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Ownership in the Electricity Market

Property, the Firm, and the Climate Crisis

Gregory Ferguson-Cradler

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Abstract

Electricity is a key area in climate mitigation. The sector needs to significantly expand while transitioning to renewable production, all in an extremely short timeframe. This paper focuses on ownership and control in the electricity sector in an era of climate change. Borrowing substantially from classical American Institutionalism, heterodox theories and histories of the firm, and legal institutionalism, this paper discusses the historically constituted nature of the categories of property, capital, and the firm and how these literatures provide helpful frameworks for analyzing the recent history and possible futures of electricity sectors. A short discussion of the recent history of the German electricity sector, particularly the large utility RWE, will briefly illustrate the approach. Climate change mitigation will require revised notions of ownership and an updated theory of the firm, property, and corporate governance for the Anthropocene.

Keywords: Anthropocene, electricity, energy transitions, property theory of the firm

Zusammenfassung

Elektrizität ist ein zentraler Faktor für den Klimaschutz: Der Sektor muss innerhalb kürzester Zeit stark expandieren und gleichzeitig den Übergang zur Erzeugung erneuerbarer Energie bewältigen. Das Papier geht der Frage auf den Grund, welche inhaltliche Bedeutung der Eigentümerschaft und der Kontrolle im Stromsektor in Zeiten des Klimawandels zukommt. Es diskutiert die historisch gewachsenen Bedeutungen der rechtlichen Kategorien Eigentum, Kapital und Unternehmen. Dabei stützt es sich auf die Klassiker des Amerikanischen Institutionalismus, heterodoxe Unternehmenstheorien und Ansätze der Unternehmensgeschichte sowie den rechtlichen Institutionalismus. Es legt dar, wie diese Literatur die Schaffung konstruktiver Analyserahmen ermöglicht, um die jüngere Vergangenheit und künftige Entwicklungsmöglichkeiten der Stromsektoren zu untersuchen. Eine kurze Beschreibung der jüngeren Geschichte des deutschen Elektrizitätssektors und insbesondere des großen Energieversorgers RWE veranschaulicht den Ansatz. Der Klimaschutz wird eine Revision des Begriffs der Eigentümerschaft ebenso notwendig machen wie eine dem Anthropozän gemäße Überarbeitung der Unternehmenstheorie sowie der Governance des Eigentums und der Corporate Governance.

Schlagwörter: Anthropozän, Elektrizität, Energiewenden, Unternehmenstheorie

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1 Introduction

Who owns electricity? Behind this seemingly simple question lies a thicket of complexity. Some aspects are technical: electricity is difficult and costly to store and must be consumed at the moment of production; it also cannot easily be specifically routed through a system, so what does it mean to "own" particular electrons flowing through the grid? Other difficulties are grounded in political economy, including the fact that utilities are frequently characterized by complex ownership structures with overlap and gray zones between different types of enterprise structures. Cultural concepts of electricity are also not stable. Electricity historically has been at least partially de-commodified and considered a "right" like food, clean water, and education but is now bought, sold, traded, and securitized on product and financial exchanges around the world. Lastly, perennial debate has followed the issue of regulation: What should states and interstate bodies regulate, and what is best left up to markets?

Answers to these questions have obvious social, economic, ethical, and – perhaps first and foremost – geophysical implications. Together with heat production, electricity generation is responsible for some 25 percent of global greenhouse gas emissions (IPCC 2015, 123, 559). As a sector that "decarbonizes quickly," any possible climate change mitigation pathway includes massive expansion in electricity production to take over from fossil fuel energy production and simultaneous steep and rapid cuts in emissions. Renewables accounted for 21 percent of global production in 2012, largely due to wind and photovoltaic production that grew five-fold and twenty-five-fold between 2005 and 2012 respectively (ibid., 522). Transition in the years to come, however, will have to be significantly faster and on a much more massive scale.[1] In sum, the characteristics and future trajectory of electricity production is of planetary importance.

Who will be making these investments? What public policy and legal frameworks are needed to provide for an adequate fossil-free electricity push? And what sort of electricity infrastructure and political economy is desirable after all is said and done? Traditionally, answers to such questions have rotated around considerations – theoretical and empirical – of privatization and nationalization of industry and their respective efficiency, social utility, and overall desirability. Recently, the question of which types of ownership and management structures have the capacity to quickly transform produc-

1 To cite one estimate, in order to meet carbon budgets with likelihood of meeting a two-degree warming goal, emission-free electricity will need to be rolled out at a rate two to three-and-a-half times more quickly than increases in all electrical production between 1985 and 2018 (Wang, n.d.).

tion to CO_2-free operations has increasingly been prioritized. As one economic historian has observed regarding the United States, ownership in the electrical sector has been the subject of fundamental public debate "to an extent seldom experienced by other industries" (Neufeld 2016, 245). The axis of debates over decision-making, profit sharing, and risk distribution generally runs along the well-rehearsed continuum of public to private ownership and control ranging from wholly integrated, state sole ownership to a private investor-owned sector subject to the market and minimal necessary regulation.

More recently, scholars and activists have begun looking at alternative ownership arrangements outside the typical private-public axis. Germany, in particular, has been fertile ground for a movement of co-operatives based not exclusively, or even primarily, on profit. Such smaller-scale enterprises have been responsible for roughly half of new green energy to come online in Germany in the recent decades (Degenhart and Nestle 2014). The structures of these enterprises have varied from co-operatives to co-operative-for-profit partnerships to (re-)municipalized ownership. These structures have been broadly grouped under the term *Bürgerenergie* (community energy). Many activists, in particular, have suggested that such a legal ownership structure of electricity production capacity offers a blueprint for a sustainable and just energy system for the future (Morris and Jungjohann 2016; Angel 2017). Such work generally does not go in any depth into the question of what exactly property and ownership are and just who owns and controls economic enterprises, be they public for-profit, privately investor-owned, co-operatives, national state-owned, municipality-owned, or anything else. This paper will discuss how deeper and richer understandings of ownership and control helpfully inform not only debates about energy transformation but also wider, more creative thinking about electricity production in a time of ecological crisis. To do so, the paper draws and builds on three literatures that are generally not well-integrated into work on energy transitions: theories of the firm, comparative and international political economy, and, most importantly, legal institutionalism.

The argument proceeds as follows: The first section provides a brief overview of the literature in electricity and energy transformations broadly. This includes literatures in economic and political history, political economy, and the interdisciplinary energy transformation literature. The second section engages deeply with the concept of ownership and control. Here the discussion covers historical and legal approaches to property and ownership in general before extending these ideas to the history and theory of the for-profit enterprise and, subsequently, the co-operative firm. The third section applies these insights to a short case study of German electricity transformation, one of the most highly touted and well-researched transitions in the literature. Taking as its point of departure a recent and well-publicized debate and semi-violent confrontation, this final section will suggest how using the tools of legal institutionalism and concepts taken from institutional theories of the firm sharpen understandings of recent and ongoing events and processes of energy transformation.

2 Electricity sectors

Deregulation and privatization

For much of the twentieth century and up until the 1990s, electricity sectors worldwide were largely controlled by either state- or privately owned, often vertically integrated, corporations heavily regulated as "natural monopolies" in terms of prices, market participation, and investment. Language and the very meaning of electricity differed markedly from that in use today. In the postwar period, electricity had carried connotations of being a right or a public and social good, especially in the developing world, where it was seen as essential for economic development. As recently as 1990, to take one instance, the Federation of German Power Plants described electricity as "a product not like other commodities but a service for which, like drinking water, there is no competition anywhere in the world" (Giacovelli 2014, 23). By the middle of the decade, a trend had begun worldwide toward deregulated, competitive markets in electricity. A wide swath of factors ranging from the post-Cold War market-centered *Zeitgeist*, continued decline of industrial-era economic models, strapped state budgets, high price tags on nuclear plants compounded by environmental protest, and international pressures led many states, by carrot or by stick, into deregulation. Governments canceled concessions for monopoly control of parts of the sector while price restrictions and other state mandates expired. Production and retail were opened up to wide-ranging competition. State and natural monopolists have been replaced to some extent by the market as planner and administrator of the sector.

The trend began with Chile in the early 1980s, followed by a wide range of countries around the world in the following decades. In some places deregulation occurred in tandem with privatization of state electricity systems, though in many contexts, including the USA, Germany, and Japan, utilities had already been largely privately owned. In other settings, such as Australia and New Zealand, public ownership was carried forward into a deregulated setting, as it was in Norway, where privatization was the third rail of deregulatory politics that threatened, if so much as touched, to upset the entire deregulation process (Pollitt 2012; Moen 2007). Markets and financial exchanges for electricity were opened across the deregulated world as electricity became more commodified than it had ever been, although here too limited wholesale markets had existed in places such as some US states and Norway for several decades. Electricity, in this new world, was a commodity, and one that was widely held to be best produced and delivered through the mechanisms and incentive structures of the competitive market (Williams and Dubash 2004; Yi-chong 2005).

In this regard, work on the recent history of electricity sectors has most often located reform and restructuring tendencies within the broader category of "neoliberalism." Neoliberalism has perhaps found its most influential articulation in the geographer David Harvey, who in neo-Marxist terms identified neoliberalism as a "theory of political economic practices that proposes that human well-being can best be advanced by liberating individual entrepreneurial freedoms and skills within an institutional framework characterized by strong property rights, free markets, and free trade" (Harvey 2007, 2). For Harvey, neoliberalism has from the beginning been a project to restore power to the holders of capital following the period of the postwar *Wirtschaftswunder* and policies of "embedded liberalism" (Ruggie 1982). As economic growth and productivity gains slowed in the 1970s, capital found it easier to organize around shared interests than did labor. From this a new orthodoxy was founded. The state was to be in service to the market; democracy became suspect as a possible impediment to the operation of the free market and, thus, capital accumulation (Harvey 2007, ch. 1–3).

Other definitions focus less on structural than on conceptual change. Here neoliberalism comprises a "set of recurring claims" about how society should, or indeed must, be organized (Grewal and Purdy 2014, 2). Neoliberalism in this sense emphasizes above all "the market" as the most efficient possible information processor and, therefore, the natural and best means of organizing human societies. The state's authority, under this conception, is based upon the degree to which it can establish functioning markets and individual prosperity (Mirowski 2014; Blalock 2014). If, according to postwar liberalism, the state was focused on meeting the objectives of society, in neoliberal thinking since the 1970s the primary goals the state must fulfill are those of the market. Economic theory under neoliberalism has taken over from social theory (Streeck 2011; Brown 2015). Furthermore, a new type of rationality, distinct from its classical liberal antecedent, has arisen that lies behind much of the policy, law, and institution-building over the last forty years (Amadae 2016). Numerous studies have further touched on the "financialization of the everyday" as everyone, in any walk of life, is encouraged to become their own entrepreneurs and investors (Zwan 2014). Conversely, neoliberal policies have had real and liberating effects for many – one should not romanticize all forms of non-market organization, nor should one by definition vilify market logics of order (Hall and Lamont 2013, 5). Non-market hierarchies can be oppressive. Likewise, even quite similar instantiations of neoliberalism can have drastically different results on the ground (Thelen 2014).

