Tunis in 2015 recently concluded that today’s global crises in health, health services and social protection are ‘in fact the consequence of neoliberal politics globally’ (WSF 2015). Meanwhile, amid all the crises, individuals are also now routinely told that their health is simply their own responsibility, a form of resilience that will only endure if they invest in it with the same individualistic and entrepreneurial prudence that is the trademark of personalized neoliberalism more generally (Brown and Baker 2012). As a result, all sorts of embodied health challenges – hunger and obesity being two especially physical examples – are repeatedly recoded as personal management problems even as they embody neoliberal socio-economic developments in society at large (Carney 2015; Guthman 2009).

How then can we better theorize the processes through which neoliberalism becomes embodied in health? While the ill-effects of neoliberal policies and practices have been spreading across borders like an infectious outbreak, neoliberalism is clearly not a biological disease agent itself. Even if it is conceptualized as an epidemic in terms of transnational health impacts, its extraordinarily diverse sequelae do not constitute a singular medical syndrome (Schrecker and Bambra 2015). The etiologies of illness involved are extremely complex, multi-causal and as geographically uneven as they are historically and economically interconnected (Labonté et al. 2009). Whether it is the global consequences of the cutbacks in health care caused by neoliberal austerity, or the impact of business deregulation, privatization and user fees introduced in national neoliberal reforms, or the everyday destabilization of communities caused by increasing income inequalities, social insecurity and environmental deterioration, the varieties of experiences, processes and time-space scales to consider are extremely heterogeneous. And then, on the other side of the ledger, there are the health benefits claimed by the privileged for neoliberal innovations in personal risk management, customized medicine, medical tourism and pharmaceuticals – benefits that also sometimes come with increased risks for others such as organ donors and experimental subjects recruited for drug trials in poor countries (Parry et al. 2015; Sparke 2014). Across such a wide range of economic, political and social life, ‘neoliberalism’ – the term – means many different things. Thus before proceeding here to offer a survey of research on the health outcomes that can be diagnosed as embodiments of neoliberalism, this chapter begins by first unpacking what the term means and how we can best theorize its ties to health.

Defining neoliberalism in relation to health

Put most simply, neoliberalism names a way of governing capitalism that emphasizes liberalizing markets and making market forces the basis of economic coordination, social distribution, and personal motivation (Sparke 2013).At a macro scale these developments can be seen as comprising ‘neoliberal governance’, a set of governmental norms including privatization, business deregulation, and trade liberalization, that reconstitute politics in the shape of the market and repurpose the state as an entrepreneurial actor that governs through proliferating public–private partnerships in the interests of business classes and global investors (Brown 2015; Harvey 2005). At a more intimate scale of personal behaviour it becomes ‘neoliberal governmentality’, a suite of practices in which individuals across a much wider set of social classes are enlisted into becoming competitive agents who invest in their human capital as entrepreneurs and who reimagine the meaning of their lives, citizenship and individuality – including their personal health – as calculating consumers constantly comparing metrics of ownership, mobility and social ranking (Brown 2015; Dardot and Laval 2013; Lemke 2001). And at once enabling and mediating developments across these different scales, neoliberalism is also a set of economic-turned-political ideas: ideas (like von Hayek’s view of health as just another consumer choice) that keep evolving as adaptive and protean yet hegemonic common-sense about market norms and necessities, and ideas that thereby continue to inspire both the macro policies and micro practices of neoliberalization in different ways in different places (Gaffney 2014; Mirowski 2013; Peck 2010). All these accounts of neoliberalism are useful, but, as has been widely cautioned (including by many of the authors cited above), each one risks turning the term into a singular and seemingly inevitable metanarrative when divorced from attention to the historical-geographical circumstances in which neoliberal ideas and discourses actually shape assemblages of neoliberal governance and governmentality (Ong 2006; Sparke 2006; Springer 2012). This is precisely where studying neoliberalism in terms of embodiment becomes so critical, offering a way of coming to terms with how all the global-to-local processes of neoliberalization come together materially to condition and, too often, to shorten and diminish human life.

Not surprisingly, scholars of health have already led the way in reconceptualizing neoliberal- ism in terms of embodiment. They are not all necessarily informed directly by the account of illness as ecosocial embodiment offered by epidemiologist Nancy Krieger (2001, 2005; but see Birn et al. 2009). All sorts of other ecologies and ‘epidemiologies of inequality’ have been charted as well (Heggenhougen 2005): some stressing the ties between ill-health and the high in-country inequalities created by neoliberal reform (Wilkinson and Pickett 2009; De Vogli, Schrecker and Labonté 2013); others surveying the severe constraints placed on poor country primary health care, health services and, more recently, on health systems strengthening by the structural adjustments and neoliberal austerity imposed by international finance and its polit- ical representatives (Birn and Dmitrienko 2005; Gloyd 2004; Kim et al. 2000; Pfeiffer and Chapman 2010); others highlighting in turn the complex biosocial mechanisms through which everything from dam-building to user fees, curtailed drugs programmes, and other structural adjustments materialize as structural violence on the poor (Farmer 2005; Farmer et al. 2013); and yet others identifying the particular routes through which poor people’s bodies, blood and bio- logical material have been turned into new molecular frontiers for capitalist growth amid the crises and speculative leaps of neoliberal globalization (Cooper 2008; Crane 2013; Rajan 2007). These varied epidemiologies are informed in turn by varied analyses of the pathways through which neoliberalization comes to be embodied. Some stress the transfer mechanisms of neolib- eral ideas through international financial institutions, free trade deals and NGOs (Labonté and Schrecker 2007; Rowden 2009; Keshavjee 2014). Others emphasize the class interests and policy reforms of neoliberal governance, including health services privatization (Navarro 2007; Schrecker and Bambra 2015; Schwiter et al. 2015). And yet others address the prudential risk- management practices of neoliberal governmentality, whether as they are practiced by consum- ers of personalized medicine in privileged contexts (Brown and Baker 2012; Lupton 2015), or as they are extended, however unevenly and incompletely, to aid enclaves of therapeutic citi- zenship in desperately poor contexts (Ngyuen 2010).

The main focus in what follows is on the pathways that can be addressed in terms of conditionalization, including under this heading the diverse developments through which neoliberalism in macro political-economic governance has become embodied in various forms of premature mortality and morbidity. Given limited space, less attention is paid here to the various forms of personalized responsibilization through which more micro modes of neoliberal governmentality have come to be embodied in individual experiences of risk and biomedical self-management. However, by way of a conclusion, the last part of the chapter points to how both conditionalization and responsibilization are increasingly coming together to shape contemporary global health formation: the formation of a field of research, intervention and outcomes in which we see micro neoliberal innovations in personalized health risk management frequently being advanced as answers to the destructive legacies of macro neoliberal structural adjustment. It is a field in which neoliberal market failures are at once acknowledged and contested even as neoliberal assumptions still strongly shape the ways that corrective counter-measures to the legacies of neoliberal structural violence are imagined, assessed and defended (Kenworthy 2014; Mitchell and Sparke 2016). But to understand the global health problems in poor countries that corrective global health interventions are designed to address we first need to come to terms with the ways in which embodied experiences of health have been structured by neoliberal conditionalization.

