PROPERTY AS EMERGENT ORDER: EXPLANATIONS AND LIMITATIONS

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By dint of our professional training, we lawyers often suffer from 'legal centrism'; the belief that the positive law is the dominant, if not the sole, source of norms in society. The primary purpose of this article is to demonstrate that this view of social order is mistaken. By piecing together insights from the spontaneous order tradition, it is argued that many of the basic norms that allow us to peaceably deal with the fact of scarcity emerged spontaneously, without the aid of courts or legislatures. However, whilst such norms are 'indeed the result of human action, but not the execution of any human design', it remains true that they are subject to fundamental structural limitations and, in many cases, can be improved upon by the 'made order' of the positive law.

I INTRODUCTION

Hayek described the concept of 'order' as

> a state of affairs in which a multiplicity of elements of various kinds are so related to each other that we may learn from our acquaintance with some spatial or temporal part of the whole to form correct expectations concerning the rest, or at least expectations which have a good chance of proving correct.[1]

Order thus describes the existence of those abstract rules of conduct that allow for the most basic social interactions by ensuring the 'correspondence of the expectations concerning the actions of others … with what they will really do'.[2] Whilst we largely take it for granted, the existence of such order is the reason why we can walk down a busy street without colliding with other pedestrians, form orderly queues at a chemist or visit the cinema's snack bar without fear of losing our prime seat. How, then, does it arise? As Hayek observed, '[t]he first answer to which our anthropomorphic habits of thought almost inevitably lead us is that it

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1 FA Hayek, *Law, Legislation, and Liberty: A New Statement of the Liberal Principles of Justice and Political Economy* (Routledge & Kegan Paul, 1973) vol 1, 36 (emphasis omitted) ('*Law, Legislation, and Liberty*').

2 Ibid. See also at 106–7.

must be due to the design of some thinking mind'.[3] An alternative explanation is that order is not designed by an individual or committee, but arises unconsciously and spontaneously through the innumerable interactions of self-interested individuals concerned only with achieving their own ends. The key claim of the spontaneous order explanation, which is most famously captured by Adam Smith's metaphor of the invisible hand, is that 'there exist orderly structures which are the product of the action of many men but are not the result of human design'.[4] As Hayek proceeded to explain, '[a]lthough there was a time when men believed that even language and morals had been "invented" by some genius of the past, everybody recognizes now that they are the outcome of a process of evolution whose results nobody foresaw or designed'.[5]

By dint of our professional training, we lawyers tend to reject the spontaneous order account and instead incline towards the first explanation for the order that we observe in the world,[6] conceiving of different forms of social interaction against the background of categories of positive law, the constituent rules of which are the product of deliberative institutions, whether legislative or judicial.[7] Within this paradigm, interactions over scarce things are the stuff of 'property law', solemn agreements fall under 'contract law' and unbidden incursions upon our persons are the province of 'tort' and 'criminal' law.

'[T]he conviction', writes Cooter, 'that rational law cannot arise spontaneously from human interaction, but instead requires deliberation and debate'[8] is a manifestation of what Krygier has described as 'the well known tendency of technical professionals to view their subject as the centre of the world. Accountants see bottom lines, dentists teeth … men with hammers see nails, and lawyers see law'.[9] Although the law may make imperial claims over every aspect of its subjects' lives,[10] the lawyer's tendency toward 'constructivist rationalism'[11] or 'legal centrism'[12] is mistaken. As the examples noted above make clear, the law has no monopoly over norm production.[13] There are no rules of the footpath, yet