Alongside and connected to questions of shifts in institutions and ideologies of political economy, capabilities and capacities of the state have also changed over the period since deregulation (Leendertz 2017). The changing nature of the state's role has been widely cast as a weakening of state capacity, replaced at every turn by regulation from the market, politics subordinated to economics. This has been dubbed the marketization of the state or, to take one felicitous locution, the *Entmündigung des Staates* (incapacitation of the state) (Doering-Manteuffel 2013; Block and Somers 2014). Of course, the idea that the roles and capacities of the state fluctuated over time and across space was one of the key findings of the German Historical School of the late nineteenth century, which argued forcefully against reification of the economy. The spheres of the state and economy, they argued, were a product of historical development – the borders dividing them fluid rather than fixed (Abelshauser 2004, 199).

The sociologists Schimank and Volkmann have carefully crafted typologies for levels of what they call *Ökonomisierung* – namely, how competition has been thrust into state, social, and other spheres thereby changing the goals (including standards and metrics for measuring success) of state apparatuses and non-profit organizations as they pass from "organized" to "marketized" modernity. At its core, this has involved inserting competition into places it had not existed previously and reconceptualizing humans as inherently competitive and driven to compete (Schimank 2017; Schimank and Volkmann 2017; Davis 2009). This created "quasi-markets" in areas such as justice, policing, education, health, and utilities, which were previously ruled by other metrics and modes of thought, called "functional differentiation" in systems theoretic language. According to the political theorist Wendy Brown, markets have thus become ubiquitous in spheres of politics and legal thought in ways most people no longer consciously realize but that would have been unrecognizable to earlier generations (Brown 2015). This might additionally lead to questions such as whether or not lost state capacity could significantly complicate large-scale state investments in, say, clean energy and infrastructure in the context of a Green New Deal.

Environmental history and social sciences have also become ever more occupied with the market-centered and state-reducing politics of ecological governance. Here, scholars have come to broadly see current environmental regulations as grounded on, theorized through, and articulated within firmly neoliberal rationales and parallel conceptions of "common sense" (Castree 2008b; 2008a; Bakker 2009; Himley 2008; Bakker 2003). Similar to other work on economization and neoliberalization, this literature has come to a general consensus that governance over the last several decades has become overwhelmingly driven by belief in efficiency of market-based mechanisms of management, commodification of a wider and wider array of goods and services, skepticism of state government capabilities, and focus on voluntary or market-based incentives to lead to change (Mccarthy 2012, 186). Beyond ideologies and rationales, other work has shown how such commodification or financialization of the environment has been possible through examination of methods of valuation (Wildavsky 1966; Tribe 1973; Dempsey 2016). A number of scholars have suggested that "neoliberalization of nature" is of central enough importance not just to the environment but to neoliberal ideology as to warrant more attention in the general literature on neoliberal governance and thinking (McCarthy 2012; Heynen 2007).

This forms the background for the broader political economy, sociological, and historical literature on electricity. Much of the literature on deregulation has focused more on explanations of the time and place of deregulation and the efficiency gains and losses in its wake than on the kinds of statehood enabled or de-legitimized through deregulation. Assessments of both deregulation and privatization are mixed and tend to break down along disciplinary lines. Social scientists from outside the discipline of economics are generally critical and often focus on the developing world, arguing that liberalization has been forced on other countries by international players such as the World Bank and led to disappointing, if not downright catastrophic, results (Williams and Dubash 2004;

Byrne et al. 2004; Greacen and Greacen 2004; Sharma 2005; Yi-chong 2005). Alan Millward has argued that privatization of public infrastructure in western Europe from the 1970s to 1990s did not raise efficiency (Millward 2005). Economists, on the other hand, are generally more favorable, showing either the success of the new market mechanisms or prescribing measures to fix markets that do not function as desired (Joskow 2003; Borenstein 2002; Bye and Hope 2005; Amundsen and Bergman 2006). One account to review both sides of the story has argued that while liberalization has resulted in increased efficiency, these gains have been modest, somewhere around 5 percent of total costs, drowned out by other economic trends, and not always shared equally (Pollitt 2012).

The social science literature on electricity and deregulation of the electricity sector has clearly shown the constructed nature of electricity markets. A prime example is Sebastian Giacovelli (2014) in an excellent study of the European Energy Exchange following in the classic footsteps of Max Weber (1894). Further work in corporate organization of large electricity infrastructure projects has also helpfully elucidated how different forms of public and private ownership are being mixed and matched, noting that "there is no longer a simple choice between full state ownership and full private ownership … public organisation is on its way back in but in many new forms with many different structures" (Haney and Pollitt 2013, 189). This paper builds particularly on such work to further explore the question of where and how markets and firms interact and, specifically, to consider more exactly what it means to speak of private and public ownership, where the firm ends and the market or public sphere begins, who exercises control and power within and among firms, and the implications this has for societies and economies in times of climate change.

Energy transformations

A large and dizzyingly multidisciplinary literature has emerged over the last decade and a half on energy transitions. Based in innovation studies and borrowing from initially well-known work in science and technology studies, this literature has treated energy and electricity infrastructures as sociotechnical systems (Hughes 1993). Historically, transitions have taken several generations (Fouquet 2016; Allen 2012; Perez 2013; Pearson and Foxon 2012). Many transitions actually involved overall increases in the use of the "abandoned" fuel source due to even more significant uptake of new fuels and expansion of overall fuel expenditure. Thus, relevance for the current energy transition is not always clear. All told, the historical record shows that transitions have been characterized by clear benefits both to private producers and consumers of energy (Allen 2012; Fouquet and Pearson 2012). Unfortunately, this time around, society does not have the luxury to wait several generations. Models and frameworks have emerged from this, including typologies of regime transitions, multilevel perspectives of transition, and particularly approaching transition from the standpoint of niche technologies which begin small but are able to grow and break the hold of incumbent interests (Geels 2014;

2002; Geels and Schot 2007). Much of this work, building on early and foundational work over a decade ago, has sought to theorize transitions as processes that are nonlinear, context-dependent evolutionary pathways characterized by emergent properties (Geels and Schot 2007). A recent overview has categorized the heterogeneous field into three major approaches: quantitative systems modeling, sociotechnical analysis, and initiative-based learning (Turnheim et al. 2015; for an overview see also Köhler et al. 2019). One particularly influential account within the sociotechnical analysis framework is that of understanding transitions as outcomes of developments at multiple levels. Technological niches provide "incubation" for innovation. Secondly, sociotechnical regimes unite actors through shared understandings, concepts, and practices. At the third level, sociotechnical landscapes incorporate exogenous, background, and typically slow-moving factors. Energy transitions are theorized as the result of interactions between these three levels (Geels and Schot 2007).

While based in innovation studies, the transition literature has been ecumenical in its approach, happily learning from and incorporating insights from across the social sciences. After early and fruitful work with key concepts from science and technology studies (STS) and history of technology, much work has recently explored how economic sociology, neoinstitutionalism, political science, and evolutionary economics might also provide usable insights (Geels et al. 2016; Cherp et al. 2017; Hughes and Lipscy 2013). The result has been impressive but often extremely scattered or all-encompassing models that begin to resemble the 1:1 maps of Borges' imagination – leaving out no detail but allowing no generalizable or overarching analysis. There remains within the transition literature epistemological questions on the role and purpose of models and frameworks in social science and just how much can and should be captured in a single model.[2]

A related nexus for research has been consideration of sociotechnical systems or regimes of energy and electricity from a local grassroots approach, looking at changes in production and consumption on the ground, frequently through the lens of social and political notions of fairness, equity, community, and democracy. This literature, drawing on classical work of Lewis Mumford, John Dewey, Karl Wittfogel, and Amory Lovins, considers how energy systems, infrastructures, and social structures are mutually co-productive (Mumford 1964; Dewey 1927; Wittfogel 1956; Lovins 1977; Burke and Stephens 2018). Are certain types of energy infrastructures with varying levels of centralization, technicality, and complexity more likely to appear within or produce certain types of government or state structure? The spatial structure of energy plays a particularly important role, as decentralized infrastructures might also engender more diffuse and egalitarian power relations and decision-making authority regarding investment and governance. The role of the "prosumer," or small-scale individual who both consumes and produces electricity, plays an important role in these accounts, as do energy cooperatives and other community-based organizations (Morris and Jungjohann 2016; Bauwens, Gotchev, and

2 Compare, for example, the all-encompassing model in Geels (2014) and the much narrower but more specific one in Meckling (2015).

Holstenkamp 2016; Angel 2017). Key to these visions are a Habermasian ideal of deliberative social practices and deliberative democracy (Szulecki 2018; Burke and Stephens 2018). One obvious critique is that deliberative democracy is not how politics happens; political decisions are generally underpinned not by consensus but by disagreement and compromise (Baccaro 2005; Szulecki 2018). Others have noted that these analyses often fall into the "local trap" – the assumption that local interests will come to fair, equitable, and sustainable solutions (Van Veelen 2018).

The transformation literature is focused largely on industries and the (socio)technological systems that are co-productive of such innovative technologies. The process of transformation is, thus, the center of attention. History and historical social sciences, on the other hand, are perhaps more likely to make individual entities the subject of analysis – the state, the corporation, the regulated market. This paper suggests that both approaches miss how regulation and law are continually made, institutionalized, and re-made through negotiation, dispute, and sometimes simply drift. To be sure, few overlook the fact that electricity is a heavily regulated industry. Yet the questions frequently asked – what is and is not regulated, how regulations are lobbied for and made, who benefits from them – assume a certain stability of legal categories. They assume that we know what ownership, property, and corporations are, and that these categories are stable. Certainly they are not. What is more, as this paper will go on to argue, these categories will – out of necessity – be re-worked and re-structured in the face of global climate mitigation. Understanding how these categories can and have moved is fundamental in the conditions of the Anthropocene. The following section will thus give an overview of the history and theory of property and, subsequently, the firm and the co-operative, before applying them to a concrete case study in the final section.

3 Ownership in history and theory

Private property

Where the dividing line is drawn between what is public and what is private and, thus, where state regulation ends and private control begins is a historically constituted and under-determined part of particular political economies rather than any sort of inevitability. Here, too, the heritage of the German Historical School looms large. Private property is historically contingent. It was not something, as noted by Joseph Schumpeter, economic sociologists could understand from a purely theoretical viewpoint but also required the kinds of historical factors and contextual explanation that Schmoller and the rest of the German Historical School prioritized (Schumpeter 1926).

To begin with, ownership of private property is much more than simply possession. Richard Pipes lucidly observed that

> possession refers to the physical control of assets, material or incorporeal, without formal title to them: it is ownership *de facto*, not *de jure* … Property refers to the right of the owner or owners, formally acknowledged by public authority, both to exploit assets to the exclusion of everyone else and to dispose of them by sale or otherwise. (Pipes 1999, xv)

If we are speaking of ownership, we are speaking not so much of a relationship between a human and an object (of greater or lesser abstraction), but between humans. To this we might add the importance of time, noting that transactions (of property) concerned legal control, which was nothing other than future control (Commons 1931, 648). This framework has clear implications for analysis – particularly historical – of the economy and economic activity, where the fixity of existing property rights and other legal and institutional norms cannot be taken for granted (Lawson 2015).