Neoliberalization as global political-economic conditionalization

Last year, our imperfect world delivered, in short order, a fuel crisis, a food crisis, and a financial crisis. It also delivered compelling evidence that the impact of climate change has been seriously underestimated. All of these events have global causes and global consequences, with serious implications for health. They are not random events. Instead, they are the result of massive failures in the international systems that govern the way nations and their populations interact. In short: they are the result of bad policies.... In far too many cases, economic growth has been pursued, with single-minded purpose, as the be-all, end-all, cure-for-all. The assumption that market forces could solve most problems has not proved true.

(Margaret Chan 2009)

She did not use the word neoliberalism itself, but, in 2009, in one of the most critical speeches ever made by a Director General of the World Health Organization, Margaret Chan delivered a damning diagnosis of the effects of neoliberal policy-making on health outcomes around the world. At the centre of the ‘bad policies’ she targeted for critique in this way was the single- minded pursuit of economic growth, and her subsequent references to globalization, market forces, and trade liberalization indexed, in turn, wider neoliberal developments as the underlying causes of the widening global crises. Coming on the heels of the 2008 global financial crisis, Dr Chan thereby summed up a widespread realization that the neoliberal norms tied to market-led global growth were creating massive problems of inequality, volatility and precarity. ‘Something,’ she said, ‘has gone horribly wrong.’

Dr Chan’s diagnosis was by no means just a rhetorical response to a bad year. It built upon a comprehensive assessment of the WHO’s own Commission on the Social Determinants of Health, which had already reached similar conclusions collected together in a report that was published in 2008 before the full scope of the global financial crisis even became clear (WHO 2008). ‘Social injustice is killing people on a grand scale,’ announced this report (ibid.: 26).And, as well as presenting voluminous data to buttress their critique, the commissioners also sought to chart some of the pathways of causal connection linking high mortality and morbidity around the world to the structural force of neoliberal policies and associated economic impera- tives. The report also did not use the term ‘neoliberalism’. It only showed up once in a reference to an online paper on uneven health outcomes and neoliberalism in Africa (republished as Bond and Dor 2007). But as they endeavoured to describe the market-made and market-mediated ‘structural drivers’ that set the conditions in which people ‘are born, grow, live, work, and age’, and as they documented how these political-economic forces are experienced and thus embodied as ill-health, the commissioners effectively underlined a form of conditionalization linked to globalization that others would clearly recognize as neoliberalization. ‘This toxic combination of bad policies, economics, and politics’, they argued, ‘is, in large measure, responsible for the fact that a majority of people in the world do not enjoy the good health that is biologically possible’ (WHO 2008, 26).

Irrespective of the terminology used, one of the most useful lessons of the analyses offered by the WHO chief and the 2008 WHO report on the social determinants of health is their focus on the processes of conditionalization through which global structural forces become embodied in health outcomes. ‘Conditionalization’ is a useful term to employ here for two reasons. First of all, it indexes the many indirect ways through which neoliberalization around the world has set the basic conditions in which people strive to live their everyday lives. Conditioning connects in this way to vital processes of social reproduction, as well as communicating as a verb – ‘to condition’ – how living conditions, in turn, become embodied in people’s health. Inequality, financial volatility, and the so-called ‘race to the bottom’ tendencies associated with the relentless global competition for investment and jobs are all important aspects of neoliberal health conditioning in this respect, as too are the massive challenges of climate change, pollution, and food and water insecurity, all of which have been further exacerbated by market liberalization and associated efforts to attract and accommodate business interests globally. More directly, the second reason for using the term ‘conditionalization’ is that it also points to the very specific neoliberal policies known as ‘conditionalities’ comprising the rules imposed on poor countries around the world by the IMF,World Bank and US Treasury Department as conditions for sup- port with debt management from the debt crises of the 1980s onwards. Also known as the ‘Washington Consensus’, the rules of conditionality – rules that included privatization, trade liberalization, financial deregulation, austerity, cuts to health programmes, user fees for health services, cuts to food and fuel subsidies, and diverse experiments in export-led development – constituted the main components of the so-called Structural Adjustment Programmes or SAPs administered by the three agencies based in Washington, DC. These same SAPs have subsequently become the subject of a powerful set of critical studies documenting the structural violence and suffering that structural adjustment imposed on societies across the global South, violence and suffering that has, in turn, been embodied in a whole series of diminished health outcomes (Pfeiffer and Chapman 2010). Let us now examine these contextual and structural patterns of health conditionalization in more detail, starting with the most generalized and global conditioning affect of all: namely, climate change.

Neoliberalism and the contextual conditioning of health

Climate change is viewed by many health scholars as ‘the biggest global health threat of the 21st century’ (Costello et al. 2009). Even if the ties to neoliberalization are not always noted, the health risks of climate change can also, in turn, be examined as being increased and intensified by neoliberal developments globally (Goodman 2014).The freeing-up of market capitalism has undoubtedly freed-up additional carbon as gas and put it straight into the atmosphere, creating the basic conditioning effect – the greenhouse effect – needed to create anthropogenic climate change. The liberalization in neoliberalization takes on a whole new meaning in this regard. As Naomi Klein puts it, ‘the liberation of world markets, a process powered by the liberation of unprecedented amounts of fossil fuels from the earth, has dramatically sped up the same process that is liberating Arctic ice from existence’ (Klein 2014: 20–1). These liberalization links noted, it would be mistaken simply to blame neoliberalism alone for climate change.The Keynesian welfare-state capitalism of the pre-neoliberal West was itself the world’s greatest greenhouse gas generator until market-led globalization brought developing countries into the club of big carbon emitters. Looked at like this over longer time-spans, economic development based on energy supplied largely in the form of fossil fuels was always going to lead to the greenhouse effect. Neoliberalism has undoubtedly accelerated the process and enabled recent phenomena such as fracking and tar sands exploitation by blunting government regulation of energy corpo- rations and legitimating new norms for extractive development (Finewood and Stroup 2012; Preston 2013). But, many other older aspects of global development have been contributing to carbon build-up for far longer.

Pre-neoliberal pollution noted, when it comes to how climate change impacts human health, and how societies might mitigate or adapt to the dangers, neoliberalism makes a very big difference indeed (Fieldman 2011). As Klein underlines, ‘we have not done the things that are necessary to lower emissions because those things fundamentally conflict with deregulated capitalism’ (Klein 2014: 18). Mitigation has thereby been repeatedly mitigated, leading to a series of dead-ends in global climate negotiations from Kyoto to Copenhagen to Cancún to Durban (Bond 2012a).The same economistic appeals to the inevitability of market logics that have helped to naturalize neoliberal globalization have also helped in this way to make shifts away from carbon-intensive energy production seem impossible to political elites. As a result, whatever worries endure about climate change are generally transformed into new market-friendly and market- mediated ‘adaptive’ opportunities through developments such as carbon credit markets, weather derivatives, patented climate-ready crops and public forest land grabs privatized as carbon sinks (Bond 2012b; Cooper 2010; Dempsey and Robertson 2012). Thus the dominant neoliberal response to climate change has been to focus on the depoliticizing development of so-called resilience, turning market tools and techniques for risk management into new climate adaptation products for those who can afford to invest in insurance and insulation from the most health-threatening implications of climate change (Bracking 2015; Felli 2015; Gilbertson and Reyes 2009; MacNeil and Paterson 2012; Parr 2015). And far from the centres of financialized climate adaptation, the bodies of the poor are simultaneously left vulnerable under neoliberalism to the floods, storms, desertification, droughts, heat waves, and disease outbreaks that the Inter- national Panel on Climate Change describes as being created or worsened by climate change, as well as all the associated shortages of reliable food and secure water supplies (IPCC 2014).

