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Comment
Property as complex interaction

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Abstract. In his important article, Benito Arruñada draws out the significance of sequential exchange for property rights and traces inadequacies in the economics of property rights to its overly contractual focus, to the exclusion of multiple transactions on the same asset. In this comment, I argue that although Arruñada's problem is a genuine one, it is part of a larger inadequacy in the economic analysis of property rights: property institutions have to manage complexity stemming from many kinds of interactions, making it problematic to focus solely on local interactions. Modular structures in property, including legal 'things' themselves, serve to manage this complexity. The larger problem of complexity allows us to set sequential exchange in its proper context.

Institutional economics has a property problem, as Benito Arruñada (2017) insightfully demonstrates in his important article. Despite a focus on what are called 'property rights', the economic analysis of property misses something central about the institution of property. Arruñada diagnoses the problem as stemming from a 'single-exchange' assumption latent in all forms of economic analysis, from transaction cost economics to institutional economics and from the theory of the firm to law and economics. In his view, the focus on single transactions, rather than the possibility of sequential exchange, leads to an over-optimism about the effectiveness of private ordering and in turn causes misbegotten policy proposals and misplaced emphasis on land titling in international development projects.

Arruñada is right to see the economic analysis of property as overly contract-oriented. Indeed, that is part of the problem of ignoring or downplaying the nature of in rem rights – those good against the world – and overemphasizing in personam rights, which avail against identified persons, often few in number (Merrill and Smith 2000, 2001a; Smith 2011). And yet the problem he tackles has deeper roots in economics and additional implications for policy. The institutions of property are a system for dealing with the interactions of actors with respect to resources – of which sequential exchange is just one, albeit important, genre.

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The problem with the economic analysis of property rights is the wrong kind of reductionism. The economic analysis of property tends to adopt two-party models and scale up in additive fashion. First one figures out the welfare effects of a rule on a pairwise interaction and then one sums up the effects of the interactions to find the welfare effects for the entire society. These two-party interactions can be – but need not be – contractual. They can also involve accidents, which would come under the law of torts. In the same work Arruñada cites for the over-contractualization of property, Merrill and I also identify a tort strand of property theorizing in law and economics that focuses on pairwise interactions in terms of potentially harmful activities (Merrill and Smith 2001b: 378–83). Think of all the possible driver–pedestrian interactions, then scale up. This tort perspective also misses the importance not just of in rem rights but of in rem rights to things. When it comes to the property torts like trespass and conversion, the law can avoid being too complex for actors and decision makers, because the duties of actors are communicated through the thing itself. Thus, to take a famous example of James Penner's, if one is walking through a parking lot full of cars one does not own, one does not need to know whether a car is borrowed from a sister-in-law, is subject to a security interest or is owned by a tax cheat, in order to know not to damage or steal it (Penner 1997: 75–6). Some of this hidden information involves subsequent transactions in Arruñada's very broad sense, and some does not. It involves all market participants, including those who might be evading the market by damaging or stealing others' assets (Merrill and Smith 2000: 27–8).

The law and economics literature does not quite ignore subsequent transactions, but it tends to take this latter, tort-like perspective. There is a literature on the good faith purchaser rule: if C purchases from B but B either stole or defrauded in order to obtain the rights from A, who should win in a contest between C and A? The law and economics literature (see, e.g. Levmore 1987) treats this as a problem of finding the cheapest cost avoider in an unfortunate interaction – a now-standard move in tort theory (Calabresi 1970). Some of the commentary explicitly draws on torts and tort-style models in order to draw normative welfare-based conclusions (Schwartz and Scott 2011). Like the over-contractualization of property, this tort approach also misses the mark. Here too the problem is that social costs and benefits may not be simply scaled up private costs and benefits; parties may have excessive incentives to search and their behaviour may cause informational externalities for unrelated third parties. These tort-like models fail to take into account the problem of secret liens and the systemically optimal production of information, which Arruñada rightly identifies as a key problem with the economic analysis of property.

And yet the problem is more general than myopia about subsequent transactions, whether these are regarded as a contract or a tort problem. Instead, the problem is the complexity in general of actors' interactions with respect to resources. If we imagined all the possible ways that each actor might impact

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any other actor with respect to any attribute of any resource, and then allowed such interactions to be conditioned on other such interactions, and so on, we would quickly approach the realm of intractability (Lee and Smith 2012). The problem of subsequent transactions, Arruñada's focus, is but one of this universe of potential interactions that have to be tamed. As in many systems both organic and designed, a device that helps manage this kind of complexity is modularity – breaking the system into components and allowing those components to interact only in a stylized fashion (see, e.g. Simon 1981; Baldwin and Clark 2000: 58–9, 236–37, 257; Langlois 2002).

