




Real Property Transactions in the Network Society: Platform Real Estate, Housing Hactivism, and the Re-scaling of Public and Private Power

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Abstract

Technology is rapidly transforming the landscape of land ownership and housing transactions, creating new types of consumer risk and new regulatory challenges. As markets, legal systems, and housing consumers navigate the new opportunities and risks of “platform real estate” (or “PropTech”), the underlying land laws, policies, and practices that produce the material context and legal framework for real property transactions, and against which consumer risk and regulation must be understood, require “re-scaling.” In this article, we offer a theoretical framework for this re-scaling project, drawing on our earlier work to develop Resilient Property Theory (RPT) for analysing complex, large-scale property questions using methods that—in a departure from liberal property theories—pay attention to the public role of the state. Against a backdrop in which narratives of private property law defined real property transactions as “private realm” activities, while consumer law and policy provided the vehicle for state-backed regulation of specifically defined transactions based on a risk-based approach, this article brings the state back into view to reflect on new configurations of risk in consumer housing transactions. In the de-materialized realm of the “network society,” networks, platforms, and innovations are recalibrating housing transactions. In this data-driven world, land transactions are financialized, depersonalized, and increasingly remote from the materiality of land and the consumption of housing. As new capabilities in digital land transaction systems reach back into the underlying law of ownership, official (state), insider (global capital markets), and outsider (social movement activists) networks have evolved to leverage their relative positionality. This article uses techniques developed in RPT to examine the re-scaling of risk in real property and housing transactions through digital network technologies. We consider the implications of resilience needs in the network society in relation to the public sovereignty of the state, the private sovereignty of land ownership, and practices of resistance to public and private sovereignty through “housing hactivism.” Finally, we argue that conceptions of consumer vulnerability and risk and embedded ideas about the relationships between private property law and consumer law and policy in real property transactions must evolve to take account of these effects.

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Technological innovations that increase interconnectivity, speed of access to information, and enable seamless transactional coordination are transforming real estate markets, local land use patterns, consumer behaviours, and ownership itself. New and emerging “PropTech,” or “Platform Real Estate” (Ferreri & Sanyal, 2022; Fields & Rogers, 2021) markets in land data, were enabled by rapidly evolving digital housing networks such as Zillow.com and Ownerly in the USA, Rightmove and Zoopla in the UK, and global platforms like airbnb, which accumulate and coordinate land information, including price, availability, financing, and neighbourhood data. Land buyers, investors, and speculators can now access land data toolkits that enable them to make rapid, remote purchasing decisions—decisions that historically would have required significant investment of time, effort, and local on-the-ground knowledge. As the new land-data marketplace disrupts local land use and ownership markets, with consequences for the consumption of real estate in the material realm (van Erp, 2019, p.166),¹ new types of data-led ownership models are being produced, with implications for underpinning land law systems, concepts of land ownership, and consumer risk in real property transactions (Castells, 2010a).

This has been most visible in the transformations of land ownership recording systems to enable “secure, paperless, electronic, end-to-end, pre-sale to post-completion e-conveyancing” (e-conveyancing Task Force of Ireland, 2008; Clark, 2011; Doversberger, 2010; Hatfield, 2015) deploying technological innovations like electronic signatures, cryptography, smart contracts, distributed ledgers [commonly known as blockchain], and associated technology, and broadening how digital assets can be created, used, and transferred (Law Commission 2022, para 1.1). This has substantive implications for conveyancing, for underpinning land law and ownership systems, and for the housing consumers who are required to navigate these systems to buy or rent their homes. The digitization of public infrastructure raises new governance challenges (Dawes, 2009) that, we argue, have fundamentally shifted the foundations upon which the roles of private property and conveyancing law, on the one hand, and consumer protection law and policy in real property transactions on the other, should be understood. This is evident, for example, in the re-branding of His Majesty’s Land Registry—created in 1862 as a public system for recording ownership of land—as a “data-driven registration business” that aims to become “the world’s leading land registry for speed, simplicity, and an open approach to data” (HM Land Registry, 2022). The Land Registry’s Strategy for 2022 + seeks to

¹ Van Erp explained that: “Land registries have always been repositories of information relating to the physical object: land and buildings and regarding the rights which a subject has regarding that object vis-à-vis other subjects. But the object: land and buildings is no longer the sole source of value for the owner... Should land registries start registering land related data, given that these in an economic sense have become part of the traditionally registered physical objects? ...whenever government agencies, such as land registries, do not reach quickly enough to market developments, the private sector will take over. There is already an example of this in Switzerland where a private so-called ‘proptech’ company is setting up a ‘decentralised property register ‘Property DNA’, a ‘blockchain-based record of all the data about a property, secured and stored in a decentralised way.’”.

enable a “world-leading property market”; it notes that: “access to information about land enables individuals, businesses and the Government to plan for a future that meets the challenges of today, such as climate change, housing need and a thriving economy”; and defines its “ultimate customers” as: “all the people, businesses and organisations who own registered land in England and Wales and everyone who wants to see the property information and data we hold about land...Our customers are also the representatives and agents of those groups, such as conveyancers, search companies and other data and PropTech businesses” (HM Land Registry, 2022, p. 5).

In the twentieth-century industrial and “ownership society,” conveyancing systems developed as the technical infrastructure that operationalized and served the substantive principles of domestic real estate law. However—more recently—Baroness Hale, former President of the UK Supreme Court, recognized the reversal of this hierarchy when she described: “the danger of letting the land registration tail wag the land ownership dog.”² These changing relationships, between land law and conveyancing, and between government, society, and technology, as the expansion of electronic consumer-facing services has produced digital housing networks, have significant implications for consumers of land and housing. One feature of this new landscape has been to: “...amplify and deepen the abstraction and separation of functions, users and outputs from actual things and places” (Porter, 2019). Porter argued that:

It is not simply that new technologies, platforms, apps and Big Data speed up existing processes, or increase their geographical reach (though they do both of course), but that new forms of social and economic relationship are being formed through these technologies.