The hazardous contexts for human life created by deregulated risk-evading industry impose risks on human health through more than just greenhouse gas emissions (e.g. Mudu 2009). There are many other health-damaging ecologies ensuing from the ways in which the neoliberal competition to attract and retain investment globally has led to diminished controls over corporate activities ranging from power generation to farming, fishing, logging and mining to chemical and pharmaceutical production to the management of food and workplace safety. Ocean acidification, aquifer depletion, overfishing, biodiversity loss, and carcinogenic chemical exposure all threaten the ecological systems that support the reproduction of healthy human bodies, and they are all intensified by neoliberalization (Castree 2010). Similarly, the ‘race to the bottom’ on (and for) factory floors created by the creation of the increasingly neoliberal global division of labour (i.e. competitive, contingent and highly precarious ‘flexible’ labour markets) has led to the sidelining of occupational health and safety protections as well as to the undermining of unions and the historic health and pension benefits secured by collective bargaining (Mogensen 2006). The deaths and injuries of workers through hyper-exploitation, suicide, factory fires, building collapses and other industrial disasters are, in this sense, just the most egregious embodiments (indeed disembodiments in some cases) of more pervasive tendencies towards increasing work-related stress, vulnerability and ill-health (Baram 2009; Ngai and Chan 2012). Most vulnerable of all, the precarious sub-citizenship of poor migrant workers in today’s global economy – many of them forced into migration by the impact of neoliberalization on domestic economies – leads directly to broken bodies, painful insecurities and, as Megan Carney puts it in her powerful analysis of the food insecurity facing women migrants on both sides of the US– Mexican border, unending hunger (Carney 2015; see also Holmes 2013).

While many workers suffer injury and deprivation in labouring to produce food and other consumer goods and services for the global economy, another way in which workers’ bodies come to embody neoliberal precarity is as consumers too. The free market deregulation of cor- porate activity and other policy shifts away from social welfare protection put populations at increased health risks by exposing consumers, and especially poor and poorly educated consumers, to an increasingly inescapable ‘corporate-consumption complex’ (Freudenberg 2014). Freudenberg’s name for this hybrid assemblage of business interests and networks also underlines – with its echo of the military-industrial complex – the huge importance of public health research into the dangers posed to consumers by industries ranging from alcohol, tobacco and fast food to firearms, petrochemicals and pharmaceuticals (Mercille 2015;Wipfli and Samet 2009). With the increasing globalization of the corporate consumption complex we also return to a form of public health conditionalization highlighted by WHO Director Chan in her account of the rising chronic disease and non-communicable disease dangers associated with market-led devel- opment. Unfortunately, though, such structural conditioning is simultaneously being down- played in individualistic approaches to behavioural responsibilization in public health, approaches that focus on cultivating healthy consumer ‘choices’ and which constitute a form of neoliberal governmentality that is now travelling transnationally to many of the same consumers being chased by global corporations themselves (Cairns and Johnston 2015; Hughes Rinker 2015; Ormond and Sothern 2012; Parry 2013; Sun 2015). While these micro neoliberal approaches have been theorized as bringing opportunities for customized medicine at the molecular level, and while it is suggested that this new biological citizenship comes without the racial exclusions and other biases of national twentieth-century biomedicine, empirical studies show that they often contribute to personal shame and guilt that leads in turn to the denial of structural conditioning and related forms of vulnerability and dependency (compare Rose 2007, with Eliason 2015; LeBesco 2011; Peacock et al. 2014; and Wehling 2010).Thus, insofar as this per- sonalized neoliberal individualization of risk management obscures the socialized neoliberal production of heath risks, it presents what Sara Glasgow and Ted Schrecker usefully refer to as ‘the double burden of neoliberalism’ in global public health (Glasgow and Schrecker 2015).

#### Blockchain is the newest vehicle for green capitalist expansion at the expense of the Global South, the newest “frontier” dictating social-spatial relations.

Howson 20 (Peter Howson, Senior Lecturer in the Social Science Department at Northumbria University, 5-13-2020, Climate Crises and Crypto-Colonialism: Conjuring Value on the Blockchain Frontiers of the Global South, Frontiers, <https://www.frontiersin.org/articles/10.3389/fbloc.2020.00022/full>) MAM

Anthropogenic greenhouse gas emissions present unprecedented, and not evenly distributed, challenges for human development globally. Each year, an average of 24 million people are displaced because of increasingly frequent extreme climatic events. By 2050, 143 million people across the Global South will become climate refugees (Kinstler, 2019). There is also broad consensus that climate change is exacerbating a mass-extinction of biodiversity with no historical equivalence (Bálint et al., 2011). Addressing such crises is becoming a boom industry; a source of substantial economic growth in a variety of sectors (Büscher and Fletcher, 2020). It is also inspiring new technical fixes using blockchain technology. Despite promises of transforming the opaque world of climate finance (Marke, 2018), providing disaster preparedness solutions for local communities in the Global South (Thomason et al., 2018), and improving natural resource governance (Kshetri, 2017), like any powerful technology, the social and political costs and benefits of nascent blockchain applications remain **ambiguous.**

This commentary explores how international development and climate change adaptation and mitigation credentials are being called upon to justify “crypto-colonialism” – neo-colonial processes (Stoneman and Suckling, 1987) whereby blockchain technology is enabling new forms of resource appropriation from the Global South. These appropriations include land, labor, data and other resources needed to facilitate economic growth elsewhere. The term Global South is used here to distinguish between spaces still suffering the scars of colonial expansionism, from those that have historically benefited from these processes (Kapoor, 2004). As with many past development agendas imposing structural economic reform, the contemporary crypto-colonial exercises discussed here are often framed as part of a “will to improve” (Li, 2007) – a quest for betterment enabling the powerful to use development and conservation discourses to legitimize particular claims at the expense of others (van Teijlingen and Hogenboom, 2016). Tsing(2005, p. 57) suggests that through such speculative enterprises, “profit must be imagined before it can be extracted; the possibility of economic performance must be conjured like a spirit to draw an audience of potential investors.” The following section explores how investors are drawn to the sustainable development frontiers – the code/spaces where crypto-colonial conjuring manifests. The paper then discusses three ways blockchain is implicated in colonial processes, exploring: (1) how the technology plays into ongoing narratives of “green grabbing,” enabling the liquidation of resources for green investment, (2) how blockchain impacts persistent North-South trade and investment inequalities, and (3) how a new power asymmetry is enabled by the technology through data colonialism and surveillance capitalism. The paper concludes by discussing how more equitable outcomes might be realized.

Climate Crises, Crypto-Colonialism and the Global South

Despite being distributed, blockchain applications do not occupy an algorithmic place apart. They are always messily embedded in places (Zook and Blankenship, 2018; Lally et al., 2019). Governance frameworks of blockchain applications are heavily entangled with **social-spatial relations** in multiple ways (Dodd, 2018). The intertwining of code and materiality creates complex **manifestations of “code/space**” (Kitchin and Dodge, 2011). Within each code/space a unique assemblage of interests gain access to (or are excluded from) sites of crypto-economic production. The geographical character of the blockchain should be understood both in terms of the identification and spatial location of the infrastructure of, for example, private servers and data centers, where the distributed network is thought to materialize, as well as the “bundle of experimental algorithmic techniques acting upon the threshold of perceptibility itself” (Amoore, 2018, p. 12).