Legal scholars have perceptively pointed at some of the ways in which private property is the result of historical process. In her book, *Property and Persuasion*, the legal historian Carol Rose sketched out the two fundamental ways that scholars generally analyze property: one through the lens of utilitarianism as an institution that forms to serve the purpose of efficiency maximization, the other seeing property as a communitarian relationship (Rose 1994). The first outlook is typical in law and economics. Conversely, communitarian arguments have been most famously elucidated by Elinor Ostrom in particular in her 1990 book *Governing the Commons*. In it, Ostrom proposed the analytic of self-financed contract enforcement, which she then submitted to formalization through the familiar apparatus of the game theoretic matrix (Ostrom 1990). This was not a panacea, Ostrom argued, but a way to think about resource use that combined coercion and cooperation, market and non-market mechanisms, public and private structures. Importantly, it explained how sustainable solutions for management of limited resources could be and empirically often are achieved by communities outside either pure market or state-managed arrangements. Rose sought a way to work across or bridge the gap between these two views of property, which she termed property-as-a-thing and property-as-a-relationship. Is it a relationship or is it a thing? It is, replied Rose, before all else a story. Claims to property as original possessions are precisely that – claims, texts, and subtexts open to different interpretations heavily dependent on audience and context (Rose 1994, 14–20). But so, too, is property a backward-looking narrative justification. Thus, in Rose's elucidation, are classic stories told by Locke, Hobbes, Blackstone, and other moral stories that encourage people to accept and respect the established private property regime (ibid., 31–40).

The legal scholars Dagan and Heller suggested a theory of a "liberal commons" which focused on intermediate forms of ownership between purely private or state ownership, with indicators of success broader than economic efficiency to include both politically liberal and communitarian values such as "the intrinsic goal of interpersonal cooperation" (Dagan and Heller 2001, 553). Dagan and Heller equated the project to creating a middle ground between commons property and private property, given – in 2001 – that the collapse of state socialism made private property the default and almost naturalized form of property. Dagan and Heller recognized the muddied waters that surround the notions of private, commons, and state property. Public property, they note, echoing Rose, might be termed commons property that is given to the use and benefit of society as a whole (Dagan and Heller 2001, 557–58). It resembles commons property but is separated by the fact of the state's "special status and distinct interest." How can this special status and distinct interest be distinguished from statuses and interests of other groups and conglomerations of people, especially when we are talking about not a national central government, but regional, local, and municipal levels of state involvement?

In fact, property is not a single claim but a host of distinguishable, sometimes overlapping, claims to ownership. It is a bundle of rights. In a classic 1961 article, the British lawyer Anthony Honoré distinguished between eleven different types of rights and instances associated with ownership. His study began with the observation that ownership exists in both capitalism and communism and "it does not follow as such" that personal ownership is fundamentally different between the two. Indeed, he argued, socialist societies recognized a "liberal" notion of full property rights but limited the range of things that could be owned (Honoré 1961, 111–13).

To compare the two more fully, Honoré set about disentangling what rights are contained within a claim to private property. The components of rights to property vary from the right to possess and exclude others from, to use without altering (usus in Roman law), to manage (important particularly for firms, where Honoré suggested we might think of "split ownership" rather than separation of control and ownership), to appropriate the returns and income from (usus fructus), to alienate, consume, waste, or destroy the capital of the thing owned as seen fit (abusus), to security and protection from expropriation, transmissibility to others, "absence of term" or non-time-limited claims, and several other more abstract extensions (Honoré 1961). None of these rights or instances of rights are total. All are, in practice, modified. Just how they are bundled and distributed determines the details of the property system in a certain place and time. The characteristics of a thing give us little indication as to the bundle of rights associated with its ownership, Honoré argued. The object owned is of secondary importance. One owns rights to things rather than things themselves. Honoré made clear that limiting an owner's privileges in managing and using things is significantly curtailed even in democracies – in the interest of the health and comfort of others there are countless rules and regulations. The social interest in the use of things is both a modern and very primitive concept. "Socialist ownership," he concluded, was not something fundamentally new, but simply a different bundle; to understand this, one needs not a new concept of property but a renewed and deepened understanding of the diversity and heterogeneity of the institution of ownership with which we are all familiar.

Theories of the firm

Institutional and heterodox

Institutionalist theories of the firm date to the rabble-rousing Norwegian-American economist Thorstein Veblen in his challenge to the classical treatment of the firm of Alfred Marshall. Veblen contended that firms were not simply "empty boxes" but in fact organize their activities strategically to control markets and dictate prices, rather than taking orders from markets as passive price-takers. Resources, production, demand, and markets themselves, Veblen maintained, were socially organized (Veblen 1904; 1921; for a helpful overview see Jo 2019). Half a century later, another distinguished American Institutionalist, John Kenneth Galbraith, built on Veblen in his notion of "guided capitalism," which suggested that markets are controlled by large-scale corporations and partly the state via influence over the titans of industry. The price mechanism might function at lower scales of business activity but at the top is superseded by the "planning" of the large corporations all active within a "corporate system"[3] (Galbraith 1967; Jo 2019). Outside of the American context, Fernand Braudel described something similar in early modern Europe, arguing that the rise of capitalism was an elite, large-scale, and controlled affair taking place among the joint-stock enterprises. Any sort of free market that could be said to have operated did so at the more local and regional levels (Braudel [1977] 1997).

Working in the milieu and heyday of the original American Institutionalists and the political context of the New Deal, the lawyer Adolph Berle and the economist Gardiner Means published in 1932 perhaps the classic account of the American firm with interest in one particular point: who controls the firm and what is the relationship between ownership (which they took to be stock ownership) and control. Berle and Means posited that a revolution had occurred in the late nineteenth and early twentieth century that fundamentally changed this relationship. Earlier, almost all firms had been small, local, and owned by single persons (or families). Since the Civil War, however, firms had become increasingly massive and publicly owned via shareholding, and thus, by the 1930s, the interests of shareholders and managers of companies no longer coincided and could even be directly at odds with one another. The greater size of enterprise unit tended toward more dispersed stockholding, which both diluted the desire and abilities of individual stock owners to actively engage in issues of firm management. From varying rights given to stockholders (stocks of various classes) to the problem of what a firm discloses (and even what a "fact" is when "everything is a reflection of the state of

3 This also resonates with the thought of Herbert Simon, who likewise foregrounded the importance of firms as the fundamental organizational form of modern societies rather than the free market: "Any creature floating to our Earth from Mars would perceive the developed regions to be covered mostly by firms, these firms connected by a network of communications and transactions we know as markets. But the firms would be much more salient than the markets, sometimes growing, sometimes shrinking, sometimes dividing or even swallowing one another. Surely they would appear to be the active elements in the scene" (cited in Robé 2011, 46).

mind of the person issuing the statement"), Berle and Means argued that power in firms had swung forcefully to its managers (Berle and Means [1932] 1991, 283). The authors questioned, therefore, just how much older notions of "property" applied to ownership of firms (or, more precisely, stocks) if control had so fully moved away from them. This account remains at the center of debate almost ninety years after publication.[4]

We might also helpfully look to another early-century American Institutionalist, John Clark, in considering the relations between state, private sector, and individuals. Clark's 1926 book *Social Control of Business* articulated a forceful argument against methodological individualism in economics and laissez-faire liberalism politically. For Clark, "control" could be exercised blatantly and physically, such as in the form of a jail sentence, but also more covertly as in the case of monopolistic domination of markets or even by laying off workers (Clark 1926, 45). In thinking about the organization and regulation of business or economic activity, then, Clark argued that business is fundamentally about and comes into being through "control" – at the level of informal institutions, customs, courts and legislation. It has no existence that is in any way prior to control – social, legal, or state. "Business is inherently a matter of public as well as private interest" (ibid., 45). Clark was resolutely non-Communist and anti-dirigiste; the argument against laissez-faire as even a plausible way to conceive of any possible human economy was no less an argument against state ownership and control. The public-private axes here were scattered, allowing in turn the formation of alternate categories and spectrum between collective, social control and concentrated control. Laissez-faire capitalism and planned economy socialism were both examples of the latter.

Clark took a dim view of the exercise of state authority. The state – even a democratic state – was, he argued, not the representative of the people or society so much as a group that exercises control through the activities of a few bureaucrats or functionaries. The immediate state officials making decisions regarding regulation or governance of economic matters frequently had wide discretion in enforcing rules and directives. "Within that margin, for all practical purposes, [the bureaucrat] is the state" (Clark 1926, 9). This view, perhaps particularly American and written in the midst of significant expansion of the administrative apparatus of the US state, would be quite recognizable to later American adherents to public choice theory. Rather than turn to the market, however, Clark advanced the conception of social control, which came from the law, as he saw increasingly happening, or legislation. Thus, the legislative and judicial state are clearly separated from the regulatory and administrative state. It is legal and legislative avenues that can effect control for the good of the collective. To take but one example, he speculated on possible wider interpretations of the concept of the "public interest" to include the dependent relations of wage-earners on employers, suggesting the merging of the doctrine of public interest with general policy power (ibid., 178).

4 Means, furthermore, had previously advanced a thesis on firm behavior in line with Veblen's where he argued that big business had power over setting prices, production, wages, and thus could be said to "engineer" or "administer" the economy (Jo 2019).

To further appreciate the murky differences between states and firms we might also turn to historical accounts of the origins of the joint-stock firm. Germain Sicard's *Origins of Corporations* shows the range and evolution of the corporation and the set of laws and customs that structured relationships between co-owners (shareholders), managing and active members actually engaged in the economic activity of the organization, and external powers – the state, first and foremost. In Sicard's examples of river mills, the corporation began with joint ownership, where every owner was a professional operator – a miller – and shared owner of the equipment. However, already by the end of the twelfth century this was no longer the case. Some shareholders were not millers and had no direct use for the equipment itself. For these shareholders, collective ownership became more passive. The non-operating owners took part in grain distribution periodically and had obligations and liabilities to contribute to the business, in kind and monetarily.

Through the High Middle Ages shareholders took turns acting as *conseillers,* a position directly engaged in day-to-day operations of the mill. Thus the break between administrators and shareholders was not total or immediate. However, by the late fourteenth century, administrators considered themselves a separate legal entity bound by "mill honor" and distinct from the shareholders. The corresponding move was to consider shareholders, if they were to be without direct control over the company's actions, liable only for their assets held by the mill. The Roman legal concept of the "corpora," a legal form granted to collectives of people with goals and duration longer than a single human life and given legal rights comparable to people's, came only in the nineteenth century (Sicard 2015, 216–39). The mills thus began looking something like modern-day cooperatives and only in the most recent centuries have acquired more and more characteristics we now associate with the corporate legal form.

The changing nature of relations between the firm and the state sovereign are also apparent from Sicard's account. Mills paid feudal lords concessions of a common fief during the Early Middle Ages. However, as the central state expanded, ties and obligations weakened. With a stronger central state, the mills sometimes turned to the king for support in disputes, appealing to the "public good." The state was interested in maintaining law and order, but so too could an appeal for assistance open up the mills for raiding by the king, again conducted in the name of the public good (Sicard 2015, 77, 203). The intertwined nature of the firm was clear here and used by both the company administration and central authorities to their own advantage. Negligence of or damage done to the company was a detriment to the public good, thus "internal regulations of this private company, made at the decision of the majority [of shareholders], could take on the binding will of royal decisions" (ibid., 203). Later, noted Sicard, company decisions were even ratified by the parliament of the region. Royal participation in the company as both shareholder and guarantor of "public good" meant deeply intertwined commercial and state interests, where the corporation functioned as a kind of royal power whose decisions sometimes acquired the status of royal decisions.