As markets, legal systems, and housing consumers navigate the new opportunities and risks of “platform real estate,” the underlying land laws, policies, and practices that produce the material context and legal framework for real property transactions are re-gearred to new conveyancing techniques. Through these processes, we argue that the nature of consumer vulnerability and risk in land and housing transactions has been altered in materially significant ways.

When the Financial Conduct Authority was launched in 2013, it promised to adopt a new approach to its “consumer protection” objectives, including a commitment to “be more outward-looking and engaged with consumers than the FSA has been...and better informed about their concerns and behaviour where this is relevant to regulatory action” (FSA, 2011, 1.11). Recognizing that its predecessor, the Financial Services Authority, had relied on flawed assumptions about the nature, sources, and extent of consumer vulnerability, the new approach emphasized the importance of ensuring that regulatory frameworks (within the scope of the FCA’s jurisdiction) were underpinned by nuanced and realistic understandings of consumer vulnerabilities (FCA, 2015). The FCA articulated a new conception of consumer vulnerability that went beyond narrow, individualistic, notions based on (limited) financial capability, to take account of the connections between individual circumstances, the situation or context of the transaction and market factors in causing or exacerbating vulnerability. This framework applies when land and housing transactions include a financial services element, yet, in many cases, and for many aspects of land and housing transactions, consumer risk remains outside the scope

² *Scott v Southern Pacific Mortgages Ltd* [2014] UKSC 52, para 96.

of consumer law's jurisdiction, governed by private property law. In these contexts, the extent to which underlying laws of ownership, land, and housing law respond to consumer risk in a context of rapidly changing transactional and market contexts raises important questions for consumer law and policy scholars to consider.³

In this article, we reflect on how technological developments are changing real estate transactions, and real estate law, in the "network society." In conceptualizing the "network society," we draw on Manuel Castells' ground-breaking work articulating the network society as the dominant organizing paradigm of modern society, emerging through the coinciding growth of informationalism, civil rights and individual rights-based social shifts, and neoliberal leaning governments (Castells, 2010a, p. 19–25). Castells observed that within the network society has emerged a network state, depowered from previous versions of the state, existing in networks of flows between other states, markets, and private actors (Castells, 2010a, pp. 304–310). In a period of technological change, property scholarship requires a dynamic toolkit to engage with the radical transformation of land transaction infrastructure, digital land markets and markets in land data, the changing nature of ownership in the network society, and the evolution of consumer risk in housing transactions. In the sections that follow, we build on the approaches and methods of "Resilient Property Theory" (RPT) to consider how new land ownership and land transfer technologies are re-shaping resilience needs, and the ability to accrue and accumulate resilience for landowners and purchasers, for communities, activists, and social movements, and for the state itself. As new nodes of networked power emerge, and land law systems adapt to new pressures and demands, new types of power relationships have been produced in respect of land ownership, citizen/consumers, global finance, real estate and housing markets, and the state. As land ownership and real estate transactions are re-scaled through digital network technologies and platforms, we consider how resilience needs in the network society have re-configured the public sovereignty of the state, the private sovereignty of land ownership, and practices of resistance to public and private sovereignty through "housing hacktivism" movements. We focus on three aspects of this transformation: the dematerialization of land, the re-configuration of power between state actors and agencies and globalized private capital, and the impacts of both processes on the nature and promise of "ownership" for property and housing consumers in a world of data-driven land markets and new markets in land data.

Platform Real Estate and Housing Hacktivism

The effects of dematerialized land transactions, and the disruptive impact of new markets in land data, are reflected in land transfer and housing rental transactions. Ferreri and Sanyal observed that the "eruption of disruptive digital platforms...under the gaze of corporations, is reshaping land law and ownership across multiple scales" (Ferreri & Sanyal, p. 1036). The changing marketplace has re-configured distributions of power and resilience between vendors and purchasers, landlords and tenants, and licensors and licensees. This is reflected in property market pricing trends, with implications for housing affordability and, in turn, in the material realm of cities in which people who provide vital services can no

³ The extension of consumer law and policy jurisdiction over regulated mortgage contracts and home finance transactions in England dates to 31 October 2004.

longer afford to live. The launch of Zillow.com's landlord services platform coincided with dramatic increases in rental prices in several cities around the world, as landlords accrued new, low-cost, on-line abilities to access resources, pricing data, and know-how that were previously not available without local, on-the-ground expertise.⁴ Similarly, the growth of AirBNB as a short-term rental information aggregator had major impacts on city-level and local housing markets, because it enabled individual owners to scale up their capacity to reach global short-term rental markets. The pivot of housing stock to short-term rentals depleted the supply, and affordability, of longer-term rental housing in communities. This is because the availability of housing supply influences sales prices, which influences housing prices for consumers both as purchasers of homes and as renters. This has become more acute as investors have bought-up properties for short-term rental opportunities, reducing housing supply and increasing demand in local communities (DiNatale et al., 2018; Lee, 2016; Zou, 2020).