3 Ibid 36.
4 Ibid 37.
5 Ibid.
6 For a similar observation, see Robert D Cooter, 'Against Legal Centrism' (1993) 81(1) *California Law Review* 417, 417–18 <https://doi.org/10.2307/3480790>.
7 That lawyers 'incline' to this view does not, of course, mean that it is universally held. Seminal works in the law and social norms field include Robert C Ellickson, *Order Without Law: How Neighbors Settle Disputes* (Harvard University Press, 1991) ('*Order Without Law*') <https://doi.org/10.2307/j.ctvk12rdz>; Lisa Bernstein, 'Opting Out of the Legal System: Extralegal Contractual Relations in the Diamond Industry' (1992) 21(1) *Journal of Legal Studies* 115 <https://doi.org/10.1086/467902>; Eric A Posner, *Law and Social Norms* (Harvard University Press, 2000). For a helpful overview, see Robert C Ellickson, 'Law and Economics Discovers Social Norms' (1998) 27(S2) *Journal of Legal Studies* 537, 546–9 <https://doi.org/10.1086/468033>.
8 Cooter (n 6) 417.
9 Martin Krygier, 'Why the Rule of Law Is Too Important to Be Left to Lawyers' (2012) 2(2) *Prawo i Więź* 30, 31.
10 Ronald Dworkin, *Law's Empire* (Belknap Press, 1986) vii.
11 Hayek, *Law, Legislation, and Liberty* (n 1) 31.
12 Cooter (n 6) 427–8.
13 For a similar observation, see Ellickson, 'Law and Economics Discovers Social Norms' (n 7) 540.

people seldom collide with each other. There is no rule of the positive law obliging a busy chemist to direct her attention to the person at the front of the queue, yet she invariably will. The cinema patron who drapes her coat over a vacant cinema seat does not acquire an estate or usufructuary right in the seat, yet the other patrons will treat her as if she has.

Although we might describe them as 'common sense' or 'good manners', these customs are in fact property norms in the broad sense that they solve potential disputes over the distribution of a scarce and rival resource, be it a prime cinema seat, space on the shaded part of a footpath on a hot day or the undivided attention of the chemist.[14] Though each is effective in preventing costly conflict, none has the pedigree to count as a 'law' in the positivist sense,[15] and their breach does not give rise to a cause of action that one could plead in a court.[16] Nor can they be described as artefacts of conscious deliberation. Instead, each arises unconsciously and spontaneously through the countless, quotidian interactions of egoists whose only concern is to do right by themselves. In game theoretic terms, these norms are 'conventions' and, as Sugden has written:

> [T]he most important lesson to be learned from the study of conventions is that a society can be ordered without anyone ordering it. In many significant cases, the coordination of individuals' actions can be brought about by self-reinforcing expectations, which evolve spontaneously out of the repeated interaction of self-interested individuals.[17]

Whilst the fundamentally bottom-up nature of many legal norms has important implications about the proper role of the judge and social organisation more generally,[18] the more modest aim of this article is to introduce a legal audience to the explanatory power of spontaneous order. By piecing together the insights of path-breaking scholars working within this tradition, it will be shown how basic conventions of property arise in the absence of a central authority, why they come to have the status of norms and why evolutionary imperatives place fundamental limitations on the content of the workaday norms that allow us, for the most part, to

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14 Hence the analogy that is often drawn between the institution of property and the ubiquitous practice of queueing. See, eg, Kevin Gray, 'Property in a Queue' in Gregory S Alexander and Eduardo M Peñalver (eds), *Property and Community* (Oxford University Press, 2009) 165.

15 On the nature of positivism, see generally John Gardner, 'Legal Positivism: 5 ½ Myths' (2001) 46(1) *American Journal of Jurisprudence* 199, 199 <https://doi.org/10.1093/ajj/46.1.199> ('Legal Positivism'). The argument presented below is thus not concerned with the claim made by some 'progressive' property scholars that courts ought to create, or reallocate, property rights in light of the relationship between the parties to the dispute. Though controversial and highly speculative, these arguments are nevertheless avowedly positivist because the efficacy of the claimed right relies on its explicit recognition by a court. For this sort of argument, see, eg, Joseph William Singer, 'The Reliance Interest in Property' (1988) 40(3) *Stanford Law Review* 611, 659, 662–3 <https://doi.org/10.2307/1228814>.

16 Importantly, nothing in the above implies that the law is completely irrelevant in these examples. If, for instance, an interloper physically removes a patron from her cinema seat, he will be guilty of an offence against the person. The crucial point is that his conduct does not amount to a breach of her legal property rights in the seat for the simple reason that she has none. Thus, the interloper commits no legal wrong against the patron if he takes her seat whilst she is visiting the snack bar.

17 Robert Sugden, 'Conventions' in Peter Newman (ed), *The New Palgrave Dictionary of Economics and the Law* (Macmillan Reference, 1998) vol 1, 453, 460.