If we return to the twentieth century, another work of the American interwar period, though written by an economist hailing from Britain, was that of Ronald Coase, whose influential article "The Nature of the Firm" paved the way for a variant of neo-institutionalism in the later decades of the century. Coase's approach was strictly at odds with neoclassical economic thinking but agreed with some of its principles, specifically the idea that actors behave according to profit maximization and that the price mechanism functions rationally. Counter to neoclassicism, Coase noted that the inner workings of the firm were not immaterial to the enterprise. Importantly, one could imagine an economy without firms at all, with only contracts between individuals. This, however, is not what happens in a real economy. Within the confines of the firm, the price mechanism is superseded by control and management. For Coase, the obvious, perhaps only possible, answer to why this would be the case was that such an arrangement must be more efficient. It stood to reason, therefore, that there was a cost to using the price mechanism (that is, simply contracting for goods and services on the open market), which he famously termed "transaction costs." For Coase, therefore, the economic planning that occurred within a firm was evidence of its efficiency – how large a firm would grow depended on prices – namely, how much it cost to use the price mechanism and at what point management and planning became more expensive than open-market contracting (Coase 1937).

In the course of the twentieth century and particularly in the 1970s, classical theories of the firm were restated and requalified in ways that did much to set the terms of subsequent debate. The central neoclassical revision was to theorize the firm as a "legal fiction" that served merely as a "nexus of contracts" among individual factors of production. Management was not an important factor and, in fact, the most influential statement to this effect argued that firms have "no power of fiat, no authority, no disciplinary action any different in the slightest degree from ordinary market contracting between any two people." Thus, continued the argument, the "presumed power" of managers over workers (to assign tasks) is "exactly the same as one little consumer's power to manage and assign his grocer to various tasks" (Alchian and Demsetz 1972, 777). Paul Samuelson, too, did not see any relevant power relations between capital and labor, noting that "in a perfectly competitive market it really doesn't matter who hires whom; so let labor hire capital" (cited in Bowles and Gintis 1990, 172).

Neo-institutionalism, as influentially articulated by Oliver Williamson, built on Coase and Alchian and Demsetz to see the firm as defined by contracts. Williamson, too, began from a starting point that he shared with neoclassical economists – the belief that the central economic actor seeks first and foremost to "economize." Where he departed from the most commonly understood economic view was in recognizing the obvious reality that contracts are always necessarily incomplete and, therefore, firms function as a means to govern economic interactions and harmonize relations between economic actors. Thus, the shape and structure of the firm became a subject of important consideration for Williamson, who – related to the assumption of economization – assumed that firms tended to the most efficient organizational structure possible under given circumstances (Williamson 1985; 2002). A related approach was that of the business historian Alfred Chandler, who shared with Williamson a general profit- and efficiency-maximizing assumption but put the unit of analysis at the level of the firm rather than the individual transaction. For Chandler, only considering the enterprise as a unit would begin to explain firms' behavior, evolution, strategies, and failures. There were emergent qualities in firms that could not be captured by simply analyzing their component parts (Chandler 1992).

Perhaps the most famous reaction to economic institutionalism came from a group of self-styled radical economists in the 1970s and 1980s. In an influential 1974 article, Stephen Marglin made the provocative argument that hierarchy in the capitalist firm had come about not due to reasons of efficiency but was instead instituted by owners of capital to control the production process and extract surplus (Marglin 1974). Looking back at some of the key moments in the Industrial Revolution, Marglin argued that explanations based on efficiency are tendentious until the point at which the factory system had been adopted, and future technological innovation was based around the assumption of efficiency of centralized worker organization. Initially, however, what the factory gave was not increased efficiency, but superior ability to monitor and discipline workers. It and the earlier putting-out system deskilled workers because they were acquainted with only a part of the production process; they could not extract themselves from the capitalist-led hierarchy and become independent. Thus, he summarized, turning the Marxian phrase itself on its head, "the steam mill didn't give us the capitalist; the capitalist gave us the steam mill" (ibid., 100).

Marglin's argument was vigorously opposed by those taking issue with his history as well as his motives (Landes 1986). Williamson undertook to measure efficiency through transaction cost analysis of differing versions of organization – including cooperatives, which he called peer-group ownership – finding that the capitalist firm won, though by an admittedly small margin (Williamson 1980; 1985). Behind it all, however, was a deep divide between world views about how plausible it is to believe that self-interest explains social processes and institutional structures. To Williamson and many others, the obviousness of efficiency gains with the implementation of new technology and desirability of such gains was simply difficult to question. Even Marx, Williamson exasperatedly noted, recognized this fact that the new radical economists were now seeking to deny (Williamson 1985, 231–32). He also attacked the slippery notion of "power" as explanans for social processes, which was, in his view, "so poorly defined that [it] can be and is invoked to explain virtually anything" (ibid., 238). It is easy to question Williamson's functionalist approach to explaining economic organization, as indeed many have (Dagdeviren and Robertson 2016). Nonetheless, a serious challenge lies at its heart that cannot be sidestepped merely by asserting cultural context or social construction of utility or efficiency.[5] It is not plausible to assume that efficiency or self-interest do not

5 This might be especially true for recent history. It is noteworthy that Francesco Boldizzoni in *The Poverty of Clio* and his sustained argument against interest as an explanatory variable limits

factor at all in human economic activity. But equally mistaken would be the assumption that efficiency is the only factor determining economic organization. It need not be prior or foremost, and absolutely should not be the sole explanatory or causal factor behind processes and institutions, but it cannot be ignored entirely.[6]

Further classical work on "power" in political economy and the need to look carefully at hierarchies and control in both labor and capital markets – thus within firms but also between firms and possible creditors – was conducted by Samuel Bowles and Herbert Gintis, who put forth the notion of the "contested exchange." Many, perhaps most, types of exchange, argued Bowles and Gintis, involve transactions so complex that they cannot be fully contracted for. Thus, problems of enforcement can be solved only in the process of conducting business (endogenously), rather than *ex ante* or exogenously in a contract. This they shared with Williamson and Alchian and Demsetz. Where they differed was in rejecting the assumption that opportunism was inherent in human nature and preferences are defined prior to and independently of exchange. Instead, negotiated or democratic interests might be defined in the process of enforcement of claims, as for that matter might interests arising from conflict. Assuming a market, however, left no place for cooperative action (Bowles and Gintis 1990, 206). The argument that Bowles and Gintis developed logically, as well as formally, was that most exchanges in a capitalist economy are, in fact, contested by this definition and give "rise to a well-defined set of power relations among voluntarily participating agents even in the absence of collusion or other obstacles to perfect competition"[7] (Bowles and Gintis 1990, 167). Workers in firms and borrowers of credit end up on the "short side" of markets and thus in disadvantaged power relations. Their performance – in the work they agree to provide or the borrowed assets they agree to return in the future – cannot be fully contracted for. The capitalist firm, then, faces "two crucial problems of agency: how to handle the money of outsiders and the labor of its members" (ibid., 205). In the former the firm is on the disadvantaged "short side" of power relations, in the latter in the advantaged situation. In other words, the firm has asymmetric power to manage its workers but is in turn managed by its creditors. Bowles and Gintis noted that the first remained a point of central interest but the second is largely elided in analysis. "The omission is serious in its own

himself almost exclusively to periods before 1800, with the exception of Fogel and Engerman's *Time on the Cross* (Boldizzoni 2011).

6 This is a point Deirdre McCloskey has spent a good part of her career making, see Hejeebu and McCloskey (1999, 304–9) and McCloskey (2016, 3–5). Explanation is called for when an efficient solution is selected just as much as when not. This corresponds to the "strong programme" for the sociology of science, which called on historians and sociologists to explain when scientific discoveries were "right" just as much as when they were "wrong" by present standards (Bloor 1976). On the debate between Williamson and other "radical" economists in the economics of worker managed firms, see Dow (2018, ch. 6).

7 In the economics literature it at least partially was addressed to, the paper argued for the rejection of the general competitive equilibrium – at the center of neoclassical economics – not because of disagreement over the concept of equilibrium or assumption of competitive markets, both of which had been deeply and widely questioned, but because even if both of those objections were discarded, the model still had fatal flaws.

right, and distorts the analysis of workplace democracy" (Bowles and Gintis 1990, 205). Again, this is no less true in energy and debates on community energy, energy democracy, or broader thinking about how and why ownership of energy is divided and the implications this has for the future, and the future of any possible transition.

A final heterodox view of the firm is that of Axel Leijonhufvud, who theorized the firm as a "cartel of capitalists." In a contracting solution to the problem of organizing a factory, each individual capitalist – much more so than individual workers – has significant power to reduce output on their owned capital and potentially hold up production for their own advantage. The only solution, according to Leijonhufvud, was to join capital into one firm through virtual shares rather than explicit portions of concrete capital goods. This put labor at a clear disadvantage. It cannot pool its "capital" as capitalists can theirs because labor, in a free society, can only be owned individually. Here, then, was a theory that recognized the issue of power in a firm but credited it to industrial efficiencies and technologies of scale (Leijonhufvud 1986).

Many of these ways of thinking about power and control within the firm complement post-Keynesian approaches to political economy that put forward class-analytic macro frameworks, much of it based on the work of Michal Kalecki (Stockhammer 2016, 366). In his classic 1943 work "Political Aspects of Full Employment," Kalecki put the issue of power, in a class framework, front and center. Power in this telling could be and was instrumental in defining notions of efficiency, as he discussed in the context of factory owners preferring discipline on the factory floor through the specter of unemployment over the higher profits to be gained in a full employment economy. In Kalecki's analysis, the question of employment had no pre-political or technocratic dynamics; any "full employment capitalism" needed new institutions that would greatly increase the power of the working class (Kalecki 1943).

Legal institutionalism

A small body of literature has recently emerged in legal studies that speaks to and offers new paths forward in considering how social scientists might read and apply such theories of the firm. Legal institutionalists, as some of these scholars have taken to calling themselves, make the argument that law has not been taken sufficiently into account in theories and histories of the firm. Accordingly, law is not in the "superstructure" of social organization as Marx thought, but a foundational part of the economy that cannot simply be regarded as a result of prior more important conditions, be they relations of production in a Marxian sense or contract-making in a neoclassical or neo-institutional account. Yet, explicit attention to and theorization of law is notably absent from most theories of the firm surveyed above, with the notable exception of the early American Institutionalists, and, indeed, legal institutionalism traces its own lineage back to them (Deakin et al. 2017). From Coase to Williamson, law receives essentially no attention, despite the fact that the organization and process of production, credit, and transactions are all fundamentally affected and determined by the legal form of the corporation, who can sue whom (or what), who is liable in case of bankruptcy, who controls and makes decisions in a corporation, and so on. A second claim follows that law must be regarded as an outcome of both state and private ordering. Building on some of the literature in property surveyed in the section above, legal institutionalism forcefully shows just how law shapes and determines the structures and functioning of individuals, firms, and the economy as a whole. Law, in turn, is not simply the articulation of rules designed and implemented by a state authority but, in fact, is often crafted in law firms by private jurists at the behest of well-heeled clients. Many, if not all, legal categories are open-ended and negotiated case by case. As one of the leading scholars of this approach has argued recently, "powerful holders of global capital have … found ways to utilize the law for their own interest; they have turned the legislatures, regulators, even courts in most countries, into agents to serve their interests, rather than those of the citizens to whom they are formally accountable" (Pistor 2019, 154).