The costs and benefits of blockchain-based conservation, community development, and disaster relief, are rarely evenly distributed (Howson, 2020). Blockchain-based interventions in the Global South, though rooted in an obvious will to improve (Li, 2007) still call upon traditions of frontier investment – the belief that being bold and early in underexplored spaces **enables the highest rewards** (Li, 2014). As Bridge (2001) argues, frontiers are imagined (and constructed) as sites of bountiful emptiness. They are fecund spaces, empty but full. For their proponents, these sites are empty of other entrepreneurial ideas, histories and claims, but full of potential for new and improved use. As Tsing (2005, p. 28) explains, a frontier is “an edge of space and time: a zone of not yet – not yet mapped, **not yet regulated**. […] The landscape itself appears inert: ready to be dismembered and packaged for export.” Conjuring the plausibility of frontier resources for global crypto-economic exchange requires promoters to overlook the presence of people who remember long histories of recurrent dispossession and neo-colonial imposition.

Transnational market-based approaches to sustainable development, such as appropriations of land for community development, biodiversity conservation, and climate change adaptation and mitigation, are playing an increasingly central role in the global capitalist economy (Büscher and Fletcher, 2018). It should not be surprising when such market logic influences the development of “blockchain-for-good” initiatives. In doing so, blockchain projects enable new manifestations of the now well-established narrative of “**disaster capitalism**” (Klein, 2007). This thesis contends that neoliberal capitalism both precipitates disasters associated with climate change, while employing these same crises as an opportunity to facilitate the expansion of a neoliberal “green economy”1. Klein (2019) suggests that through the use of Blockchain technology the climate crises is enabling new forms of “crypto-colonialism.” The term crypto-colonialism2 was coined before the invention of blockchain to refer to neo-colonial expansions toward host countries seeking to acquire greater political independence. This was at the expense of greater economic dependence upon the neo-colonial power. The term is used here in a slightly different way, to make sense of how blockchain technology enables new forms of “green grabbing” for global carbon markets, maintains North-South disparities using climate finance instruments, and enables data colonialism through the provision of humanitarian assistance for climate refugees. These projects are all legitimized under a banner of sustainable development in

#### Climate change amplifies every threat and causes irreversible environmental damage – hidden fragilities exacerbate the impact.

Beard et al. 21 (S.J. Beard; Senior Research Associate and Academic Programme Manager at the Centre for the Study of Existential Risk, S.J. Beard, Lauren Holt, Asaf Tzachor, Luke Kemp, Shahar Avin, Haydn Belfield; Centre for the Study of Existential Risk research associates, Phil Torres of Torres 16; visiting scholar at the Centre for the Study of Existential Risk at Leibniz Universität Hannover, Assessing climate change’s contribution to global catastrophic risk, Futures Volume 127, March 2021, 102673, [https://www.sciencedirect.com/science/article/pii/S0016328720301646#](https://www.sciencedirect.com/science/article/pii/S0016328720301646)!, MAM)

While most of the impacts of climate change so far have fallen within the range of what was experienced during the Holocene, the rate of change is **faster than** in **the Holocene** and we are now beginning to see climate change push **beyond these boundaries**. In the latest edition of the planetary boundaries’ framework, climate change is placed in the zone of increasing risk, implying that while this boundary has been breached, there remains some **potential** for normal functioning and recovery (Steffen et al., 2015). It thus lies between what the authors identify as the ‘safe zone’ and other ‘high risk’ transgressions, such as disruption to the biochemical flows of nitrogen and phosphorus and loss of biosphere integrity. As part of their discussion of BRIHN Baum and Handoh (2014) note that climate change is the planetary boundary for which the risk to humanity has received most meaningful consideration and they suggest that this attention is deserved. Yet little research attention has been paid to climate change’s extreme or catastrophic effects. Kareiva and Carranza (2018) argue that, despite currently falling outside of the area of high risk, climate change has the clear potential to push humanity across a threshold of irreversible loss by “changing major ocean circulation patterns, causing massive sea-level rise, and increasing the frequency and severity of extreme events… that displace people, and ruin economies.” Even if humanity was resilient to each of these individual impacts, a global catastrophe could occur if these impacts were to occur **rapidly and simultaneously**. One scenario that has received comparatively more attention is that of the global climate crossing a tipping point that would trigger environmental feedback loops (such as declining albedo from melting ice or the release of methane from clathrates) and cascading effects (such as shifting rainfall patterns that trigger desertification and soil erosion). After this point, anthropogenic activity may cease to be the main driver of climate change, making it accelerate and become harder to stop (King et al., 2015). Other scenarios can be discerned from the numerous historical cases in which the modest, usually regional, climatic changes experienced during the Holocene have been implicated in the collapse of previous societies, including the Anasazi, the Tiwanaku, the Akkadians, the Western Roman Empire, the lowland Maya, and dozens of others (Diamond, 2005, Fagan, 2008). These provide a precedent for how a changing climate can trigger or contribute to societal breakdown. At present, our understanding of this phenomena is limited, and the IPCC has labelled its findings as “low confidence” due to a lack of understanding of cause and effect and restrictions in historical data (Klein et al., 2014). Further study and cooperation between archaeologists, historians, climate scientists and global catastrophic risk scholars could overcome some of these limitations by identifying how the impacts of climate change translate into social transformation and collapse, and hence what the impacts of more rapid and extreme climatic changes might be. There is also the potential for larger studies into how global climate variations have coincided with collapse and violence at the regional level (Zhang, Chiyung, Chusheng, Yuanqing, & Fung, 2005; Zhang et al., 2006). However, these need to be interpreted and generalized with care given the differences between pre-industrial and modern societies. Societies also have a long history of adapting to, and recovering from, climate change induced collapses (McAnany and Yoffee, 2009). However, there are two reasons to be sceptical that such resilience can be easily extrapolated into the future. First, the relatively stable context of the Holocene, with well-functioning, resilient ecosystems, has greatly assisted recovery, while **anthropogenic climate change** is more rapid, pervasive, global, and severe. Large-scale states did not emerge until the onset of the Holocene (Richerson, Boyd, & Bettinger, 2001), and societies have since remained in a surprisingly narrow climatic niche of roughly 15 mean annual average temperature (Xu, Kohler, Lenton, Svenning, & Scheffer, 2020). A return to agrarian or hunter-gatherer lifestyles could thus have more devastating and long-lasting effects in a world of rapid climate change and ecological disruption (Gowdy, 2020).7 Second, modern human societies may have developed **hidden fragilities that amplify the shocks** posed by climate change (Mannheim 2020) and the complex, tightly-coupled and interdependent nature of our socio-economic systems makes it more likely that the failure of a few key states or industries due to climate change could cascade into a global collapse (Kemp, 2019). A third set of plausible scenarios stem from climate change’s broader environmental impacts. Apart from being a planetary boundary of its own, Steffen et al. (2015) point out that climate change is intimately connected with other planetary boundaries (see Table 1). Climate change is thus identified by the authors as one of two ‘core’ boundaries with the potential “to drive the Earth system into a new state should they be substantially and persistently transgressed.” This transformative potential was elaborated on in subsequent work exploring how the world could be pushed towards a ‘Hothouse Earth’ state, even with anthropogenic temperature rises as low as 2 ◦C (Steffen et al., 2018). The connection between climate change and biosphere integrity (the survival of complex adaptive ecosystems supporting diverse forms of life) is particularly strong. The IPCC is highly confident that climate change is adversely impacting terrestrial ecosystems, contributing to desertification and land degradation in many areas and changing the range, abundance and seasonality of many plant and animal species (Arneth et al., 2019). Similarly, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) has reported that climate change is restricting the range of nearly half the world’s threatened mammal species and a quarter of threatened birds, with marine, coastal, and arctic ecosystems worst affected (Diaz et al., 2019). According to one estimate, climate change could cause 15–37 % of all species to become ‘**committed to extinction’** by mid-century (Thomas et al., 2004). Disruption to biosphere integrity can have profound economic and social repercussions, ranging from **loss of ecosystem services and natural resources** to the **destruction of traditional knowledge and livelihoods.** For instance, desertification, which threatens a quarter of Earth’s land area and a fifth of the population, is already estimated to cost developing nations 4–8 % of their GDP (United Nations, 2011). Many other rapid regime shifts involving loss of biosphere integrity have been observed, including shifts in arid vegetation, freshwater eutrophication, and the collapse of fish populations (Amano et al. 2020). There is a theoretical possibility of still more profound regime shifts at the global level (Rocha, Peterson, Bodin, & Levin, 2018). However, the contribution of loss of biosphere integrity to GCR is yet to be assessed. Kareiva and Carranza (2018) argue that it is unlikely to threaten human civilization, due both to a lack of plausible mechanisms for this threat and the fact that “local and regional biodiversity is often staying the same because species from elsewhere replace local losses.” However, in their classification of GCRs, Avin et al. (2018) suggest the potential for ecological collapse to threaten the safety boundaries of multiple critical systems with diverse spread mechanisms at a range of scales, from the biogeochemical and anatomical to the ecological and sociotechnological. Note that both these studies were conducted for largely conceptual purposes and should not be taken as rigorous analyses of this risk, this topic warrants further investigation.