Speculative ownership—enabled by data aggregation platforms in the digital realm—contributes to housing unaffordability and homelessness in the material realm, which is experienced most acutely at the local scale. Atkinson explained the effects of “buy-to-leave” investments in high-end London real estate by global super-rich speculator-buyers seeking out places to park their capital (but not their bodies) on housing affordability and “live-ability” in the city. He described the “capture” of the city by global capital as: “...a process that involves not so much conflict and strategic gain as an apparently voluntary acceptance and submission to the ruling logics of capital and its expansion...[so that] those with money can profit from and subsequently dictate how the city and its various resources are to be used” (Atkinson, 2020, p. 28). He argued that: “This can be seen in the way planning authorities in the city have come to identify private developers as critical to the remaking of many districts, while presiding over the demolition and loss of desperately needed public housing” (*ibid*). As financial speculation was privileged over material sustainability (Fox O’Mahony & Roark, 2023), policies geared towards attracting ultra-wealthy speculators were coupled with: “...disinvestment in local neighbourhoods, demolished estates, evictions, rising homelessness and, alongside these changes, the apparent loss of an ethos of care and support for those in need was systematically withdrawn” (Atkinson, 2020, p. 3). Although real estate investors are not only the super-rich as profiled in Atkinson’s *Alpha City*, but also small-scale middle-class investors who use real estate investment as a means of creating financial opportunity, for a sense of personal satisfaction, or an assertion of independence and self-sufficiency (Fox O’Mahony & Roark, 2022, ch 7; Garboden, 2023), real estate transactions have always favoured those who have immediate access to liquid resources over other housing consumers. The transition to digital informationalism in land and housing markets compounded that transactional leverage advantage by combining the speed of liquidity with the speed of information, supported by the fiction that the digital record is unassailably accurate (Keenan, 2017).

Concerns about the implications of these transitions to data-driven land transactions, and new markets in land data, for housing consumers promoted new collaborations between political “autonomous” squatters and digital “hacktivists,” who combined forces to resist these transformations through activism in the material and the digital realms. In *Property Outsiders: How Squatters, Pirates and Protestors Improve the Law of Ownership*, Peñalver

⁴ For example, since 2019, in the USA, cash only sales of land have increased nearly 30%: Share of Homes Bought With All Cash Hits 30% for First Time Since 2014; <https://www.redfin.com/news/all-cash-home-purchases-2021/>

and Katyal (2010) described the informational function that property rule-breakers perform in revealing normative and behavioural misalignments: between the law, the state, and the needs and vulnerabilities of populations. They argued that, while law-breaking practices are disruptive in the short term, they produce valuable signals about the need for systemic corrections. In the material realm, squatters deploy practices of unlawful occupation to critique, draw attention to, and lobby for state action in the face of economic, and specifically affordable housing, crises. In the digital realm, hackers deploy technological expertise to disrupt official (state and private global corporation) mechanisms for managing access to information in the digital sphere (Himanen, 2001; Maxigas, 2016; McCormack, 2013; Söderberg & Maxigas, 2021). As these groups came together, the emergence of “housing hacktivism” collaborations revealed the changing character of ownership, housing, and property systems and opened up important new questions concerning the position and protection of housing consumers.

The techniques of “political squatting” have traditionally been deployed by social movements to protest against, and resist, the hegemony of the private property system and its impacts for people, places, and power (Martínez López, 2018). Political or social movement squatters use unlawful occupation as a means of taking direct action against the state and the economic and property systems it supports (Pruijt, 2013, p. 24). The practice of squatting enables grassroots activists to “scale-jump” (Roark & Fox O'Mahony, 2024)—transcending their position of political marginalization, rhetorically upscaling their critique of the state, expressing resistance, and demonstrating alternative economic models and ways of life. Castells (1983) argued that:

...urban movements do address the real issues of our time, though neither on the scale nor on the terms adequate to the task. And yet they do not have any choice since they are the last reaction to the domination and renewed exploitation that submerges our world. But they are more than a last symbolic stand and desperate cry: they are symptoms of our contradictions, and therefore potentially capable of superseding these contradictions.

Urban squatting movements draw on network-integration tactics such as institutionalization and networks of cooperation (Pruijt, 2003, p. 141) to bolster their resilience, challenging the complicity of state power in the property-based sovereignty of (globalized) private capital (Fox O'Mahony & Roark, 2022, p. 320–331). By demonstrating productive utility on unused land and in vacant buildings, and drawing on narratives of traditional (rural) “homesteading,” they promote alternative ways of consuming housing by living more sustainably in a sharing economy (or *oikonomy*) (Cattaneo, 2013). Urban squatters communicate these claims through physical occupation of real property on the ground. Their presence in the material realm highlights the physical absence of speculator-owners, as they leverage the power of physical presence to “reclaim the city” (Adinolfi, 2019; Hodkinson & Chatterton, 2006; Marcuse, 2009; Martínez, 2019; Vasudevan, 2014) on behalf of vulnerable, marginalized, and excluded housing populations.

For a period in the late 1990s and early 2000s, Squatted Social Centres (SSCs) across southern Europe offered physical space to digital disruption networks for “Hacklabs” (Söderberg & Maxigas, 2021). The collaboration was symbiotic: While the SSCs provided access to physical spaces for Hacklabs to operate from, Hacklabs contributed to the programming of the SSC by offering free public access to computers and the Internet, free workshops on a variety of topics including basic computer use, installing open-source software, independent radio broadcasting, and training in the use of digital disruption

techniques like hacking. Embedded in a shared environment, the network links between hacker and squatter groups—both physical and digital—were nearly seamless. Brought together through their shared commitments to disrupting the networks of (state and private) power that underpin material and technological inequalities and extractive global capitalism, SSCs and Hacklabs functioned in symbiotic networks, sharing resources, expertise, goals, risks, identities, and people.