18 Hayek, *Law, Legislation, and Liberty* (n 1). See especially at 72, 85–7, 94–102.

peaceably avoid the ever-present potential for conflict caused by the ineradicable fact of scarcity.

Although the primary aim of this article is to demonstrate the extent to which the order that we observe in the world is 'indeed the result of human action, but not the execution of any human design',[19] it is neither a panegyric for spontaneous order nor an apology for anarchic political fantasies in which the positive law is redundant, or worse. Whilst spontaneous order demonstrates how institutions can get 'up and running' without the assistance of a central authority, there are limits to what emergent norms can achieve. The final part of the part of this article discusses both these limits and the ways in which spontaneously emergent norms can be improved by the 'made order' of the positive law.

II FROM THE TOP-DOWN AND THE BOTTOM-UP

A From Bentham to Hume, via Locke

Although 'legal centrists' are wrong to regard the law as the sole source of property norms, they are in exalted company. The patron saint of legal centrists is Bentham, who famously proclaimed that '[p]roperty and law are born together, and die together. Before laws were made there was no property; take away laws, and property ceases.'[20] In opposition to Bentham stand those who believe that the state does not create property rights, but merely recognises them. According to one prominent bottom-up view, property rights arise because the right-holder performed some morally significant act. To take the most famous example, Locke claimed that resources are removed from the universal commons of mankind and reduced to private ownership by the act of mixing one's labour with them. Locke famously argued that:

> Though the earth, and all inferior creatures, be common to all men, yet every man has a property in his own person: this nobody has any right to but himself. The labour of his body, and the work of his hands, we may say, are properly his. Whatsoever then he removes out of the state that nature hath provided, and left it in, he hath mixed his labour with, and joined to it something that is his own, and thereby makes it his property. It being by him removed from the common state nature hath placed it in, it hath by this labour something annexed to it that excludes the common right of other men. For this labour being the unquestionable property of the labourer, no man but he can have a right to what that is once joined to, at least where there is enough, and as good, left in common for others.[21]

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19 Adam Ferguson, *An Essay on the History of Civil Society*, ed Fania Oz-Salzberger (Cambridge University Press, 1995) 119.

20 Jeremy Bentham, *The Theory of Legislation*, ed CK Ogden (Routledge & Kegan Paul, 1931) 113. Rather more recently, but to the same effect, Singer has argued that '[p]roperty exists only if we have property law, and law exists only if we have government to issue regulations. One cannot be for property and against government.': Joseph William Singer, 'Original Acquisition of Property: From Conquest and Possession to Democracy and Equal Opportunity' (2011) 86(3) *Indiana Law Journal* 763, 778.

21 John Locke, *Two Treatises of Government and A Letter Concerning Toleration*, ed Ian Shapiro (Yale University Press, 2003) 111–12 [27].

Since the 'preservation of property' was 'the end of government, and that for which men enter into society',[22] property, in Locke's theory, is logically prior to government.[23] The proper role of the state in the classical liberal view is thus confined to recognising the rights created by morally significant unilateral acts that predate its creation. As Epstein explains:

> [T]he correct starting point is the Lockean position that property rights come from the bottom up. In the state of nature, all particular things are unowned. Thereafter, the first possessor acquires by a unilateral act rights that are good against the rest of the world. The state fulfils its role of protecting these property rights against encroachment by creating a 'social contract', whereby individuals are required to surrender some portion of what they own so as to provide for the greater security of that which they retain.[24]

Significantly, not all bottom-up accounts rely on morally decisive unilateral acts. An alternative to Locke's natural law explanation is the 'conventionalist' account of Hume. According to Hume, property rights emerge spontaneously because it is in the interest of individual members of a political community that they do so. Hume argued that:

> I observe, that it will be for my interest to leave another in the possession of his goods, *provided* he will act in the same manner with regard to me. He is sensible of a like interest in the regulation of his conduct. When this common sense of interest is mutually express'd, and is known to both, it produces a suitable resolution and behaviour. And this may properly enough be call'd a convention or agreement betwixt us, tho' without the interposition of a promise; since the actions of each of us have a reference to those of the other, and are perform'd upon the supposition, that something is to be perform'd on the other part. Two men, who pull the oars of a boat, do it by an agreement or convention, tho' they have never given promises to each other. Nor is the rule concerning the stability of possession the less deriv'd from human conventions, that it arises gradually, and acquires force by a slow progression, and by our repeated experience of the inconveniences of transgressing it.[25]

Consistently with what would now be called 'methodological individualism', Hume did not argue that order emerges from anarchy because the transition is in the interests of some abstract entity called 'society'. Nor did he argue that the emergence of basic property norms conferred a collective benefit on a political community in the Kaldor-Hicks sense that the winners' surplus is sufficiently large to (hypothetically) compensate the losers for their loss. Instead, he argued that the 'peace dividend'[26] made possible by the transition from the state of nature to civil

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22 Ibid 161 [138].