Property law embodies this kind of modular architecture. To begin with, the emphasis on *things* in property law allows for a modular structure: all sorts of activity is partially hidden behind the 'thing' boundary (Smith 2012). Think of the many activities that can happen on a parcel of land, protected by the owner's exclusion rights, which are of no relevance to outside actors. (And contrast the law of nuisance, which is about selected important interdependencies between activities on adjacent parcels, well known to economists through Coase (1960).) In many cases information about the history of transactions is hidden in this 'modular' fashion, although to different degrees depending on the asset. Rights in negotiable instruments can be transferred free of prior owners' claims more freely than can rights in other assets. Trust rights avail against transferees who are not good faith purchasers, and yet trust beneficiaries cannot sue trespassers directly. These structures channel interactions into certain grooves and rule out others: subsequent transactions are part of the story, but only part.

It is worth emphasizing that this more complete picture of potential complexity helps explain why property puts emphasis on things to the extent that it does. As I have argued elsewhere, legal things – objects of personal property, parcels of land, various intangibles – are the lynchpin for property's modular structure (Smith 2012). If there were no larger problem of complexity to solve, it is not clear that the possibility of subsequent transactions alone would make legal things important to property. It is entirely possible that subsequent transactions could be handled by the correct notice-giving devices and traffic rules of priority, without such a heavy emphasis on modular things. Arruñada admits as much when he says that '[w]ithout this [single-exchange] assumption, the law and economics of property could have tackled the most important issues in property markets even if it had retained a bundle-of-rights conception'. The substantive version of the bundle-of-rights theory does not account for how property manages complexity. It might be true that one could deal with the complexity of sequential transactions while leaving unaddressed all the other potential interactions, but that is not an argument for the generality of the theory of property as sequential exchange.

Nor is 'thinghood' irrelevant to Arruñada's concerns. Furnishing notice to potential transactors is easier if legal things – as distinct from physical things – are well defined. Thus, Arruñada is right that the rectangular survey was not

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just about physical line drawing. What Libecap and Lueck show is that the institution of the rectangular survey allowed for the definition of legal things – parcels – that are associated with more transactions, less litigation and greater land values (Libecap and Lueck 2011). Which aspect of legal 'thing' definition is doing the work is an open question, but 'thing' definition is no less part of the institutional framework of property than are registries. The entire institution works as a whole, and it is for this reason that isolating parts of it for empirical study has been challenging to say the least.

Thus, when Arruñada sees 'property as sequential exchange' (as his title would have it), he is both identifying an important problem and overstating its role. This has implications for the lessons he draws.

Arruñada insists that property necessarily involves public ordering. This is true, and is related to why statutes have long played a larger part in property law than in other areas of private law. But the term 'public' is ambiguous and elastic. If the single-exchange assumption leads many to overemphasize private ordering, the realization of the possibility of and need for multiple sequential transactions and other forms of interaction can lead to a too-quick assumption that private ordering does not work. Ultimately the right mix of public and private ordering is an empirical question, comparing feasible alternatives (Coase 1960: 42–4, Demsetz 1969: 1). It is, however, instructive to explore why it is easy to overestimate the case against private ordering.

On one view, property institutions evolved from possessory conventions. These conventions arose in small groups and would be tested by interactions between one or a few actors on both sides – possessors and potential challengers (see Friedman 1994; see generally Krier and Serkin 2015, Smith 2015). Think of someone with a household implement or a hut and garden facing a potential thief or intruder. The norms of possession allow for such interactions to afford stability of expectations and tamp down conflict. These small-scale norms eventually prove inadequate, especially when large-scale impersonal markets develop. Hence the need for institutions like law courts and Arruñada's registries.

The big questions are when and how these norms do and don't scale up to society as a whole (Friedman 1994). Arruñada is right that libertarians are generally optimistic that the morality and efficiency of these more local norms against force and fraud do scale up unproblematically to the level of society. They tend not to worry, for example, about the distributional implications of the initial allocation and its changes over time. By contrast, many non-libertarians see a need for constraints on transactions or some form of tax-and-transfer system in order to make overall results satisfy the requirements of justice. Likewise, in terms of efficiency, transactions may not scale up for several reasons. One is that transactions may lead to harmful effects on third parties. These include complexity externalities (Caballero and Simsek 2013; Smith 2011: 169). Another reason for the system of transactions not to scale up properly would be if the transactions interact in undesirable ways. Where a debtor must convince a lender

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that they will not take on more debt, there is a need for off-the-rack law and sometimes the kind of public ordering that Arruñada calls for. In some cases, property-like asset partitioning governs the many different clams over time that can be made on a pool of assets – a kind of 'thing' (Hansmann and Kraakman 2000). What is remarkable is not so much that such public ordering is necessary at some point but that it is not necessary for more of the time.

In sum, property law has to rule out many sorts of interdependencies in order to manage complexity successfully, and it has to cabin the important remaining interdependencies. Among these are sequential transactions, on which Arruñada provides some much needed illumination. The general problem for property institutions is to find a robust platform for managing a wide array of potential interdependencies and consequent complexity.

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