#### The aff’s regulation on the blockchain kills momentum for DLTs in the market – increases fears of volatility that drive away investors.

Nikolai Kuznetsov 18, financial analyst and professional trader writing for Forbes, The Next Web and Investing.com, “Regulations And Their Influence On Cryptocurrency Prices,” Cointelegraph, 2-24-2018, <https://cointelegraph.com/news/regulations-and-their-influence-on-cryptocurrency-prices>

2017 saw cryptocurrencies swing wildly in valuations daily. Despite a mostly upward trajectory, the market remains susceptible to unpredictable and sometimes extreme fluctuations in prices.

While some of this volatility can be attributed to how the current cryptocurrency model was conceived—namely its deflationary nature—and the fact that most coins are still viewed mainly as investment and speculative assets, there have been external factors that drive price momentum as well.

The increased spotlight on Bitcoin and its digital contemporaries led the original cryptocurrency to skyrocket in value. This meteoric rise results in widespread market participation, inviting retail investors in droves to the crypto industry. However, it also focused the gaze of governments and international actors on the industry, a factor that has and could still play a large role in this volatility, especially if past regulatory efforts are any indication.

A prominent example of how regulations can lead to unintended consequences in financial markets comes courtesy of the post-crisis Dodd-Frank Act. Due to the restrictions placed on deposit-taking banks, many prominent financial institutions were forced to reduce their market-making activities in certain asset classes to reach higher capital ratios required by the regulations. In effect, the reduction in market-making liquidity harmed the price discovery process. Especially in the bond market, which is not as liquid as foreign exchange or stock markets, it can conceivably result in a snowball effect that amplifies directional price movements instead of reducing overall volatility.

Despite regulators’ best intentions, cryptocurrencies’ values remain heavily tied to speculation and optimism. For this reason, drastic policy changes can have an outsized impact on short-term direction, as several prominent examples revealed over the past year.

Nonetheless, the long-term impact is slightly hazier, as many of these regulations are only months old. Even so, while they could lead to a more stable market in the future, an abundance of questions surrounding the matter shows just how effective regulations will really be, and to what degree they will impact prices in the future.

Why regulations affect prices

The original boom in cryptocurrencies occurred in an unregulated environment. Even as news outlets and investors paid closer attention to the market, regulators and international actors remained largely distant from the action, and prices continued to soar unabated.

While in 2017 regulatory bodies take their first steps toward reining in the market, the previous near-decade saw cryptocurrencies evolve and grow relatively unrestricted. For regulators, this means attempting to box in a system that grew chaotically mostly by design.

This trend was largely visible thanks to the explosive growth in ICO funding many Blockchain companies attained last year. In 2017 new Blockchain-based companies reach an unheard-of $4 bln in funding even as regulators like the Securities and Exchange Commission began to circle. The capital raising was not without its flaws, with several well-publicized incidents underlining the relative lawlessness of the current model.

Hartej Sawhney - Co-founder of Hosho – a Blockchain and smart contracts auditing and security firm who’ve seen and audited a vast amount of smart contracts noted:

"There is currently no regulatory body that is enforcing standard practices for companies within the Blockchain ecosystem.

The number of successful high-profile attacks and data breaches are also indicative of the security weaknesses that many companies and organizations have, but choose to ignore due to lack of regulation which is a big factor to the volatility of cryptocurrency prices.

Sophisticated projects within the Blockchain ecosystem will only grow a stronger support from investors and exchanges upon the rise of a regulatory environment.

Having clarity on laws is better than none. Gibraltar is a great example of a nation that has made its stance on regulation of the Blockchain space clear, thus companies globally are flocking to incorporate there."

This ‘wild west’ the cryptocurrency market catalyzed has had a psychological impact on investors. Due to the decentralized nature and lack of power structures inherent in cryptocurrencies, many view regulations as a tactic that could stunt this explosive growth, and reduce the volatility that has been a hallmark of the industry.

Market reaction

The result is a market in which news or speculation of upcoming regulation leads to massive moves in one direction or another, as investors rush to sell off coins or purchase them, creating instability in prices and wild swings in valuations. Bitcoin, for example, lost nearly half of its value as popular exchange Coinbase launched an internal investigation into fraudulent practices and potential market manipulation on their platform.

#### This collapses violent forms of tech innovation and competition – even small shifts in antitrust law decimate confidence.

Thierer ’21 [Adam; February 25; Senior Research Fellow with the Mercatus Center at George Mason University; The Hill, “Open-ended antitrust is an innovation killer,” https://thehill.com/opinion/technology/540391-open-ended-antitrust-is-an-innovation-killer]

Unfortunately, the calls for more bureaucracy and regulation emanating from all corners of the political world could have an unintended consequence: discouraging the sort of vibrant innovation and consumer choice that made America’s tech companies household names across the globe.

Sen. Amy Klobuchar (D-Minn.) is leading one charge. Klobuchar, who chairs the Judiciary Subcommittee on Antitrust, Competition Policy and Consumer Rights, recently introduced the “Competition and Antitrust Law Enforcement Reform Act.” This sweeping measure seeks to expand the powers and budgets of antitrust regulators at the Federal Trade Commission and the Department of Justice. It also includes new filing requirements and potentially hefty civil fines.