Urban and rural squatting movements promote sustainable alternatives to extractive capitalism using a range of strategies: from the direct action of land/food system commons and ecological protest sites like “Grow Heathrow”; to *oikonomic*-ecological practices of urban and rural squatters who demonstrate ways of living more sustainably. Global movements like Occupy have raised public awareness and understanding of the connections between unsustainable economic and financial systems, unsustainable social inequalities, and environmental and ecological unsustainability. Echoing the practices of squatter social movements, housing “hacktivists” deployed technological expertise to advance political and social goals.⁵ Hacker values of autonomy, innovation, and access underpinned their commitment to making information, or data, more transparent. Social movement hackers embody the virtues of “sharing,” from their commitment to “commonism” (which seeded the “creative commons” movement) (Hands, 2011) to open-access computer labs and free Internet. Against this backdrop, hackers resist the hegemony that private capital and corporations have accrued, at the expense of user-consumers, through their ownership of, or power over, data-driven land and housing information systems. As a social movement operating in digital realm, hackers leveraged their agility and expertise to disrupt the resilience of private corporations and the public/state actors or institutions that were seen to have enabled them to gate-keep access to digital information, just as squatters sought to disrupt the gentrification of the city and the squeezing out of people and identities that did not align with gentrification goals.

Their status as under-the-radar antagonists means that, like squatter occupations, hacktivist projects are rarely sustainable in the long term. Castells described the paradox of grassroots movements that address “the real issues of our time,” but which often do not operate on a scale that is “sufficient to the task” (Castells, 1983, p. 331). On the one hand, this refers to the scale gap between hacktivists and the actions they seek to mobilize: as grassroots activists, they challenge injustices that are perpetrated by global corporations with the backing of governments and transnational organizations. While hacktivists may be able to scale up action through large volume campaigns, the duration of those campaigns tends to be temporally short, as the expenditure of resources on initiating the protest leaves limited capacity remaining for sustaining the operation in the face of legal or market attempts to defuse the impact of the action.

As the transition to a securitization frame, particularly after 9/11 (Fox O’Mahony & Roark, 2022; Manjikian, 2013), saw state responses to squatting become less tolerant and more punitive, squatter-housing hacktivist collaborations were dissipated. As increased legal scrutiny and jeopardy associated with the physical space of the squat depleted the resilience of both Hacklabs and social squatted centres (Söderberg & Maxigas, 2021), the

⁵ The hacker as a concept is broader than the technological hacker that it has become associated with. Hackers emerge in all sectors where expertise is built to innovate systems in a way that increases access. In that way, squatters and gorilla gardeners are the hackers of the urban environment, where housing and food access are expanded on an ethic of open-innovation sharing. Legal constraints are inconsequential, or a barrier, to the work of hackers.

cooperative relationship between SSCs and Hacklabs also changed. SSCs increasingly focused their energies on a focused critique of state action concerning housing inequality and exclusion, and the squatter organizations that had previously operated through SSCs re-located, from highly visible SSCs to vacant residential properties, where they highlighted the impact of (state-endorsed) private investor-speculator practices in deepening the effects of an unsustainable and unaffordable housing eco-system (Atkinson, 2020; Fox O'Mahony & Roark, 2023). At the same time, Hacklabs transitioned to a broader critique of the accrual of private sovereignty of global corporations in the digital realm, and the enabling role of the state in ceding power to privatized global capital.

The transition of Hacklabs from visible, material, on-the-ground locations in social squatted centres to less visible hacker spaces coincided with changing targets for hacktivist action: from focusing on *transparency* and *access* to technology, to challenging the financial, informational, and material *coordination* of land transactions by global corporations (and enabling states). Just as squatter movements occupied local spaces within the material city to challenge the impacts of financialization and the hegemony of global private capital in capturing housing systems (Annuziata & Rivas-Alonso, 2018; Pruijt, 2014), hacktivists deployed cyber-attacks, denial of service campaigns, or email saturation campaigns to challenge and disrupt the globalization, financialization, and capture of information, data, and technology in the de-material or digital sphere (Hayes & Ollitrait, 2019).⁶ In both cases, creative disruption highlighted the accrual of power in private global corporations, and its impacts on access, especially for vulnerable housing consumers, to essential resources for human survival: on land and housing in the material realm of the city and on the new model of housing governance through the power of aggregated data-markets in the de-material realm of information networks.

Resilient Property Theory and the Network Society

Resilient Property Theory (RPT) offers a new methodological toolkit, and theoretical framework, for analysing the interactions between competing individual interests (e.g., owners, neighbours, investors, mortgagors, and squatters), aggregated interests (e.g., neighbourhoods, markets, cities, communities, and social movements), and institutional interests (e.g., housing systems, economic systems, ecological systems, the so-called institution of private property, and the state itself). These categories overlap: for example, individual owners may be networked in aggregate groups, such as neighbourhoods; squatters may create networks of collaboration through social movements; and market actors are aggregated to articulate the networked-institutional claims advanced on behalf of markets. Institutional claims are shaped by the political processes through which individual interest-holders cluster around shared agendas. By recognizing and taking seriously the range of interests at

⁶ For example, Carnegie Institution has identified 40 cyber-attacks on financial institutions worldwide since 2007 directed at disruption. These acts may have political, economic, and criminal motives: for example, some cyber hackers put their services to bid for political or government operatives in a collaborative effort. In a report from the New York State Department of Financial Services, it issued a report on Cyber Security in the Banking Sector where it noted political “hacktivists” seeking to make political statements are a major source of disruptions. Similarly, in a 2021 Congressional hearing on the threats to the financial sector, leaders of the six largest US banks all identified cybersecurity as their most pressing concern. Hacking Wall-street, *New York Times* (July 3, 2021).

stake in tackling complex, “wicked” property problems, RPT offers fresh perspectives on complex property problems.