23 Locke remarked that '[t]he reason why men enter into society is the preservation of their property; and the end why they choose and authorize a legislative is, that there may be laws made, and rules set, as guards and fences to the properties of all the members of the society': ibid 197 [222].

24 Richard A Epstein, *Design for Liberty: Private Property, Public Administration, and the Rule of Law* (Harvard University Press, 2011) 99 <https://doi.org/10.4159/harvard.9780674063051>.

25 David Hume, *A Treatise of Human Nature*, ed LA Selby-Bigge (Clarendon Press, 2nd ed, 1978) 490 (emphasis in original).

26 Jeremy Waldron, '"To Bestow Stability upon Possession": Hume's Alternative to Locke' in James Penner and Henry E Smith (eds), *Philosophical Foundations of Property Law* (Oxford University Press, 2013) 1, 10 <https://doi.org/10.1093/acprof:oso/9780199673582.003.0001>.

society made *each* individual better off in the long term.[27] His explanation for the emergence of property rights was thus simple self-interest:

> Instead of departing from our own interest, or from that of our nearest friends, by abstaining from the possessions of others, we cannot better consult both these interests, than by such a convention; because it is by that means we maintain society, which is so necessary to their well-being and subsistence, as well as to our own.[28]

Whilst there is reason to doubt Hume's claim that the transition makes *everyone* better off,[29] the strength of his account of the origins of property is that it requires neither heroic acts of self-sacrifice nor moral magic tricks.

B Which Bottom-Up Account?

Though both the Lockean and the Humean accounts are 'bottom-up' theories of property,[30] each proceeds from fundamentally different axioms. Whereas Locke's theory is grounded in the moral force of a particular unilateral act, Hume's theory is almost entirely 'positive' in the sense that is it both amoral and alegal.[31] Which, then, is to be preferred? The argument defended below is that Hume's convention-based thesis presents the more compelling account because it avoids the two most fundamental objections to Locke's natural rights alternative.

The first of these objections concerns the general problem of 'unilateralism'.[32] As Epstein has explained,[33] all theories that rely on a unilateral act, whether first possession or first labour, suffer from the fundamental problem that they cannot explain *why* such acts should have the effect of binding others in the absence of their consent.[34] Epstein regards the problem of unilateralism as a manifestation of Hume's famous 'guillotine', according to which no valid argument can move from a factual premise to a normative conclusion.[35]

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27 Hume, *A Treatise of Human Nature* (n 25) 497.

28 Ibid 489.

29 This is because some individuals could, at least in principle, have been better off in the state of nature. For discussion, see Robert Sugden, *The Economics of Rights, Co-operation and Welfare* (Palgrave Macmillan, 2nd ed, 2005) 171 <https://doi.org/10.1057/9780230536791>.

30 See generally Waldron, 'To Bestow Stability upon Possession' (n 26).

31 On the nature of positive accounts, see David Friedman, 'A Positive Account of Property Rights' (1994) 11(2) *Social Philosophy and Policy* 1, 2 <https://doi.org/10.1017/S0265052500004404>.

32 See generally Leif Wenar, 'Original Acquisition of Private Property' (1998) 107(428) *Mind* 799, 806–7 <https://doi.org/10.1093/mind/107.428.799>; Lisa M Austin, 'Possession and the Distractions of Philosophy' in James Penner and Henry E Smith (eds), *Philosophical Foundations of Property Law* (Oxford University Press, 2013) 182, 191–2 <https://doi.org/10.1093/acprof:oso/9780199673582.003.0008>; NW Sage, 'Original Acquisition and Unilateralism: Kant, Hegel, and Corrective Justice' (2012) 25(1) *Canadian Journal of Law and Jurisprudence* 119, 121–2 <https://doi.org/10.1017/S0841820900005373>.