The most important feature is the proposed change to the legal standard by which regulators approve business deals. It would allow the government to stop any deal that creates an “appreciable risk of materially lessening competition,” and it also defines exclusionary behavior as, “conduct that materially disadvantages one or more actual or potential competitors.”

These may sound like simple, semantic tweaks, but – much like some of the other policy ideas currently circulating – they would upend decades of settled law and create a sea change in U.S. antitrust enforcement. This change could undermine business dynamism, innovation and investment in ways that inhibit the global competitiveness of U.S. businesses.

Critics of merger and acquisition (M&A) activity by large tech firms include not only Sen. Klobuchar but also Republicans such as Sen. Josh Hawley (R-Mo.). Hawley recent offered an amendment to a budget bill that would preemptively prohibit mergers and acquisitions by dominant online firms. Klobuchar and Hawley believe that M&A skews the market in favor of today’s largest firms, entrenching their market power and discouraging innovation.

History teaches a different lesson. Consider DirecTV and Skype, both once considered innovative market leaders in their respective fields of satellite TV and internet telephony. Both firms stumbled, however, and they might not even be with us today without creative business deals. DirecTV has been partially or fully controlled by Hughes Electronics, News Corp., Liberty Media and now AT&T. Skype has swapped hands multiple times, moving from eBay, to a private investment firm and now to Microsoft.

These were complex deals, and some didn’t work, leading to divestitures. But each was a learning experience that illustrated how dynamic media and technology markets can be with firms constantly searching for value-added arrangements that serve their customers and shareholders. If we make this type of activity presumptively illegal, we’re imagining that government bureaucrats are better suited to make these calls than businesspeople and the consumers who choose whether or not to buy the product.

Worse yet, legal tests like those Klobuchar proposes – “conduct that materially disadvantages potential competitors” – are remarkably open-ended and could be easily abused. The system will be gamed by opponents of deals for business reasons. They will claim that their own failure to attract investors or customers must all be the fault of more creative rivals. That’s a recipe for cronyism and economic stagnation.

Those who worry about today’s largest tech giants becoming supposedly unassailable monopolies should consider how similar fears were expressed not so long ago about other tech titans, many of which we laugh about today. Just 14 years ago, headlines proclaimed that “MySpace Is a Natural Monopoly,” and asked, “Will MySpace Ever Lose Its Monopoly?” We all know how that “monopoly” ceased to exist.

At the same time, pundits insisted “Apple should pull the plug on the iPhone,” since “there is no likelihood that Apple can be successful in a business this competitive.” The smartphone market of that era was viewed as completely under the control of BlackBerry, Palm, Motorola and Nokia. A few years prior to that, critics lambasted the merger of AOL and TimeWarner as a new corporate “Big Brother” that would decimate digital diversity and online competition.

Today, we know these tales of the apocalypse ended up instead becoming case studies in the continuing power of “creative destruction.” New innovations and players emerged from many unexpected quarters, decimating whatever dreams of continued domination the old giants once had.

Today’s biggest players face similar pressures, and it’s better to let rivalry and innovation emerge organically, not through the wrecking ball of heavy-handed antitrust regulation.

### Advantage 2: Algorithmic Injustice

#### Unregulated blockchain solidifies and legitimizes data colonialism and surveillance capitalism – a more robust regulatory framework is key

Howson 20 (Peter Howson, Senior Lecturer in the Social Science Department at Northumbria University, 5-13-2020, Climate Crises and Crypto-Colonialism: Conjuring Value on the Blockchain Frontiers of the Global South, Frontiers, <https://www.frontiersin.org/articles/10.3389/fbloc.2020.00022/full>) MAM

Data Colonialism and Climate Refugees

Appropriations of things, including data, are legitimized by a necessity for urgent climate action. Data colonialism for environmental ends combine the extractive practices of historical colonialism with the abstract quantification methods of computing that works at every point in space where people and/or things are attached to everyday communication infrastructures (Couldry and Mejias, 2018). This mode of colonialism could also be thought of as surveillance capitalism, whereby the territory claimed by climate-minded blockchain projects includes land, labor and other resources, but also private human experience to be used as “behavioral data” for “prediction products” (Zuboff, 2019). Unlike traditional forms of colonialism, data colonialism involves not one center of colonial power (the West), but multiple. These centers include, for example, Facebook, Palantir, Accenture and Microsoft, and according to Kinstler (2019) these players are seeing extractive opportunities from human migration caused by climate change. In 2017, ~24 million people were displaced because of extreme climatic events (Podesta, 2018) and by 2050, over 143 million people across the Global South are predicted to become climate refugees (Rigaud et al., 2018). The acceleration of people on-the-move provides challenges for development agencies committed to achieving various Sustainable Development Goals (SDGs) efficiently. These include SDG 16.9 (provide legal identity for all, including birth registration, by 2030), and SDG 17.19 (provide statistical capacity-building to increase the proportion of countries that have achieved 100 per cent birth registration and 80 per cent death registration. Every major aid-granting agency is either incubating, researching, or piloting a digital identity program for those displaced (Kinstler, 2019).

To enable the distribution of cash-for-food aid, the World Food Programme’s (WFP) Building Blocks initiative is collecting personal data, including biometrics, from over 500,000 Syrian refugees in Jordan (Rugeviciute and Mehrpouya, 2019). Personal data, entitlements and transaction logs are stored on the Ethereum blockchain providing a virtual bank account and ID for each refugee. While the Building Blocks platform is a demonstrable success, the agency should be concerned that conducting iris scans on refugees in shops robs them of dignity. Sensitive, personally identifiable information for some of the most vulnerable people in the world is also being generated and made accessible across agencies, inevitably introducing greater risk of data breaches. Some for-profit start-ups have also developed blockchain tools to manage sensitive information. PassBase is a self-sovereign ID platform that uses government-issued documents, linked social media accounts, and biometric signatures. Where these blockchain platforms are deployed, refugees and other vulnerable people, might find themselves forced to give up personal (including biometric) information about themselves, stored for as long as there is a functioning internet on an immutable archive, in return for temporary support with basic necessities. This data could also be used in the future to make decisions about individuals with far-reaching consequences. Some may suffer punitive restrictions based on decisions made using biased algorithms calculating, for example, risk of absconding or working without a permit. Some may struggle to access credit or insurance on the basis of patterns in historical datasets. Wrongful convictions, incomplete medical histories, or errors concerning ones affiliations are immutable on a blockchain.

Owning ones ID as a citizen of a specific state might prove unproblematic in many instances. However, groups such as the Rohingya are continually displaced by climatic events and their citizenship is often contested between the state and the individual. Bank accounts, passports, access to credit or insurance are restricted even where clear jus soli (citizenship rights by birth) exist. Rohingya refugees are often considered legally “stateless” and denied the necessary proofs to enable a digital ID granting them legal attachment to their birthplace (Bremner, 2020). The blockchain development start-up, Rohingya Project, understand that the central problem is not identity per se, as being officially recognized as Rohingya is rarely useful. The Rohingya Project aims to create a self-sovereign ID platform that does not rely on any state entity or other third-party intermediary to issue supporting documents. Users of the platform in Malaysia will be able to access credit and other services via a crypto-wallet to encourage entrepreneurship and financial sustainability within the Rohingya community (Rohingya Project, 2020). Data shared by some of the most persecuted on a blockchain, highlights the obvious need for a more robust regulatory framework to effectively mitigate the risks associated with data protection, privacy and human rights.