In contrast to liberal property theories, which are anchored in the “private realm” of transactional justice, RPT is distinctive for its foregrounding of the role of state actors and agencies—across the multi-scalar state—in allocating the resources of resilience between competing property stakeholders. It recognizes that when state actors respond to property problems, they perform a dual role: as “allocators” of resilience through the creation, recognition, and enforcement of entitlements or the creation and operation of regulatory regimes; and, at the same time, as accumulators of resilience, as states seek to shore up their own authority and legitimacy in the face of conflict or crises. In seeking to understand the drivers and determinants of state action in response to property, housing, and consumer problems, RPT is a theory *of* state action. This can be contrasted with liberal property theories (conservative or progressive), which offer theories *for* or *against* state action. By focusing on the interactional effects of property problems on networks of stakeholders, RPT looks beyond narrowly defined transactional private property relationships to consider the implications and dynamic evolution of property, housing, and consumer law and policy, in a context of evolving risk and resilience, for multiple actors, networks, and for the state itself.

The approach and methodology of RPT provides a toolkit for understanding these complex problems in the context of the network society. Drawing on actor-network theory, it adopts a “methods assemblage” approach to map the “whole topography” of a problem-space (Fox O’Mahony & Roark, 2022, pp. 215, 217–8, 334–336), revealing the “hinterland” of problems in the context of preexisting social and material realities and the “webby relations and practices” of actor-networks. By looking beyond the interpersonal relations between contracting parties to property transactions and recognizing that these transactions are embedded in wider networks of stakeholders, RPT provides techniques for seeing individual, aggregated, and institutional stakeholder interests as networked systems. In focusing on these wider networks, RPT recognizes that state responses to property and housing problems are contextualized and constrained by factors that are both within and beyond the control of the state itself or the economic, social, legal, or regulatory institutions it sustains.

RPT draws on the concept of “scale” to recognize different dimensions of power and resilience within property systems and that differently situated actors are able to mobilize that power in different ways, in the material and dematerialized realms. For example, while the physical occupation of space by squatters and collaborative or punitive responses by state or market actors are lived out in the material realm, global corporations and government bureaucracies exercise power in both the material and de-material realms. When hacker activists (or “hactivists”) collaborated with autonomous squatter organizations, they combined their tactics for disrupting hegemonies of power in the materialized and dematerialized realms, leveraging expertise to marshal grassroots techniques of trespass and obstruction both on the ground and within globalized digital network systems.

Castell’s theory of the network society described how the development of information and communication technologies unleashed the power of networks, producing the “information age.” As the Fordist industrial society gave way to the “network society,” infrastructures of power were decentralized, fragmented, and distributed across global networks. Castells describes fragmentation as a structural feature of the network society: “The global network society is a dynamic structure, it is highly malleable to social forces, to culture, to politics, to economic strategies. But what remains in all instances is its dominance over activities and people who are external to the networks. In this sense the global overwhelms the local, unless the local becomes a node in alternative global networks, as

is the case with the incorrectly labelled 'anti-globalization movement', which is a global movement for global justice according to its participants" (Castells, 2010b, p. 23). Processes of: "...globalization, decentralisation, and networking...[enabled the] knowledge-based economy [to] function at its full potential because data, minds, bodies, and material production could be related globally and locally, in real time, in a continuous interactive network" (Castells, 2010b, p. 22). These changes re-calibrated risk and power in property and housing transactions: as the ambit of state action with respect to property and housing was scaled back (neoliberalism), scaled up (to globalized financial power), and scaled down (through localism) (Fox O'Mahony & Roark, 2022, Chapter 4). As the slow-burn of property law and policy debates about the development and implications of state-led (public) e-conveyancing systems gave way to the rapid development of privately-owned platform real estate, Ferreri and Sanyal described: "[t]he eruption of disruptive digital platforms...reshaping geographies of housing under the gaze of corporations and through the webs of algorithms" (p. 1035).

Although global digital networks have no boundaries, Castells emphasized that: "...this does not mean that people everywhere are included in these networks. In fact, for the time being, most are not. But everybody *is* affected by the processes that take place in the global networks of this dominant social structure" (Castells, 2010b, p. 22). This "double logic of inclusion and exclusion", material and digital and global and local, is evident in power relations within the infrastructure of informationalism. For example, citizen-consumers are affected by global financial markets, whether or not they participate in these as home buyers. In the emerging paradigm of platform real estate, the digitization of land data and transactions is simultaneously removed from, and critical to, the material realm. Official narratives promoting and advancing e-conveyancing express property claims in de-materialized terms. As the rise of the "network state" has "re-scaled" ownership, re-configuring the underpinning concepts of property law and conveyancing, the material implications of de-materialization for housing, land use, sustainability, and consumer welfare also require further attention (Fox O'Mahony & Roark, 2023).

Localized resistance to these effects by autonomous squatters and housing hacktivists reaches up to the dematerialized digital realm to disrupt the hegemony of global corporations. Just as markets and states adapt to the imperatives of platform real estate—and the global corporations who have deployed their expertise to colonize the infrastructure and bend property systems to their own priorities and resilience needs—digital/data disruptors respond to the exercise of propertied power in the de-materialized realm. In the network state, financial investment interests assert market share through "private property" claims. At the same time, the tools traditionally used to respond to the materiality of "possession" by housing user-consumers (with possession as the common law "root of title") have been reoriented to protect the de-material "investment" stakes of global capital. This was evident, for example, in the objectives of England's Land Registration 2002, which set out to "de-materialize" land, to facilitate, legitimate, and privilege land speculation and to reduce the protection and validity of possessory interests. The Joint Report of the Law Commission and Land Registry clearly signalled that the Act was intended to: "...alter the way in which title to land is perceived" (Law Commission and Registry, 1998, p. 1.1). It claimed that:

There is now wide support, both within the property industry and from many legal practitioners, for the introduction of a system dealing with land in de-materialized form. Indeed, such a system has come to be regarded as inevitable... (para 1.2)

This was justified by the objective of the Bill: “that the register should be a complete and accurate reflection of the state of the title of the land at any given time...” (para 1.5). The Report noted that this would “also require a change in attitude...[t]hese changes will necessarily alter the perception of title to land. It will be the fact of registration and registration alone that confers title” (para 1.9, 1.10).