33 Richard A Epstein, 'Possession as the Root of Title' (1979) 13(4) *Georgia Law Review* 1221, 1228, 1240.

34 The important point is that the unilateral act does not merely change someone's factual position, but their normative position, too. See generally Allan Gibbard, 'Natural Property Rights' (1976) 10(1) *Noûs* 77, 78 <https://doi.org/10.2307/2214478>; Jeremy Waldron, *The Right to Private Property* (Clarendon Press, 1988) 175–6. As Ripstein notes, the validity of unilaterally imposed normative restraints presupposes a theory of political authority that explains why such acts are binding in the absence of the putative duty-ower's consent: Arthur Ripstein, *Force and Freedom: Kant's Legal and Political Philosophy* (Harvard University Press, 2009) 90 <https://doi.org/10.4159/9780674054516>.

35 Epstein, 'Possession as the Root of Title' (n 33) 1240.

Whilst Epstein's conclusion is correct, his diagnosis of the philosophical problem does not apply to Locke. Because Locke's argument starts with the normative claim that 'every man has property in his own person', he is not attempting to derive an 'ought' from an 'is'. To the contrary, he is attempting to derive an 'is' about rights from an 'ought' about self-ownership.[36] The real objection to Locke's argument is thus not the 'is-ought' problem, but the 'fact-value' dichotomy. To logical positivists, at least, Locke's argument is incapable of binding third parties in the absence of their consent because putative duty-owers can always trump the putative right-holder's claim by replying: 'Well, I simply don't agree'.[37] Because we are in the realm of value statements, neither party can be proved right or wrong.[38]

This is not the only flaw in Locke's argument. Even if one accepts his axiom of self-ownership, one can still attack the validity of his inference from the premise of self-ownership to the conclusion of ownership of external things.[39] It simply does not follow that a resource with which I mix my labour *therefore* becomes mine because there are other possible consequences. As Nozick observed, it could be that I lose my labour,[40] or that my entitlement is limited to the increase in the asset's value attributable to it.[41] A similar point is made by Epstein,[42] who suggests that the labourer may only have a claim for the value of the services rendered, however measured, secured by a lien over the asset to which he annexed his labour.

The virtue of Hume's alternative lies in the absence of these flaws. Because Hume's argument is not based on a value claim about self-ownership, but on the brute fact of individual self-interest, it does not founder on the fact-value distinction. Nor does it rely on a questionable analogy with the doctrine of

36 As Harris has noted, even if it is granted that nobody owns me, it does not follow that I therefore own myself: see JW Harris, *Property and Justice* (Clarendon Press, 1996) 196.

37 Hence Rousseau's famous remark that '[t]he true founder of civil society was the first man who, having enclosed a piece of land, thought of saying, "This is mine", and came across people simple enough to believe him': Jean-Jacques Rousseau, *Discourse on the Origin of Inequality*, tr Franklin Phillip, ed Patrick Coleman (Oxford University Press, 2009) 55.

38 For a utilitarian defence of self-ownership, see Richard A Epstein, 'The Utilitarian Foundations of Natural Law' (1989) 12(3) *Harvard Journal of Law and Public Policy* 713, 728. See also Friedman (n 31) 14.

39 Indeed, it may even be a fundamental category error: see Waldron, *The Right to Private Property* (n 34) 185–6.

40 Robert Nozick, *Anarchy, State, and Utopia* (Basic Books, 2013) 174–5.

41 Ibid 175. How one would value the increment attributable to labour is a difficult question, and probably explains why the law of restitution does not adopt this approach.

42 Epstein, 'Possession as the Root of Title' (n 33) 1226. Epstein's suggestion comes closest to the law's actual approach in *quantum meruit* claims, which limits the restitutionary award to the market value of the labour expended. To illustrate with Lord Scott's example, if a locksmith is asked to open a cabinet which turns out to contain fantastic quantities of treasure, the locksmith is not entitled to the treasure, or even a share of it, but only to the value of his services: see *Cobbe v Yeoman's Row Management Ltd* [2008] 1 WLR 1752, 1773 [41]. It is not, however, clear why the labourer's claim should be secured by a lien. On this issue, see generally Michael JR Crawford, 'The Case against the Equitable Lien' (2019) 42(3) *Melbourne University Law Review* 813.