Conclusion

Blockchain is enabling new opportunities for speculative investment through climate crises globally. This commentary has explored how international development, disaster relief, and climate change mitigation credentials are being called upon to legitimize crypto-colonialism – the extraction of economic benefits from those suffering the scars of empire in the Global South. Climate-smart blockchain platforms enable ongoing narratives of “green grabbing,” perpetuating North-South trade and investment inequalities, whilst allowing new power asymmetry through data colonialism and surveillance capitalism. Despite blockchain’s ongoing disruption of most economic, political and social institutions, the main challenge for the technology is to protect itself from the inherent tendencies of modern capitalist society and the associated concentrations of wealth and power in the Global North (De Filippi and Loveluck, 2016). There continues to be a lot of hype surrounding blockchain applications, fanciful use-cases and sinks for speculative investment. Despite there still being few successful examples, there is a clear need for more situated critical analysis of active case-studies. Only by doing case-study analysis can critical scholars reveal the inequitable terrain of project-benefit distributions to expose the likely winners and losers. The most effective means of engaging exploitative blockchain platforms is by supporting and enacting alternate techno-economic strategies, such as platform cooperatives, within and outside of blockchain. If any project, blockchain or otherwise, claims to be emancipatory, the foremost step is to abandon the claims of a technology as a starting point, and instead give autonomy and agency to local communities to design and manage their own future, rather than having outside interests, or technologies themselves, determine a future for them (Crandall, 2019). The crypto-colonial endeavors, explored throughout this commentary, remain ultimately about advancing capitalist forms of governance. Until the focus shifts toward achieving more equitable outcomes, not only will blockchain solutions lead to an oversimplification of socio-ecological complexity, but will further embed colonial responses to climate crises.

#### This legitimation of platform capitalism ensures corporate control over digital technology at the hands of monopolies – cements global inequality as inevitable.

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(Nick Srnicek, Visiting Lecturer at City University and the University of Westminster, PhD from London School of Economics, *Platform Capitalism*, epub edition, pgs. 116-121)

We began this chapter by arguing that twenty-first-century capitalism has found a massive new raw material to appropriate: data. Through a series of developments, the platform has become an increasingly dominant way of organising businesses so as to monopolise these data, then extract, analyse, use, and sell them. The old business models of the Fordist era had only a rudimentary capacity to extract data from the production process or from customer usage. The era of lean production modified this slightly, as global ‘just in time’ supply chains demanded data about the status of inventories and the location of supplies. Yet data outside the firm remained nearly impossible to attain; and, even inside the firm, most of the activities went unrecorded. The platform, on the other hand, has data extraction built into its DNA, as a model that enables other services and goods and technologies to be built on top of it, as a model that demands more users in order to gain network effects, and as a digitally based medium that makes recording and storage simple. All of these characteristics make platforms a central model for extracting data as raw material to be used in various ways. As we have seen in this brief overview of some different platform types, data can be used in a variety of ways to generate revenues. For companies like Google and Facebook, data are, primarily, a resource that can be used to lure in advertisers and other interested parties. For firms like Rolls Royce and Uber, data are at the heart of beating the competition: they enable such firms to offer better products and services, control workers, and optimise their algorithms for a more competitive business. Likewise, platforms like AWS and Predix are oriented towards building (and owning) the basic infrastructures necessary to collect, analyse, and deploy data for other companies to use, and a rent is extracted for these platform services. In every case, collecting massive amounts of data is central to the business model and the platform provides the ideal extractive apparatus.

This new business form has intertwined with a series of long-term trends and short-term cyclical movements. The shift towards lean production and ‘just in time’ supply chains has been an ongoing process since the 1970s, and digital platforms continue it in heightened form today. The same goes for the trend towards outsourcing. Even companies that are not normally associated with outsourcing are still involved. For instance, content moderation for Google and Facebook is typically done in the Philippines, where an estimated 100,000 workers search through the content on social media and in cloud storage.90 And Amazon has a notoriously low-paid workforce of warehouse workers who are subject to incredibly comprehensive systems of surveillance and control. These firms simply continue the secular trend of outsourcing low-skill workers while retaining a core of well-paid high-skill labourers. On a broader scale, all of the post-2008 net employment gains in America have come from workers in non-traditional employment, such as contractors and on-call workers. This process of outsourcing and building lean business models gets taken to an extreme in firms like Uber, which rely on a virtually asset-less form to generate profits. As we have seen, though, **much of their profitability after the crisis has stemmed from holding wages down.** Even the Economist is forced to admit that, since 2008, ‘if the share of domestic gross earnings paid in wages were to rise back to the average level of the 1990s, the profits of American firms would drop by a fifth’.91 An increasingly desperate surplus population has therefore provided a considerable supply of workers in low-wage, low-skill work. This group of exploitable workers has intersected with a vast amount of surplus capital set in a low interest rate world. Tax evasion, high corporate savings, and easy monetary policies have all combined, so that a large amount of capital seeks out returns in various ways. It is no surprise, then, that funding for tech start-ups has massively surged since 2010. Set in context, the lean platform economy ultimately appears as an outlet for surplus capital in an era of ultra-low interest rates and dire investment opportunities rather than the vanguard destined to revive capitalism.

While lean platforms seem to be a short-lived phenomenon, the other examples set out in this chapter seem to point to an important shift in how capitalist firms operate. Enabled by digital technology, platforms emerge as the means to lead and control industries. At their pinnacle, they have prominence over manufacturing, logistics, and design, by providing the basic landscape upon which the rest of the industry operates. They have enabled a shift from products to services in a variety of new industries, leading some to declare that the age of ownership is over. Let us be clear, though: this is not the end of ownership, but rather the concentration of ownership. Pieties about an ‘age of access’ are just empty rhetoric that obscures the realities of the situation. Likewise, while lean platforms have aimed to be virtually asset-less, the most significant platforms are all building large infrastructures and spending significant amounts of money to purchase other companies and to invest in their own capacities. Far from being mere owners of information, these companies are becoming owners of the infrastructures of society. Hence the monopolistic tendencies of these platforms must be taken into account in any analysis of their effects on the broader economy.

#### Broad use of algorithms and faulty access to data facilitates discrimination – garbage in, garbage out.

Slaughter 21 [Rebecca, Federal Trade Commissioner, “Algorithms and Economic Justice: A Taxonomy of Harms and a Path Forward for the Federal Trade Commission,” *Yale Journal of Law & Technology*, August, https://bit.ly/3wdFFfx, JCR]