Enhanced legal protections for absentee or speculator owners were coupled with the withdrawal of legal cover for informal-possessory interests. The new imperatives of speculation demanded the reform of the law of adverse possession and the further strengthening of owner-purchaser protections, relative to informal interests. The LRA 1925 created the category of “overriding interests” to strike a balance between transactional certainty and efficiency and the protection of “on the ground” claims; the “fundamental objective” of the LRA 2002 was:

that, under the system of electronic dealing with land that it seeks to create, the register should be a complete and accurate reflection of the state of the title of the land at any given time, so that it is possible to investigate title to land online, with the absolute minimum of additional enquiries and inspections. (Law Commission and HM Land Registry, 2001, 1.05)

The 2002 Act reduced the range of interests capable of overriding and re-drafted others to limit their applicability. It adopted a general principle that expressly created interests should, in principle, be subject to registration, and incorporated a “discoverability” requirement for informally created interests to qualify as overriding.⁷ Enhanced protections for purchasers and the retrenchment of legal protection for on-the-ground interests in possession, read together with the reform of adverse possession and the “de-materialization of land,” embedded an explicit agenda in support of land speculation and a transfer of power from housing consumers to capital and corporations. Legal protections for possessors, both lawful and unlawful, were diluted or withdrawn.

Nicole Graham has described this process of abstraction as creating unsustainable “people–place relationships” (Graham, 2011). “Placeless property” widens the power differential between user-consumers who rely on the on-the-ground materiality of land and housing to mitigate their embodied human vulnerability, and the financialized corporations, brokers, and sellers, who leverage dematerialized informationalism to produce financialized value. For consumers, local geographical limits and the unavailability of material needs for housing limit the range of purchase options, narrowing market choice and increasing localized demand. At the same time, sellers and brokers have accrued power through real estate platforms and the new market in land and housing data depleting the resilience of local housing consumers.

⁷ Under the LRA 2002, informally created legal easements and profits are potentially overriding, but only bind the purchaser in fact if (a) the purchaser had actual knowledge or constructive knowledge (i.e. that the interest was obvious on a reasonably careful inspection) of the existence of the easement, or (b) the easement has been exercised within the last year. Leases granted for a term not exceeding seven years from the date of grant of lease are overriding (LRA 2002, sch. 3, para. 1) unless the tenant does not take possession until three months after the grant of the lease (these reversionary leases or future leases are more difficult for a purchaser to discover); or if the lease is discontinuous (for example, a lease of a property for a month a year, over three years—again, difficult to discover); and excluding the grant of certain rights under the Housing Act 1985.

Re-scaling Ownership in the Network Society: The Public Sovereignty of the State and the Private Sovereignty of Ownership

The dematerialization of land law systems was advanced through a network of vehicles: from privately funded venture capital investments in developing land-data markets served by “platform real estate” to the public/quasi-public/private systems that advanced the financialization of housing, and the disbursement of the capital asset of domestic real estate into global capital flows through secondary mortgage markets. Through processes of digital dematerialization, the up-scaling of home-finance to global financial markets expanded the capacity for real property to underpin financial risk, at the same time as it detached “value” in housing or land from material value in the physical realm and re-located ownership’s value in de-material asset form.

The implications of this re-scaling of ownership infrastructure for consumer risk are evident in the USA, in ways that are still emerging in UK real estate and housing markets. In the USA, the privatization of the prudential, state-managed housing finance system applying lending policies based on affordability (Fannie Mae) produced the dematerialized, re-gear secondary mortgage market and opened up new lines of liquidity and increased willingness to purchase riskier mortgage debt (Odet, 2019, p. 8). The growth of the globalized, disaggregated, secondary market lowered standards, spawned the sub-prime mortgage sector, and in turn triggered the credit crunch and financial crisis that snowballed into the Great Recession from 2008 (Brunnermeier, 2009, p. 100). The origins of this crisis in the institutional vulnerabilities of global banking and financial and capital markets prompted widespread debates, in the USA, the UK, and elsewhere, about the nature, scope, and effectiveness of market regulation and the role of institutions—public and private—in producing adequate resilience to mitigate consumer vulnerability and risk (MacNeil & O’Brien, 2010). The proposition that “self-correcting markets” create their own resilience with little or no need for state interference was undermined, and the limitations of self-regulation and reliance on the “invisible hand” were revealed (Malloy, 2009, p. 80).

The implications of networked real estate transaction infrastructure in the USA extend beyond regulated secured finance transactions, narrowly understood, to a broader relocation of power in real estate and housing transactions. The US’s Mortgage Electronic Recordation System (MERS), which applies e-commerce capabilities to record mortgage transactions, began registering and tracking mortgage loans in 1997 and the MERS eRegistry launched in 2014. It was formed through a network of private financial institutions, who shared data regarding property transfers and assignments amongst themselves but shielded public access to that data by recording a single transaction in the public record (Phillips, 2009). A single ledger entry perfected the title but transactions between institutions were hidden behind the network’s institutional borders. The ability of the MERS digital system to share information within its own network of insider-institutions demonstrated the power of MERS within the US property transfer market: because individual consumers who transact in land don’t have access to this detailed land data, they bear disproportionate risks relative to the institutions they transact with.