accession. To the contrary, as both Gauthier[43] and Sugden have argued,[44] Hume's account is broadly 'contractarian'. Though Hume regarded the notion of a social contract as patently silly,[45] his account of property rights remains contractarian because the emergence of order from anarchy, made possible by the creation of property rights,[46] is a departure from the status quo that can be recommended to each member of a political community *individually*. Whilst the emergence of duties which 'bind strangers to [their] creation'[47] cannot be explained on the ground of the actual consent of the duty-owers, the existence of such duties is nevertheless legitimated on the ground that free and rational people *would* have consented to their creation, were they offered the choice.[48]

III COORDINATION PROBLEMS

The greatest virtue of Hume's bottom-up account of property is that it manages to explain the emergence of order-creating property norms without recourse to Bentham's extreme positivism or Locke's moral alchemy. To modern game theorists,[49] its particular brilliance lies in its informal description of emergent property norms as pure strategy equilibria in iterated coordination problems.

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43 David Gauthier, 'David Hume, Contractarian' (1979) 88(1) *Philosophical Review* 3, 10–11, 17 <https://doi.org/10.2307/2184777>.

44 Robert Sugden, *The Community of Advantage: A Behavioural Economist's Defence of the Market* (Oxford University Press, 2018) 36–7 ('*The Community of Advantage*') <https://doi.org/10.1093/oso/9780198825142.001.0001>.

45 Hume remarked that

> [w]ere you to preach, in most parts of the world, that political connexions are founded altogether on voluntary consent or a mutual promise, the magistrate would soon imprison you, as seditious, for loosening the ties of obedience; if your friends did not before shut you up as delirious, for advancing such absurdities.

David Hume, 'Of the Original Contract' in Angela Coventry and Andrew Valls (eds), *David Hume on Morals, Politics, and Society* (Yale University Press, 2018) 208, 211 <https://doi.org/10.12987/9780300240504-029>.

46 Because Hume believed that the twin facts of scarcity and man's intrinsic avarice were the chief sources of political strife, he also believed that the creation of property rights was both a necessary and a sufficient condition for emergence of civil order: see Hume, *A Treatise of Human Nature* (n 25) 491. One may raise an eyebrow at the optimism of this claim.

47 William Swadling, 'Property: General Principles' in Andrew Burrows (ed), *English Private Law* (Oxford University Press, 3rd ed, 2013) 173, 174 [4.03] <https://doi.org/10.1093/acprof:oso/9780199661770.001.0001>.

48 The idea here is something like Rawls' original position: see John Rawls, *A Theory of Justice* (Oxford University Press, rev ed, 1999) 118–19. In contrast to 'actual' or 'tacit' contractarianism, Gauthier describes these sorts of justifications as examples of 'hypothetical contractarianism': see Gauthier (n 43) 13, 15–16.

49 See, eg, Ken Binmore, *Fun and Games: A Text on Game Theory* (DC Heath, 1992) 29 ('*Fun and Games*'); Peter Vanderschraaf, 'The Informal Game Theory in Hume's Account of Convention' (1998) 14(2) *Economics and Philosophy* 215 <https://doi.org/10.1017/S0266267100003849>.

A Pure and Impure Coordination Problems

Despite the intimidating name, 'coordination problems' are a ubiquitous and, for the most part, mundane part of social and economic life. Farmers wish to agree on some common day to bring their produce to market; merchants wish to agree on a common unit of measurement; men attending a formal dinner wish to make the same choice about their attire;[50] friends who have become separated in an unfamiliar city wish to hit upon the same rendezvous point. In each case, the parties have multiple choices but must find some way of correlating their choices. To borrow Ullmann-Margarit's explanation:

> Co-ordination problems are interaction situations distinguished by their being situations of interdependent decision. That is, they are situations involving two or more persons, in which each has to choose from among several alternative actions, and in which the outcome of any person's action depends upon the action chosen by each of the others. So that the best choice for each depends upon what he expects the others to do, knowing that each of the others is trying to guess what he is likely to do.[51]

The simplest coordination problems are those in which the participants are indifferent to the choice settled upon, so long as they settle upon the same one. The archetypal example is the question of which side of the road to drive on. The structure of a 'pure' coordination problem, such as the Driving Game, is set out in in Figure 1.