A taxonomy of algorithmic harms, describing both the harms themselves and the technical mechanisms that drive them, is a useful starting point. This section is divided into two subparts. The first addresses three flaws in algorithm design that frequently contribute to discriminatory or otherwise problematic outcomes in algorithmic decision-making: faulty inputs, faulty conclusions, and failure to adequately test. The second subpart describes three ways in which even sophisticated algorithms still systemically undermine civil and economic justice. First, algorithms can facilitate discrimination by enabling the use of facially neutral proxies to target people based on protected characteristics. Second, the widespread application of algorithms both fuels and is fueled by surveillance capitalism. Third, sophisticated and opaque use of algorithms can inhibit competition and harm consumers by facilitating anticompetitive conduct and enhancing market power. These six different types of algorithmic harms often work in concert—with the first set often directly enabling the second—but before considering their interplay, it is helpful to describe them individually. Of course, the harms enumerated herein are not, and are not intended to be, an exhaustive list of the challenges posed by algorithmic decision-making. This taxonomy, however, does help identify some of the most common and pervasive problems that invite enforcement and regulatory intervention, and therefore is a helpful framework for consideration of potential enforcement approaches. A. Algorithmic Design Flaws and Resulting Harms The first three categories of algorithmic harms generally stem from common flaws in the design and application of specific algorithms. Faulty Inputs The value of a machine-learning algorithm is inherently related to the quality of the data used to develop it, and faulty inputs can produce thoroughly problematic outcomes. This broad concept is captured in the familiar phrase “garbage in, garbage out.” The data used to develop a machine-learning algorithm might be skewed because individual data points reflect problematic human biases or because the overall dataset is not adequately representative. Often skewed training data reflect historical and enduring patterns of prejudice or inequality, and when they do, these faulty inputs can create biased algorithms that exacerbate injustice.16 One recent example is Amazon’s failed attempt to develop a hiring algorithm driven by machine learning, an effort ultimately abandoned before deployment because the algorithm systematically discriminated against women. This discrimination stemmed from the fact that the resumes used to train Amazon’s algorithm reflected the male-heavy skew in the company’s applicant pool, and despite the engineers’ best efforts, the algorithm kept identifying this pattern and attempting to reproduce it.17 Faulty inputs also appear to have been at the heart of problems with standardized testing during the COVID-19 pandemic.18 The International Baccalaureate (IB), a prestigious global degree program for high school students, cancelled its in-person exams and instead relied on an algorithm to “predict” student test scores based on inputs such as teacher-estimated grades and past performance by students at a given school. The result? Baffling test scores with life-altering consequences. For example, relying on schools’ past average test scores likely disadvantaged high-achieving students from low-income communities—many of whom had taken these courses to receive college credit and save thousands of dollars in tuition.19 According to the IB, 60 percent of US public schools that offer IB classes are Title I schools,20 and numerous IB students reportedly saw their college scholarships or admissions offers rescinded because the algorithm assigned them unexpectedly low test scores.21 In a similar case, the United Kingdom used an algorithm to replace its A-Level exams—which play a pivotal role in university admissions there— before ultimately retracting the scores in response to widespread protests. Critics pointed out that the inputs, which were similar to those used in the IB algorithm, unfairly stacked the deck against students at lower-performing schools.22 Education should help enable upward social mobility, but the inputs in these instances reflected structural disadvantages and socioeconomic differences.23 As the BBC noted in its coverage, “it locks in all the advantages and disadvantages—and means that the talented outlier, such as the bright child in the low-achieving school, or the school that is rapidly improving, could be delivered an injustice.”24 In short, when developers use faulty data to train an algorithm, the results may replicate or even exacerbate existing inequalities and injustices.

#### Proxy discrimination masks injustice through the promise of neutrality – opacity makes it uniquely pernicious.

Slaughter 21 [Rebecca, Federal Trade Commissioner, “Algorithms and Economic Justice: A Taxonomy of Harms and a Path Forward for the Federal Trade Commission,” *Yale Journal of Law & Technology*, August, https://bit.ly/3wdFFfx, JCR]

In addition to the flaws in algorithmic design and implementation enumerated above, the promise of algorithmic decision-making is also tempered by its systemic contributions to broader social harms. One such pernicious harm at work in recent examples of algorithmic bias is a problem scholars have termed “proxy discrimination.”55 When algorithmic systems engage in proxy discrimination, they use one or more facially neutral variables to stand in for a legally protected trait, often resulting in disparate treatment of or disparate impact on protected classes for certain economic, social, and civic opportunities.56 In other words, these algorithms identify seemingly neutral characteristics to create groups that closely mirror a protected class, and these “proxies” are used for inclusion or exclusion. Facebook’s use of Lookalike Audiences that facilitated housing discrimination presents one of the clearest illustrations of proxy discrimination. According to allegations by the Department of Housing and Urban Development (HUD), Facebook offered customers that were advertising housing and housing-related services a tool called “Lookalike Audiences.”57 An advertiser using this tool would pick a “Custom Audience” that represented her “best existing customers,” then Facebook identified users who shared “common qualities” with those customers, who then became the ad’s audience. To generate a Lookalike Audience, Facebook considered proxies that included a user’s “likes,” geolocation data, online and offline purchase history, app usage, and page views.58 Based on these factors, Facebook’s algorithm created groupings that aligned with users’ protected classes. Facebook then identified groups that were more or less likely to engage with housing ads and included or excluded them for ad targeting accordingly. According to HUD, “by grouping users who ‘like’ similar pages (unrelated to housing) and presuming a shared interest or disinterest in housing-related advertisements, [Facebook]’s mechanisms function just like an advertiser who intentionally targets or excludes users based on their protected class.”59 This problem may persist across advertising algorithms, which are designed to maximize clicks and conversions. Even when the advertiser requests a broad audience and more inclusivity, an algorithm may skew ads to demographic segments that are expected (based on historical performance) to generate more clicks. In one recent study, researchers specified an identical audience for three different job postings: a lumber industry position, a supermarket cashier position, and a taxi position.60 Despite the request for the same audience, the lumber job went to an audience that was 72 percent white and 90 percent male, the supermarket cashier went to an 85 percent female audience, and the taxi position went to a 75 percent Black audience.61 The dangers of proxy discrimination, amplified by machine learning and optimization, likely affect the credit sphere as well.62 The combination of an expanding and innovative FinTech market paired with alternative credit scoring has the potential to extend credit to more people who need it. But FinTech innovations can also enable the continuation of historical bias to deny access to the credit system or to efficiently target high-interest products to those who can least afford them.63 Indeed, these biases can be exacerbated through the use of algorithms, because the algorithms automate decisionmaking—giving the appearance of impartiality—while simultaneously obscuring visibility into both the inputs and the formulae used to make those decisions. That opacity can make the bias even harder to identify. A recent study illustrates both the promise and residual peril of algorithmic lending decisions for credit discrimination.64 The study found that in loans made by face-to-face lenders, Latinx and Black borrowers pay considerably more in interest for home-purchase and refinance mortgages.65 The study also found that FinTech algorithms discriminate 40 percent less than lenders—but that significant discrimination harming the Latinx and Black borrowers still occurs.66 The scholars could not conclude definitively what caused the discriminatory outcomes from the FinTech platforms, but they surmised it was likely due to some type of optimization based on a neutral characteristic that aligned with minority status, just as we saw in the examples above.67 Proxy discrimination is not a new problem—the use of facially neutral factors that generate discriminatory results is something that society and civil rights laws have been grappling with for decades.68 In the context of algorithms, sometimes this flaw might be accidental.69 For example, proxy discrimination was one of the reasons that the health care algorithm discussed earlier ultimately produced biased outcomes, but we have no reason to believe that the hospital or manufacturer of the algorithm in question was trying to disadvantage Black patients. It is important to note, however, that proxy discrimination can also be intentional, and the obscurity provided by black-box decision-making can allow bad-faith actors to effectively launder bias and discrimination through their algorithms in pursuit of illegitimate profits or to maintain oppressive hierarchies.70 Proxy discrimination that results in disparate impact is always pernicious, whether or not we can identify underlying intent, and it can and should give rise to legal liability even if it is not intentional.71