The impact of MERS on local real estate markets prompted local state officials, who are responsible for recording real estate transactions in their county, to bring a series of lawsuits aimed at reining in MERS. US States argued that state property transfers required individual recordation. They argued that state law required notice of property transfers in the public record or that property recordation offices were entitled to collect recording fees

associated with individual transfers of property.⁸ These actions were motivated by a shared concern that gated access to MERS's land transaction data vested disproportionate power in private financial institutions, relative to the public authorities responsible for the official infrastructure of land ownership. None of these efforts to curtail the private sovereignty of the digitally-networked property infrastructure produced by MERS was successful.

The growth of MERS, now reported to have recorded between 50 and 60% of all residential mortgages in the USA, was facilitated by its early architectural compliance with uniform legislation, such as the Uniform Electronic Transactions Act and e-Sign legislation, which dictated safe harbour requirements for the enforceability of electronic records. Developed from the bottom up, MERS constructed an electronic registry system to empower the financial institutions that formed its network, while ensuring compliance with the requirements of state legislation for the enforceability of transactions. MERS's value was built on its ability to transform ordinary single-parcel transactions into legally enforceable electronic records, while simultaneously constructing an architecture of exclusion that limited access to land information to those within its network. MERS's power rose from its control over, and coordination of, real estate data conferred on actors in its network: a network that the state was instrumental in constructing, but which—now that it is operated by private power—the state has limited power to regulate.

In England, the development of land ownership infrastructure for e-conveyancing has been led through the public institution of His Majesty's Land Registry. Since 2002, significant steps have been taken to digitize transactions in registered land, including e-discharge of mortgages, new rules to allow digital documents to be submitted and electronic signatures. In the last decade, English property scholars have debated the model that e-conveyancing will follow: Continuing the current approach in which HM Land Registry continues to focus on developing electronic services and mechanisms for electronic dealings with the Registry or the "gold-standard e-conveyancing" model (Dixon, 2019, p. 72) for which the LRA 2002 was designed—but which has now been largely abandoned (*ibid*, 73). One of the risks the e-conveyancing project has produced for real estate consumers is the extent to which the public authority of the Land Registry as "guardians of the land registration galaxy" is undermined in favour of privatized PropTech companies.

Dixon characterized this as a: "...return to a system of private conveyancing—instead of unregistered land, we would have e-registered land..." (*ibid*, 73). He argued that: "...while there is broad support for a system which provide both title security and transactional efficiency, we should not forget that our substantive and transactional land law needs to be rooted in the society it serves. The reality is, obviously, that land does not exist in a dematerialized world, like shares traded electronically, or an electronic bank account. It is physically *and* emotionally different and we should not pretend otherwise. Land gets under the skin and the fingernails, and in everyday life, how people use and relate to land matters for their wealth and their welfare. Land is not only an asset and the 'e-register' a remote and largely meaningless concept for private citizens. This insight is not a reason to abandon some form of eConveyancing, but it is a reminder that it may not be wise to be governed in this context by the ideology of the digital world" (*ibid*, 80). These concerns go to the heart of the implications of a data-driven land registration business on the distribution

⁸ See e.g., *Doug Welborn et al., v. The Bank of New York Mellon*, Civ. Action No. 3:12—CIV-220 (U.S. Middle District Court Louisiana 2012); *Commonwealth of Kentucky v. MERSCORP Holdings Inc.*, Civil Action No. 13-CI- 000060 (Commonwealth of Kentucky Franklin Circuit Court, Jan. 23, 2013); *Dallas County, TX v. MERSCORP*, No. 14—10,392 (U.S. D.C. N.D. TX June 26, 2015).

of labour between land law, or property law, on the one hand, and consumer protection law and policy on the other. The boundaries between these domains have shifted in the past: for example, when it became clear that land law did not provide adequate safeguards for vulnerable consumers in mortgage transactions, reversions and sale-and-rentback and these were brought, progressively, under the ambit of home finance regulation (Fox O'Mahony & Overton, 2014; Overton & Fox O'Mahony, 2018).

The diffusion of power in the network society has dissipated the “public sovereignty” of the state and enabled the accrual of power in “private sovereignty” networks of global financial capital. Twentieth-century liberal property theories were built on an assumed tension between the private sovereignty of (property owning) individuals and the public sovereignty of the state (Benvenisti, 2017; Katz, 2017; cf Jayasuriya, 1999). In these frames, the institution of private property protected and promoted the freedom and autonomy of individual citizens against the potential of an over-reaching and oppressive state. Yet, as Justice Madala observed in the South African Constitutional Court’s judgment in *Du Plessis v. De Klerk*: “the modern-day reality [is] that in many instances the abuse in the exercise of power is perpetrated less by the State and more by private individuals against other private individuals.”⁹ Johan van der Walt described the power shift from governments to global businesses:

The principal role-players in today’s global economy, huge multinational companies, have gained sufficient power to impact incisively on the efforts of national governments to govern their states in terms of local public interest. The transnational mobility of big business has a marked effect on the political will of national governments... Governments are today constantly subject to the need to compete with other governments to retain the favor of the big companies that drive their economies. (van der Walt, 2005, p. 50)

He characterized the: “reduction of states to willing or unwilling and therefore dispensable business partners, [as] a return to structures of power that are similar to those that characterised premodern societies” and argued that: “...the postmodern displacement of state sovereignty by a network of global economic power relations constitutes a neo-feudalism” (*ibid*).