An approach that is cognizant of the legal framework in which firms exist has important consequences for any realistic theory of the firm. First, we will do well to clarify how laws impact the structure of business activity by differentiating between the firm and the corporation. The firm is the organized structure of economic activity. The corporation is the legal instrument that structures most firms of all but the smallest size, giving them separate legal personality with various rights, including, most importantly, entity shielding, loss shifting, and the prospect of immortality (Robé 2011, 3; Pistor 2019, 55). To call the corporation, as the legal form structuring the firm, a legal fiction is to miss how corporate structure allows the corporation to own property, take on debts, sue and be sued in court, accumulate assets, and have an indeterminate life span[8] (Robé 2011, 10). Jean-Philippe Robé has shown step by step how legal corporation-hood benefits investors, owners, and managers of a firm. Of utmost significance is the fact that the corporation is not owned by its shareholders. Indeed, Robé showed that this is one reason corporate structure is so beneficial. What shareholders own – and all they own – are shares in the corporation. This gives the responsibility and rights to vote in shareholder assemblies and collect dividends when distributed. This is not a property right to the corporation itself.[9] Thus, the separation of ownership and control that animated Berle and Means was actually the second separation, whereby dispersed share ownership leads to increased managerial control. The first separation, however, occurs at the moment of incorporation. This legal fact largely deflates the influential idea behind agency and shareholder value theory that is based on the contention that shareholders own the firm and thus managers should act as their agents. There is no duty for firm management to maximize profits – neither legally nor in any defensible theory of

8 For the original articulation of the firm as a "legal fiction," see Jensen and Meckling (1976).

9 A "share" in this way is a misnomer. Someone owning 25 percent of the total shares in a company does not own 25 percent of the company but 100 percent of the shares that make up 25 percent of total shares in the company. "The difference is very important," argues Robé, particularly in companies that have gone public (Robé 2011, 35).

the firm (Robé 2019). Shareholder-value maximization theory is not only without legal foundation. So too does it make the heroic assumption that institutions of governments will be able to force internalization of all externalities. As Robé and an increasingly large body of literature today clearly show, firms, particularly multinational firms, are in part designed to produce externalities, in the form of tax dodging, environmental externalities, and a host of social consequences of economic activity (Robé 2011, 66; Pistor 2019). The institutions we have, argues Robé, exist

> at the national level … and on the basis of eighteenth century political theories in the context of relatively closed economies in which agriculture and small businesses were dominant, in a world with no business corporations, no large firms, no global society, no global environmental problems. In today's global world, there is no such thing as "the government." We have competing States with competing interests hosting competing firms playing competing States to supply them with legal environments favorable to the improvement of their competitive position in the global economy. (Robé 2011, 66)

Quite opposite of being assumed away – or not recognized in the first place – imperfections of political regulation should be central to analyses, theorizing, and real-world governance of firms.

The answer, then, to the question of who owns the corporation is as disarmingly simple as it is perplexing: it owns itself. This is clear when one considers that no owners, no matter how many shares they own, may simply help themselves to its capital. Indeed, as Leijonhufvud suggested, this feature allows capital owners to solve problems of collective action. On the other hand, in the event of bankruptcy of the firm, their losses can be no larger than what they have already invested. This leads to the contention that controlling shareholders, to a large extent, are able to have their cake and eat it too – controlling the firm as if they owned it but hiding behind limited liability for any (negative) consequences that might befall it (Robé 2011, 73).

The separation of the corporation and government is thus quite hazy. As Blackstone stated several centuries ago, perhaps having the British East India Company in mind, "corporations are republics writ small" (cited in Ciepley 2013, 141). Not just related to companies acting as extensions of colonial states, the concern was central to Berle and Means as well, who observed that the enterprise, as it had (in its American context) grown in size and autonomy, "becomes transformed into an institution which resembles the state in character" (Berle and Means [1932] 1991, 309). Business is not simply economic, in a separate realm from politics, but constitutes "economic statesmanship." If this is the case, corporate governance and theories of the firm need fundamental overhauling in how we think about, analyze, and regulate activities of corporations.

Renewed attention has recently been given to an old argument, namely that the corporation should be run not just for shareholder benefit but for a larger group of people who might be called stakeholders. People can hold recognized interests in a company that are not equity or otherwise financial. This was the context for an influential 1930s debate between Adolf Berle and Merrick Dodd – American lawyers both. Dodd argued that corporations were not merely private institutions but also public organizations, which implicated social responsibility. The corporation was a real separate entity not reducible to its shareholders and should be recognized as such (Ireland 2010, 850–51). Indeed, Berle some decades later would himself recognize the ways corporations transgressed the public/private divide and suggested that corporations often exercised significant political weight and were active in the provision of essential goals and services to make them "quasi-governing agencies" (see also Anderson 2019; Ferreras and Richmond Mouillot 2017).

This call has recently been taken up by political scientists and philosophers. One, the political theorist David Ciepley, has argued that before the nineteenth century, corporations were not viewed as private. It was, instead, "taken for granted that they owed their existence and rights to the government that chartered them," and charters were given out neither freely nor easily (Ciepley 2013, 139). One of the fundamental objectives of liberalism of the nineteenth century was precisely to draw a clear line between the public and the private. Not that this changed much in practice, noted Ciepley, as corporations were unaccountable before and after, but it changed the justification. Earlier, corporate unaccountability had been simply due to state incapacity or unwillingness to fitfully monitor, whereas afterwards unaccountability became part of the legal doctrine. However, argued Ciepley like Clark before him, it is government interference that makes a corporation. Thus, the corporation might be considered a "franchise government." It takes the form of and assumes powers delegated by the state but runs on private initiative. "A corporate economy," wrote Ciepley, "is not merely a parallel universe of private governments, but is a messy public-private offshoot of public government and cannot be separated from it historically, analytically, or normatively" (ibid., 141). This is not some inconsequential aside. The rights of the corporation, especially limited liability, are fundamental to the strength of the corporation; indeed, "corporations rely on government to override the normal market rules of property and liability"[10] (ibid., 144). Like Robé, Ciepley highlighted that shareholders do not own property in anything related to the general conception of private property. They are not able to use, exclude others from, lend, borrow on, alienate, or profit from its use or sale, either collectively or individually. Thus corporate property can only be said to be private in so much as it is not public. Indeed, the assets of the corporation have been legally separated from managers and shareholders since the very beginning (Ciepley 2013, 147). Arguments against limited liability in corporate form and function continue today. Paddy Ireland has shown that unlimited liability was, in fact, the norm and considered "natural" well into the nineteenth century. In classical work such as Adam Smith we see deep suspi-

10 This is to leave aside the discussion above that casts doubt on the naturalness of private property, not to mention the myriad works that similarly seek to de-naturalize the free market as classically stated by Polanyi (2001) but also North (1977). Subsequent economic history has shown markets in pre-modern times to be far more significant than previously believed, see Hejeebu and McCloskey (1999).

cion toward the idea of a rentier class of share owners. According to Smith, this was fundamentally inefficient and should, thus, hold the burden of showing a clear public benefit (Ireland 2010).

More recently, huge literatures have been generated in management, business, and ethics fields about the ideals and reform principles of corporate governance. Much scholarship in the social sciences – as well as journalism in an area of increasing practical significance – recollects an inter- and postwar Golden Era of responsible corporate management before the ideology of maximizing shareholder value, greatly reduced taxes on higher incomes, mobile post-Bretton Woods capital, and favorable political and legal environments unleashed private capital (Davis 2009; Dunne et al. 2016). One area of intense interest in the social sciences currently is that of shareholder activism, whereby investors use the levers offered by the corporate form to affect firm behavior. This literature is generally framed by the concept of financialization – featuring shifting power relations on global markets, changing spheres of public authority and private actors, and altered alternatives and strategies of firm management – and has offered evidence that such activity, though limited, has achieved some success (Büthe and Mattli 2011; Emel 2002; McAteer and Pulver 2009; Neville et al. 2018). Theories of "stakeholder management" have also been extensively discussed, though these suffer from the problem of how to define who is and is not a stakeholder, and, to a large extent, this literature is also blind to the legal structure and organization of firms. Another well-known and widely discussed idea is that of proscribed labor representation on corporate boards – something most famously instituted in German co-determination laws.[11]

Another approach, stemming from the legal institutionalist literature, is to suggest that the corporation be treated as a commons. The corporation, like the commons, is ownerless and subject to a wide range of diverse and sometimes overlapping claims. This view draws on the idea of property rights as shifting bundles of claims to a thing – present in both legal institutionalism and in Elinor Ostrom's seminal work on the commons. This pushes us to see existing bodies of law – bankruptcy, employment, fiscal, administrative – as identifying claims on corporations as if they were a commons (Deakin 2011; Tortia 2018).

The cooperative

Stock-issuing corporations, of course, are not the only form of enterprise. Indeed, one of the most noteworthy features of the electricity sector is the widespread use of the

11 Even in the most market-fundamentalist of countries, leading politicians and presidential contenders are now suggesting legally mandated power-sharing within corporations modeled on Germany's much discussed "co-determination" laws (Warren 2018). Similarly, the Business Roundtable in the United States recently drafted a statement, signed by over 180 CEOs, promoting the redefinition of the "purpose of a corporation" (Roundtable, n.d.).

cooperative form of business organization, both historically since the late nineteenth century and continuing to the present day. In several European contexts the cooperative has been the favored vehicle for expansion in the recent decades of renewable energy production. This phenomenon has generated a wide range of literature in the energy social sciences, but literature that is perhaps less well-integrated either with larger political economic literatures or historical and social science addressing roles and evolution of business organization writ large. Like corporate governance, cooperatives have also seen a boom in interest from academics recently. Marx noted, with some approval, that cooperative factories run by workers themselves are, within the old form, the first examples of a "new form," though he later turned against them for relying on capitalist market relations and lacking a strong class dimension (Martins 2013, 433; Restakis 2010). Gramsci, too, focused on the way workers' councils and increased worker representation in the corporation would further involvement of workers in more democratic means of distribution and corporate profit-sharing.

The cooperative movement and its many syndicalist offshoots aiming for workers' control or power-sharing have been a major feature of industrial economies for the last 150 years. At the center of the cooperative – in the cooperative ethos as usually articulated – is the human, with capital playing a subsidiary role. The cooperative is to be democratically run, thus setting it apart from the for-profit corporation. Whereas corporations traditionally work on a one share-one vote principle, the cooperative ideal is that cooperatives will give each member an equal vote, regardless of the number of shares owned. Cooperative co-owners are usually seen to be more risk-averse than capital-owned enterprises. Indeed, cooperatives proved less susceptible to the contraction following the global financial crisis in 2008. Thus, some authors in the cooperative literature have deigned cooperatives "shepherds of stability" both for this outlook as well as their explicit long-term time horizon focused on stable organizational development (Blome-Drees 2012; Doluschitz et al. 2012). The International Co-operative Alliance lists seven core values and principles: voluntary and open membership; democratic member control; economic participation by members; autonomy and independence; education, training and information; cooperation among cooperatives; and concern for the community (Šahović and Silva 2016, 48). Historically, cooperatives have been important in retail, where consumer cooperatives pioneered some aspects of the postwar consumer revolution (Ekberg 2012; Kalmi 2006). In agriculture, cooperatives continue to dominate some markets. In electricity, cooperatives have a long tradition, going back in some settings – the US prominently – to the early twentieth century, when they were established in primarily rural areas to provide electricity to populations too poor or disbursed to make attractive markets for utilities (Neufeld 2016). More recently, cooperatives have had a major part to play in many renewable energy infrastructures in Europe – Denmark and Germany in particular – forming much of the investment in these new industries.

However, in the economic and management literature, cooperatives receive very little attention, despite their role in historical and contemporary economies. Much of the classic literature, as surveyed by Panu Kalmi and Gregory Dow, consists of heavily theorized, mathematical models that bear no resemblance to even the most basic empirical data (Kalmi 2006; Dow 2018). In form and approach, it seems easily amenable and recognizable to much economic theorizing.[12] The Yugoslav experience prior to 1989 occupied pride of place in this literature, although many of the differences with full-blown capitalist economies were papered over, as were the politically less attractive characteristics of Yugoslav authoritarianism. The central models of the 1950s and 1960s that launched further research posited that worker-managed firms would seek to maximize net income per worker rather than maximize profit as per standard economic theory in capitalist firms (Dow 2018).

Empirically, cooperatives are not static, and those in existence – including those in renewable power – have shown tendencies to change over recent decades in significant and structural ways. In Europe, where the market share of agricultural marketing cooperatives is some 40 percent, organizations have been pressed by challenges ranging from legislative reform, market concentration, and internationalization (Bijman, Hanisch, and Sangen 2014, 643). Even the famous Mondragon cooperative of northern Spain has reportedly come under stress, though reports vary (Economist 2013; Tremlett 2013). Of course, proclaiming a sector to be in "crisis" is often more argument than undeniable fact, but structures in cooperatives do seem to be changing or under some uncertainty in the recent period. Core to these are questions fundamental to the very *raison d'être* of cooperative enterprises, such as how much freedom and authority paid, non-member management should have outside the immediate control of coop members and who should be on and what should be the role of boards of directors. A number of innovations in European cooperatives include changes to proportional voting (breaking from the one member-one vote principle), separating cooperative associations from cooperative firms in order to limit liability and increase freedom of action of hired managers, and allow greater financing flexibility through hybrid ownership structures. There are even cooperatives listed on stock exchanges (Bijman, Hanisch, and Sangen 2014). Beyond the obvious question – of immediate practical regulatory significance – of where the dividing line lies between cooperative and non-cooperative corporate form, we can also appreciate how it is state policy and regulation that allow cooperatives as cooperatives to exist in the first place, with all the specific obligations and privileges of this status.

Another approach to cooperatives has been within the general viewpoint of institutional analysis, perhaps best characterized by Henry Hansmann, a legal scholar writing in a neoinstitutionalist, law and economics tradition. Quite the opposite of being an economic sideshow, Hansmann has argued, cooperatives are actually the dominant organizational form in market as well as government enterprise. There is, of course, a catch – cooperatives, he argues, have always existed to protect their most vulnerable class of stakeholders, those who are most in danger of being held hostage by others. In the case of the for-profit company, the most vulnerable class are the owners of capital, who

12 The theoretical economic literature has concentrated mostly on worker cooperatives, worker-managed firms. See Dow (2018) for a detailed overview and state of the field.

organize as the exclusive class of collective owners to minimize this vulnerability. Investor-owned firms might, then, be correctly termed "capital cooperatives" (Hansmann 2014). The claim is highly debatable, but, for the purposes of this paper, the takeaway is that most structures of shared ownership involve principles of collectivity that at some level can be termed cooperative, from "capital cooperatives" to "territorial collectives" (states). To be sure, this massively papers over the cooperative principles that cooperative members generally see themselves living out: values of self-help, democracy, and decentered profit focus. But then, we also see many cooperative members with mixed goals with some empirical evidence that the larger the cooperative and the looser the ties between its members, the greater the incentive of profit is in the motivations of its members (Holstenkamp and Kahla 2016). The larger point, however, is that categorical differences between state, private, or cooperative interests are far from clear.

Finally, in answer to the million-dollar question of why cooperatives are so rare, explanations provided by economists like Dow correspond closely to those given in Harvey and other neo-Marxists to explain the rise of financial capitalism, as well as to those present in heterodox economists such as Leijonhuvud. In short, capitalists are fewer and more homogeneous in their desires than any other potential stakeholder group and, thus, are in a superior position to push their interests (Harvey 2007). This has obvious implications when looking not only at cooperatives but also for-profit joint-stock companies and is an obvious argument for the importance of considering ownership mix to understand enterprise behavior, including investment decisions, profit-sharing mechanisms, and wider impacts of structure and equality across economic sectors.

Implications for the green shift

Scholarship on property and theories of the firm and cooperatives, especially the classic work of the American Institutionalists, radical and heterodox political economy, and most recently legal institutionalism, provide a fertile ground for thinking about how the green shift is happening now, could happen in the future, and what future political economies of electricity will come to look like. These analytical tools enable deeper answers to questions beyond simply who formally owns an asset (be it a nuclear power plant, subsurface coal, or a solar panel array), but what sorts of ownership claims are made, how these claims are justified, the narratives in which they are embedded, and how bundles of ownership claims implicitly and explicitly change. Similarly, the behavior of large, powerful electrical utilities can be fruitfully examined through the lens of more realistic theories of the firm. As suggested by institutionalist theorization and histories of the firm, power relations appear in several guises. The proposition that firms exercise power over markets, as argued by Veblen and Galbraith, is perhaps the best-known and most widely investigated institutionalist claim. Issues of power and control raised by the "radical" economists concerning power of management over workers have clear implications for energy transition in deciding who will control and allocate electricity production and supply and how profits will be distributed. More than this, as per Robé, the power to allocate, command, and dictate within the firm determines many of the externalities – social but also environmental – that firms might create. As Leijonhufvud and Marglin suggest, we might expect a relationship between technical and infrastructural modes of production and organization of intrafirm power relations. Finally, a third aspect of power highlighted by Bowles and Gintis is that of finance and lenders of financial capital over firms. This, too, is of key significance for transformation and begs the question of the influence of finance on rebuilding electricity infrastructure, how financial allocation decisions are made, who they are guaranteed by, and who benefits.[13]

In the following brief case study, I take the recent history of the German electricity sector with particular focus on one large utility company to explore how those tools might be used to both analyze and think creatively about policy considerations in a sector that is so critical to climate change mitigation. Indeed, beyond being merely analytically productive, the argument will be developed that it is only through a "legal institutionalist" lens that we can understand the change to property and corporate governance that has already commenced in the green shift and will, of necessity, only pick up pace in the coming years.

4 The challenge of transition in Germany

In the summer of 2018, environmental activists were several years into their occupation of a relatively small stand of woods not far from the city of Cologne that was due to be leveled by the German electricity utility RWE, the largest of the German electrical utilities, to make way for strip mining of lignite (brown coal). The protests uncovered a range of debates from deforestation and dirty coal energy in a country that advertises itself as a global climate leader, to regional and class-based politics in a rust-belt region still feeling the brunt of decades-long deindustrialization. In all this, the role of the state as a guardian of nature and climate, but also as guarantor of the status of private property, was hotly disputed. RWE is a private corporation but with significant minority stakes held by municipalities, including representation on its board of directors. These are ties that go back over a century (RWE 2017; Schweer, Thieme, and RWE-Energie-Aktiengesellschaft 1998). The state also spoke with multiple voices, including a chancellor who has been rhetorically outspoken on issues of climate but whose government has shown great deference to industrial polluters, not least a fossil fuel-dependent auto industry. The government's junior coalition partner was a social democratic party in electoral and public-opinion free fall with a traditional center of support in the working

13 On the issue of "democratization of finance," with clear and important implications for energy transformation, see the growing literature well summarized in a recent special issue of Politics and Society (Block 2019).

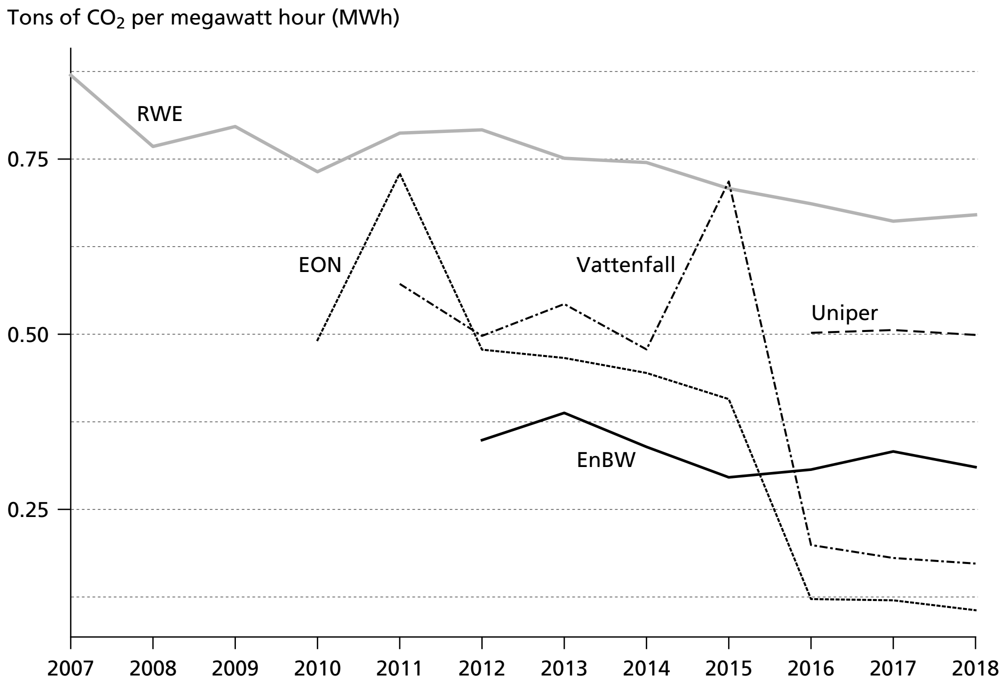
class of the industrial Ruhr region. Outside the ruling coalition was a green party pushing heavily for total abandonment of coal – in addition to nuclear – in the near future if not immediately; a liberal party outspoken in defense of private property rights; and a right-wing populist party featuring skepticism and even outright denialism of anthropogenic climate change. In September 2018, police began to clear the woods of protesters, which simultaneously put a federal commission tasked with planning the country's long-term exit from coal under existential stress. In the course of the action, a journalist fell through a rope bridge to his death, prompting temporary suspension of the police operation. Then in early October a regional court put a (temporary) halt to the clear-cut in response to an environmental challenge alleging the action did not obey legislation with regard to a threatened species of bat inhabiting the stand. The regional government, which had supported RWE's right to operate in accordance with law and contract, now called for dialogue as recriminations flew not just from environmentalists but also from RWE complaining of a lack of support from Berlin. Protesters not only continued occupying Hambacher Forst but also took action to block and disrupt RWE transportation infrastructures (Zeit Online 2018; Spiegel Online 2018b; Spiegel Online 2018a).

The protests and strikes surrounding the Hambacher Forst are only the latest in a stream of anger and accusations that have long been directed at the large German electrical utilities and RWE in particular. For the protesters and numerous sympathetic onlookers across the country, RWE represented all that was wrong with Germany's slow turn away from coal – corporate greed, short-termism, and unwillingness to face the facts about climate change.[14] Not only have the big German utilities continued with their massive carbon footprint, so too have they under-invested in renewables to a striking extent. However, the German shift to renewable production has generally been regarded as a (comparative) success story. Renewable production of electricity has expanded rapidly, from 2 percent in 2000 to some 38 percent of total production in 2018 (Arbeitsgruppe Erneuerbare Energien-Statistik 2019). This compares favorably to most other countries in the world. However, only 5 percent of renewable production (38 percent) has occurred within the Big Four. Bearing this out, the CO_2 emissions for the big utilities have only been reduced quite modestly (see Figure 1).

RWE is a company that illustrates more clearly than most the institutionalist observation about how hard it is to separate the corporation from the state. Founded in the late nineteenth century, RWE had on its first three-person board of directors the mayor of Essen, where the utility is headquartered. By 1905, not only were municipalities represented on the board, Essen, Gelsenkirchen, and Mülheim municipalities held significant shares in the company; the strategy of co-opting and incorporating municipalities was

14 For its performance, RWE's CEO was awarded the anti-award "Dinosaur of the Year" by the Naturschutzbund Deutschland, a nature conservation union, for his "anachronistic demonstration of power" and lack of acceptance for sustainability and the climate targets of the Paris accord (Welt 2018). Indeed, he was the third RWE CEO since 2006 to win the award (Naturschutzbund Deutschland e.V., n.d.).