The re-scaling of (global) capital and the state and the effects of dematerialization and digitalisation in re-scaling power over property relations and property transactions raise critical questions for consumer protection policy. The creation and development of HM Land Registry transformed the nature of real estate transactions, bringing transactional security and protections for individual citizen-consumers within a public service context, defined by commitments to integrity, impartiality, and the public interest. In 2016, the UK Government floated a proposal to privatize the Land Registry. While the proposal for “direct” privatization was subsequently withdrawn in the face of large-scale criticism and opposition, the shadow of privatization, and the role of (global) ‘PropTech’ businesses as de facto gatekeepers of digitized data-driven land registration systems, casts HM Land Registry’s commitment to: “becom[e] a more data-driven registration business” into fresh relief.

The state’s increased dependence on global market performance for its own resilience also has important implications for the nature and possibility of consumer protection in real

⁹ *Du Plessis v De Klerk* (1996) 5 BCLR 658 (CC).

estate transactions. As the global financial crises of the twenty-first century have revealed, the resilience of consumers and regulating states depend on networks of global capital circulations and financial markets (Held, 1995; Langley, 2015; Lessig, 2006). Crucially, for an RPT analysis, which pays attention to the state's own resilience needs, states are no longer in control of their networks, but are nodes in the global capital network, with risks of exclusion from the network. Indeed, Castells described the global financial market itself as "an automaton," operating outside of the control of any major financial institution, because of the size, volume, and complexity of flows of capital (Castells, 2010b, p. 32). While the capitalist class has some power in these networks, they are also highly dependent on both the autonomous dynamics of global markets and on the decisions of governments in regulations and policies. As states have adapted in structure and performance to become networks themselves (Castells, 2001), network states operate through supra-national organizations where governance is shared (such as the European Union, NATO, or NAFTA), or where resources are pooled and distributed across common values (such as the International Monetary Fund).

The re-scaling of sovereignty in the network society is reflected in concerns about the impact of rapidly developing technologies in rendering legal systems and rules created to protect consumers less relevant. Legal and policy debates about the nature, operation, and risks of e-conveyancing systems have extended over decades, as lawyers and policymakers seek to understand, and to regulate, new and emerging transactional risks. This relatively slow pace of response to rapidly changing risk is compounded by what van Erp described as the risk of: "IT developers...overrun[ing] the law with their rallying cry that '(computer) code is law'" (van Erp, 2019). He explained that: "[w]hile the opportunities of new technologies...may result in interesting debates among lawyers, IT developers are just not interested and will proceed..." Lessig explained that the exercise of sovereign power to regulate or control behaviour is realized in contexts that are determined by systems architecture as much as they are by ideology: "to understand the power a government might have, we must understand the architectures within which it governs" (Lessig, 2006, p. 282). The transformation of property and housing transaction infrastructure through platform real estate has major implications for consumer protection in (digital) property transactions. As Lessig observed: "[n]ot everything that is possible, should also happen. The law must balance the interests of all involved and protect those with, for example, unequal bargaining power, such as consumers...".

Conclusions

The network society has re-ordered our social and economic lives, with fundamental implications for land law, housing law, conveyancing, and the protection of property consumers. As land and housing systems have been re-scaled—from the material world of on-the-ground transactions to the dematerialized digital realm—the theories we use to make sense of the law and governance of property and housing must be considered afresh. This is no mere "academic" task: the transition to digital data-led land and housing systems and the emergence of new markets in land and housing data have critical implications in the material world. As state power to direct land and housing systems was ceded, and then transcended by the private power of PropTech, the transformation of markets has reached down to re-order people and places.

The rise of platform real estate requires a systematic re-imagining of property transactions for the network society. In the new property paradigm of informationalism, states find themselves “outgunned, out-manned, out-numbered [and] out-planned” (Miranda, 2016). Private corporations powered by global capital markets now hold the resources, and the expertise (or the financial ability to employ the expertise), to shape digitized property systems to their advantage, and against the interests of consumers. Jean-Phillipe Robé explained that: “[t]he deep reason for all of this is that our institutions have been bypassed by the historical development of a world power system creating overwhelming constraints, and the politicians in charge of our local political institutions do not have the levers to effectively act on its course” (Robé, 2020, p. 1). Speculative cities and states are geared around productive *asset* use, but have depleted capacity to deliver sustainable housing and sustainable cities without private capital (Hackworth, 2015). As city-authorities pursue economic growth by leveraging private capital investment to fund erstwhile public functions, from housing to infrastructure to policing (Hackworth, 2007, pp. 43, 44), financialization is an important tool for speculative development at the city or local level. Global corporations, and private capital market actors, have accumulated new and emerging assets of resilience.

In building new analytical frameworks for understanding and responding to consumer risk in this context, it is important to focus on the resilience needs of networked stakeholders—including, critically, the resilience needs of the state itself. Central within this is a need to recognize, and re-scale, the roles of state institutions, actors, and agencies, and the power of private corporations. Property theories geared around industrial-age public/private binaries, which argue for more or less state intervention or restraint, are revealed as relics of past times. The habits of the liberal age, born of land and housing in the material-realm, lionized the private sovereignty of ownership as a mechanism to promote and safeguard the autonomy of the individual. In the dematerialized realm of the network society, the great power shift has seen the “David” of liberal private individualism morph into the “Goliath” of privatized global corporations—a “neo-feudalism.” The laws and policies governing land and housing have yet to cotton on, and catch up. As is often the case, it has been the “property outlaws” (Peñalver & Katyal, 2010) and outsiders (Fox O'Mahony, 2014), the people in the margins (van der Walt, 2009, pp. 23–24), the “housing hacktivists,” who have signalled to the impact of these transformations for people and places, demonstrating the material impacts of the network society for consumers in property and housing transactions.

Data Availability Not applicable—no original data provided in publication.

Declarations

Conflict of Interest The authors declare no competing interests.

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