Figure 1 Carbon emissions by company



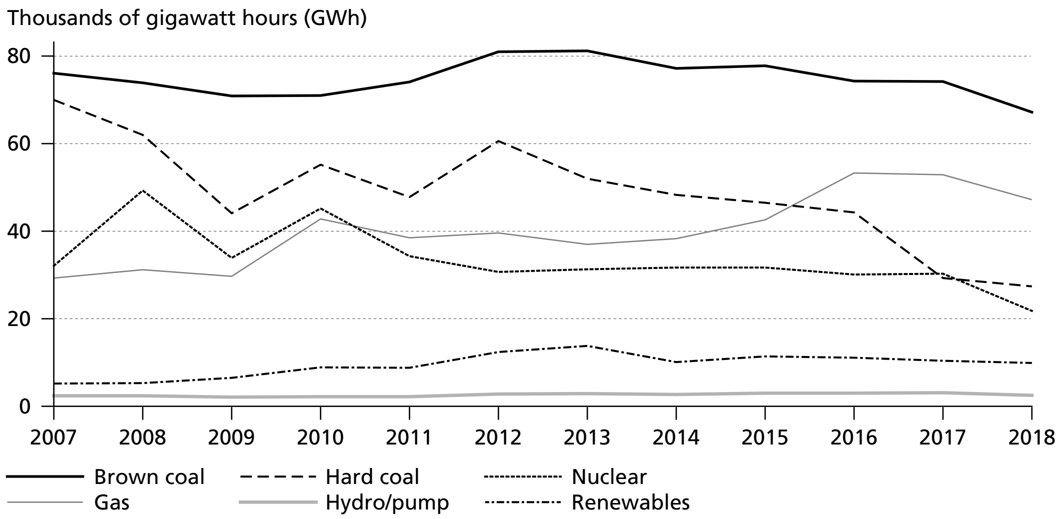
Notes: Reduction in E.ON's carbon emissions were due to the consolidation and separation of fossil fuel-burning power plants within the new company Uniper. Reduction in Vattenfall's emissions resulted from the sale of its coal-fired power plants to a Czech company not represented here.
Sources: Calculated based on data in company annual reports.

key to RWE's initial expansion (Eising 2000, 134; Schweer, Thieme, and RWE-Energie-Aktiengesellschaft 1998, 28–34). So, too, did this pattern remain. Roughly 40 percent of the shares of RWE at its largest in the early 2000s were held by municipalities. Many commentators saw this to be a deep weakness. A Spiegel article argued that the corporation lacked initiative and its management resembled a government agency, bereft of creativity and zeal. "In the Essen conglomorate, the public sector has the last word" (Spiegel 1997).

RWE's fuel mix is dominated by coal, with lignite making up around one half and hard coal almost a quarter. Nuclear is another quarter, and renewables 5 percent. In 2016 RWE spun off its renewables unit into a separate company, Innogy, concentrating on renewables and grids. In 2018 the deal was reversed. RWE and EON announced they would buy Innogy and do further assets swaps to allow RWE to incorporate both Innogy and EON's renewables division under its roof, with Innogy's grids and retail sections going to EON, coupled with stock swaps and a 1.5 billion euro cash payment from RWE to EON, thus reversing the spin-off conducted only two years earlier (Figure 2).

Municipal ownership has declined gradually, from around 40 percent at its height to 31 percent in 2005 to some 20–25 percent today. As seen in Figure 3, roughly 15 percent of these shareholders were previously united under RWEB holding but this has now bro-

Figure 2 RWE electricity generation mix

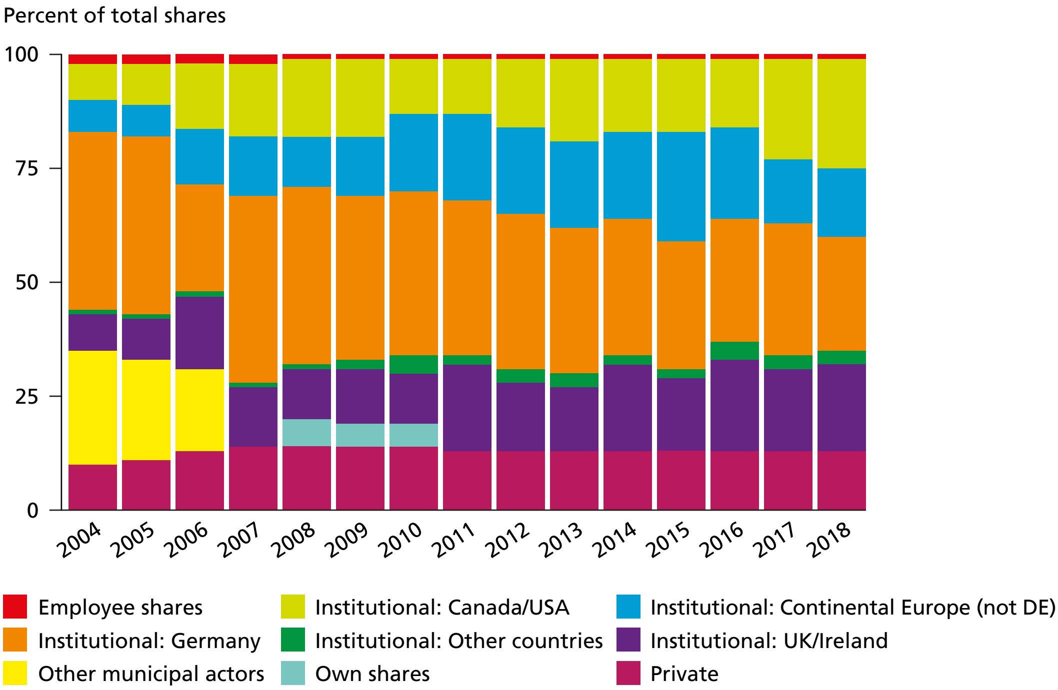


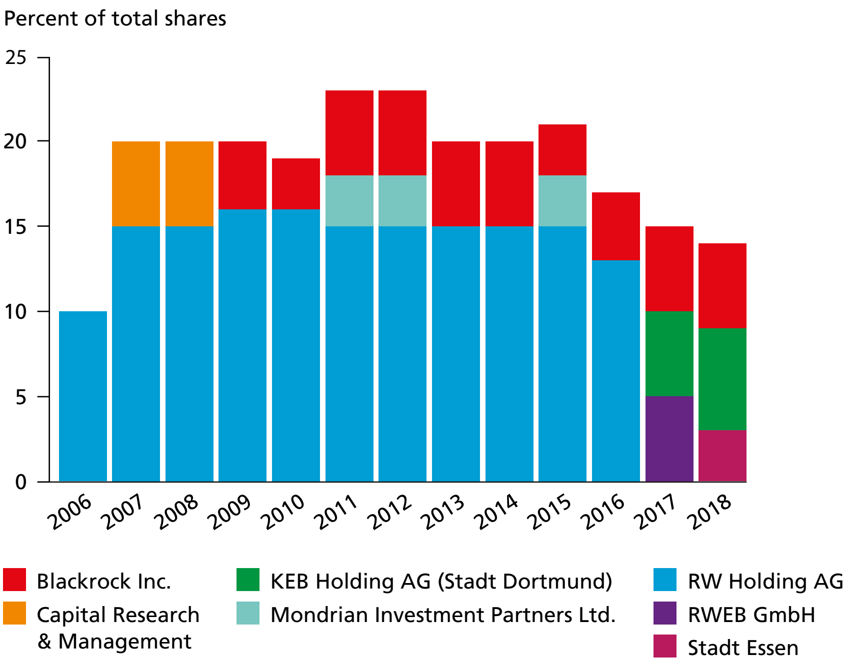
Sources: RWE annual reports.

ken up, with the cities of Essen and Dortmund the largest remaining and only municipalities to control by themselves over 3 percent of total shares. The origin of shareholding institutional capital has changed as well, with total German institutional holdings declining from around 40 percent in the early 2000s to some 25 percent in 2018. This is now rivaled by institutional investors from North America (24 percent) and the UK and Ireland (19 percent), both of which held only 8 percent in 2004. RWE has, since the beginning of the century, been highly reliant on capital markets for financing; pressure from the markets has, however, increased somewhat – its long-term senior bond rating declined from A+ to BBB in 2018, one step up from speculative grade (Figure 4). The average term to maturity of senior debt securities was eleven years in 2004, now eight in 2018. However, while in 2004 this made up the majority of securities, by 2018 RWE had shifted a portion of its funding (and, indeed, a majority of RWE outside of Innogy's funding) to so-called corporate hybrid bonds, a young European market that combines aspects of bonds and equity, providing long-term financing in capital-intense industries at a higher yield than regular (senior) debt (Myles 2013; Trigo 2019). Thus, as one would expect, RWE has had noticeably less room for maneuver, pressed for both funding and needs to please capital markets and its own shareholders. Thus it found itself, as Bowles and Gintis suggested, in increasingly asymmetric power relations with creditors.

Another sign of changing times occurred in 2003, with a struggle on the corporate board over a new CEO with implications for how the corporation would be run – for its workers and, theoretically, in close coordination with the municipalities, or with an eye toward financial indicators and shareholder value. The big shareholders eventually prevailed and a CEO from outside the company, outside the electricity sector, and even outside the country was named in the person of a long-time Shell executive and native of

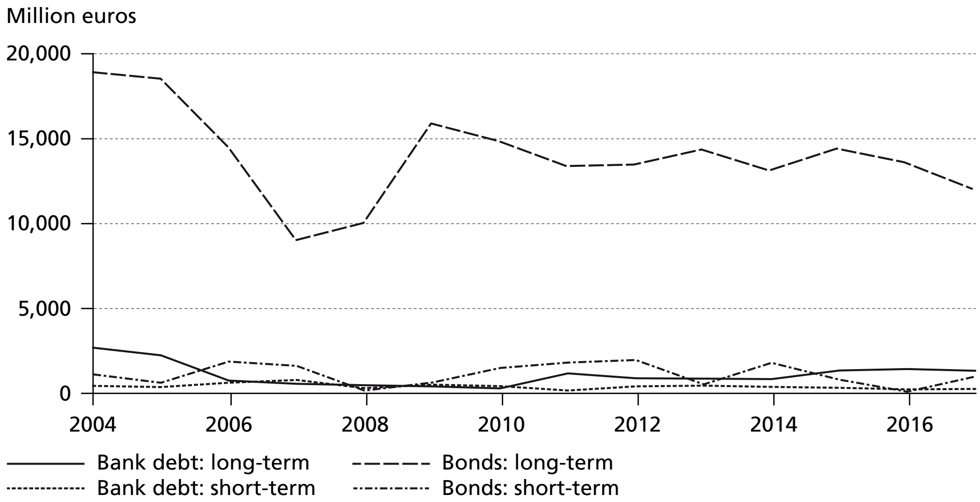
Figure 3 RWE share ownership





Note: Origin of shareholders and shareholders in possession of more than 3 percent of total shares.
Sources: RWE annual reports.

Figure 4 RWE financial liabilities



Sources: RWE annual reports.

the Netherlands. For a company so deeply integrated with both local and federal levels of state, having a CEO who did not even speak solid German was a major shift of both material and symbolic importance (Spiegel 2002b). While unions and the municipalities often had overlapping interests and local governments were deeply concerned about employment, ultimately the municipalities also relied on stable dividend payments to supplement their tight budgets. Thus, a budget-saving strategy that drove down debt and overheads – up to and including reducing employment – would lead to continued dividends. This was, in the end, the priority for municipalities (Spiegel 2002a).

After Fukushima as well, municipalities, now perhaps in even more difficult budget straits, remained particularly reliant on dividends and in a position to make their voices heard. The municipalities consistently opposed behavior that would lead to decreases in dividend payments (Andresen 2014). Decreased or absent dividend payments shot holes in already stressed municipal budgets subjected to austerity (Spiegel 2014). This had led to increasingly difficult relations with the post-Fukushima CEO of RWE, who had sought financing to build a new strategy for RWE (Dohmen and Hawranek 2015).

In the summer of 2010, the Big Four found themselves under attack from the federal government. Not only were talks underway to plan a phase-out date for German nuclear energy, a source of both revenue and enormous sunk investments for the utilities, there was also talk of creating a tax on utilities to cover the future costs of nuclear clean-up and long-term storage. The utilities, in possession of no small amount of lobbying power within the German state, came together to issue a warning for what this meant: if nuclear was to have a tax, they might be forced to immediately shut off all nuclear plants, with dire consequences for German electricity production and reliability (Sebastian, Gathmann, and Medick 2010). However, as others have noted, the utilities did not have the same ability to push through their desired policies as did, for instance, the German auto industry (Meckling and Nahm 2018). The utilities received both a tax on future nuclear waste disposal and a schedule for eventual phase-out of nuclear power.[15]

Less than a year later, however, this painstakingly whittled-out deal was unilaterally scrapped by the federal government in a matter of weeks. The Fukushima reactor meltdown pushed the government to hastily and unilaterally rewrite the deal and provided a policy window to pass far-reaching legislation. Nuclear drawdown would occur much more quickly than previously agreed. The effects on the utilities' balance sheets were clear and immediate. Huge amounts of assets buried in nuclear power plants would have to be decommissioned and written off far sooner than the utilities had hoped. Again, the utilities seemed to have been caught in a contingent confluence of events – just as their lack of attention to renewables was beginning to catch up with them, so too did they lose one of their major sources of revenue. Not, of course, that they had not been warned. Nuclear energy had been highly divisive from the beginning in Germany, being the subject of a long, fabled protest movement in the 1970s and 1980s that interwove Cold War pacifism with the nascent environmental movement and birth of the German Green Party (Radkau 1983). The term *Energiewende* had been coined in the 1980s, and it was around the turn of the century that the Red-Green government first negotiated plans to end nuclear production on German territory.

Regardless, RWE, along with two other utilities, responded with legal proceedings complaining of unfair actions by the state and demanding to be compensated. The companies, so went the complaint, had been given a timeline in 2002 which had then been extended in 2010 only to be cancelled some seven months later. This was simple dispossession, held the companies, as the right to use the power plants as power plants had been summarily and unilaterally withdrawn (Tageszeitung 2016). Some six years later, the German High Court in Karlsruhe found these claims to be partially legitimate and ordered some reimbursement, though only a fraction of that claimed by the utilities. Both RWE and Vattenfall were entitled to reimbursement for the amount of electricity they were promised in the 2002 federal agreement. Otherwise, all three would also be evaluated for investments made in the seven months between the 2010 agreement and the 2011 decision. Fundamentally, however, the court held that the "phase out of the revised phase out" *(Ausstieg aus dem Ausstieg)* was not something that the utilities could claim damages from. The revised phase-out timetables were adopted by legislators with the life of the population and the protection of the environment as their goal and "therefore, achieved a risk minimization of significant extent" (Oeder 2016). Thus, the bundle of property rights utilities were recognized to have over nuclear power plants had changed, and abruptly. No one disputed that they owned them, but the range of ways they could exploit them was significantly altered.

15 The tax was eventually declared unconstitutional.

The Hambacher Forst incident and, subsequently, the resolution laid out by the federal *Kohlekommission* outlining plans for drawing down coal-fired power plants fully by the mid-2030s have also opened up possibilities for a redefinition of property rights. In the local case of the Hambacher Forst, RWE's ownership of the land gave them, in their view, clear rights to exploit and despoil (abusus) the area, including uprooting the stand of trees. RWE justified its claims by attaching euro values to the fact that plans were already made and deeply entrenched to use coal from the Hambacher Forst area. As the CEO said after the coal commission had made its report and RWE's position appeared to be softening, from an "economic or business perspective [saving the forest] is not rational … symbols do have their price" (Müller 2019).

For the activists, however, the argument was about the old-growth stand of trees and the non-monetized worth of nature, as well as the wrongs inflicted by climate change, particularly on those of the developing world who did not profit from burning coal but suffered from the consequences.[16] This is, indeed, the very definition of an externality. Coal was an asset on RWE's books, whereas "the atmosphere" or "ecological diversity" was not. Thus it appeared to RWE that "rational" economics dictated razing the trees and overturning the soil. But for the protesters, the old-growth stand had value just as did a CO_2-free atmosphere. The formal limits of "control" dictate the assets RWE must report on its balance sheet, and because the atmosphere or the so-called "ecosystem services" provided by Hambacher Forst were not or could not be owned and thus do not appear on a single balance sheet, they did, indeed, seem symbolic. This is to return to Robé's point about theories of the firm in the real world. We do not have states that are even remotely capable of compelling the internalization of all externalities. Finally, we might notice that both RWE's and the protest movement's response have been stories in and of themselves, as Rose noted, one having subtexts, based on different valuations and prioritization (Rose 1994, ch. 1).

The coal commission has since issued its findings and laid out a rough plan for retreating from coal by 2035 or 2038. RWE will be hardest hit by this and has already announced that it will demand some 1.2 to 1.5 billion euros per gigawatt of capacity mothballed. This is clearly the case, as Commons noticed a century ago, of property rights claimed to protect asset holders' expectations of future returns. It is also one that environmental groups have found ludicrous on the face of it. The need to move away from coal is in no way new or abrupt, and indeed the plan suggested by the coal commission is painfully slow. And thus, many have argued that the firm that has done its utmost to drag its feet on the *Energiewende* and at the same time received huge subsidies for continued extraction and burning of coal, including building new coal-fired power plants, might now be rewarded for it (Stöcker 2019).

In addition to the moral hazard it would seem to represent, this also underlines the usefulness of seeing the firm through legal institutionalist analytical frameworks. Gen-

16 "Hambi bleibt!" 2019. Accessed December 6, 2019. https://hambacherforst.org/hintergruende/.

erating the sorts of risks RWE did could only have made sense within a narrow understanding of the limits and purpose of the firm. But would other organizational forms have been able to adjust better? Evidence suggests that increased local control – whether through a local stakeholder-interest governance model, firm-as-a-commons organization, or a cooperative – might not have made much of a difference. It was the municipalities in RWE that were among the most vocal proponents of higher dividends and, if so needed, less investment. There are weighty arguments for why these forms might be generally preferable for workers and local community members, but from the standpoint of rapid transition of business plans and activities to ecologically renewable ones, the two are not inherently correlated.

5 Conclusion

The climate crisis is forcing the rebundling of property rights. This is central to the clash over Hambacher Forst; everyone agreed that RWE owned the land, but the debate and bitter discord were over which exact set of rights this ownership granted. Indeed, central bankers and, increasingly, others in finance have begun to notice this, suggesting the need for new instruments to gauge ecological, geophysical risks. As the Bank of England has noted, "if governments push ahead with climate policies, but investors do not adapt their investment strategies accordingly, misallocation will grow" (Scott, van Huizen, and Jung 2017, 104; Kemfert 2018). The risk and possible threat to global markets comes about because of the fungibility and huge flexibility of the idea and institution of property. And the climate crisis will force ever more states around the world to revise and remake the basket of rights that they recognize. We are moving toward, or need to be, a property and corporate governance for the Anthropocene.

The climate crisis also requires a rethinking of the distribution of power exerted on and within the firm, first and foremost in the power of markets and finance over firm-level decision-making. Finance here might be expected to do what it is supposed to do well – efficiently and effectively allocate capital for maximum social benefit. Yet, finance and markets do a famously poor job of pricing in climate externalities. Estimates suggest that financial markets are currently pricing in and betting on climate warming of some 3.7 degrees (Partington 2019). This requires more than firm management only focused on returns to shareholders (and to managers themselves, who seem to have been the group to profit most handsomely from the "shareholder value" paradigm). As Robé has argued at length, the shareholder value theory presupposes the strict separation of public and private spheres and the ideal functioning of "public" governance. Some things, the atmosphere or the ocean, cannot be controlled by any one business entity, thus appear on no balance sheets and are not, as such, accounted for. One solution is to force this into accounting categories, to force business to treat the climate as capital. Just as corporate capital cannot legally be consumed as income (this being the design of a Ponzi scheme), environmental capital should equally be subject to the same requirements of capital maintenance (Robé 2019). This gestures toward the "commons-ness" of both the global climate and the corporation. If neither can be owned by anyone other than themselves, then laws against plundering either one should be similar. Another solution might come in the form of democratized finance. Finance is to no small extent built on and enabled by the guarantees of state financial apparatus. Thus, the extent to which finance is, in fact, private can be questioned. This has subsequent implications for distribution of decision-making authority and profits (Hockett 2019).

So, too, must we think about control within the firm. At the end of their classic work, Berle and Means pointed to the firm's importance to society and overall social well-being:

> The future may see the economic organisms now typified by the corporation, not only on an equal plane with the State, but possibly even superseding it as the dominant form of social organization. The law of corporations, accordingly, might well be considered as a potential constitutional law for the new economic State, while business practice is increasingly assuming the aspects of economic statesmanship. (Cited in Robé 2011, 78)

"Economic statesmanship" would thus seem to demand the kind of attention that political theorists are only beginning to give to the question of what democratic representation of a firm could actually look like. Democracy in the political sphere is based on equal rights of all to influence government (Ferreras and Richmond Mouillot 2017). Furthermore, climate change is making increasingly clear that economic statesmanship must include not just labor, capital, and possibly even more disparate stakeholders, but the climate itself.[17]

In Hambacher Forst, who owns what and how is up for grabs. This paper has suggested that we understand this as a changing of property rights and re-coding of capital by making use of legal institutional and heterodox economic theories of the firm. The firm is the ordering structure for organizing and enabling production, the corporation the legal form allows for shielding capital, as well as for channeling externalities. The theories of the firm considered above are, like the century they originated in, deeply enmeshed in the struggle between capital and labor. Over the last several decades, the "social" has come to be emphasized in revisionist thought, resulting in movements like the push for stakeholder rights. The climate crisis adds, urgently, an additional dimension, one that must be addressed in our structures and rules of productive activity.

17 Full discussion of mechanisms for representing the climate as a whole is a separate topic, but suffice it to say that the traditional suggestion from scholars of science, technology, and society, that scientists are those who can and should speak for nature (Callon 1984), should be questioned in the light of the recent history of climate diplomacy. Whereas the failure of Kyoto was a failure of top-down, technocratic, and binding climate targets, the approach to the Paris accord and its initial success suggests a more bottom-up, participatory, and democratic means to setting targets and abiding by them. As Paris includes signatories at various levels, including but also below that of territorial state, so too might this principle applied to corporate decision-making seem promising (Hale 2018).

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