		Player A	
		Left	**Right**
Player B	*Left*	*10*, **10**	*-10*, **-10**
	Right	*-10*, **-10**	*10*, **10**

Figure 1

The Driving Game is a particularly clear example of a coordination problem because, even if drivers have some preference about which side of the road they would prefer to drive on, this preference is dwarfed by their mutual desire to avoid a head on collision. However, for this very reason, the Driving Game and other pure coordination games are of limited general interest. Much more common, and thus socially significant, are interactions in which the players wish to correlate their choices, but have some definite, and inconsistent, preferences about which choice is selected. If the Driving Game is the archetypal example of a pure coordination problem, then the Intersection Game is a good example of an impure coordination problem.[52]

Two drivers who arrive simultaneously at an intersection will wish to coordinate their strategies in order to avoid a collision. Despite this overwhelming imperative,

50 Interestingly, women attending a formal event face precisely the *opposite* problem.

51 Edna Ullmann-Margalit, *The Emergence of Norms* (Clarendon Press, 1977) 78 (emphasis omitted).

52 See also Richard H McAdams, *The Expressive Powers of Law: Theories and Limits* (Harvard University Press, 2015) 76–7 <https://doi.org/10.4159/harvard.9780674735965>.

they are not indifferent about the choice either to brake or to maintain speed. Each would obviously prefer to maintain speed and for the other to brake. The structure of the Intersection Game is set out in Figure 2.

		Player A	
		Maintain Speed	**Brake**
Player B	*Maintain Speed*	*-10*, **-10**	*5*, **3**
	Brake	*3*, **5**	*0*, **0**

Figure 2

Although the Intersection Game involves a degree of antagonism, the desirable 'coordination events', represented in the northeast and southwest quadrants, are nevertheless stable. More properly, they constitute 'Nash equilibria'. The concept of a Nash equilibrium is essentially one of best reply. Although it may not represent the optimal outcome for any given player, a pair of strategies will be in Nash equilibrium if neither party can unilaterally improve upon his or her position *given* the other player's choice.[53] That the desirable coordination events are also Nash equilibria is what makes even the most impure of coordination problems substantively different from the more famous Prisoners' Dilemma, the payoffs for which are given in Figure 3.

		Player A	
		Cooperate	**Defect**
Player B	*Cooperate*	*5*, **5**	*-10*, **10**
	Defect	*10*, **-10**	*0*, **0**

Figure 3

The 'dilemma' in the Prisoners' Dilemma is that the single equilibrium solution, represented in the southeast quadrant, is not also the socially optimum solution, represented in the northwest quadrant. No matter what Player A decides to do, it is in Player B's interest to defect, and vice versa, guaranteeing a suboptimal outcome for both. In game-theoretic terms, the decision to defect is 'strictly dominant',

53 For a helpful discussion, see Douglas G Baird, Robert H Gertner and Randal C Picker, *Game Theory and the Law* (Harvard University Press, 1994) 21–3, 310. Because they correlate individual choices, Nash equilibria allow for the creation of cooperative institutions without the need to posit the philosophically difficult concept of 'collective intentionality': see Natalie Gold and Robert Sugden, 'Collective Intentions and Team Agency' (2007) 104(3) *Journal of Philosophy* 109, 109–10 <https://doi.org/10.5840/jphil2007104328>. On 'collective intentionality' see John R Searle, 'Collective Intentions and Actions' in Philip R Cohen, Jerry Morgan and Martha E Pollack (eds), *Intentions in Communication* (MIT Press, 1990) 401. On why Nash equilibria became norms, see the discussion in Part VIII, below.

meaning that the other player's choice of strategy is irrelevant to one's own choice of strategy.[54]

The pernicious logic of the Prisoners' Dilemma explains why whistleblowers are hard to find, nuclear disarmament is difficult to achieve, the peloton sometimes fails to catch the break and hostage exchanges often end with the death of the hostage.[55] Because, at least in its 'one shot' variety,[56] it is *never* rational to cooperate in a Prisoners' Dilemma,[57] the parties need the assistance of exogenous sanctions and norms that solve the dilemma by changing the payoffs.[58] This is not, however, true of coordination games. Because the defining feature of even the most impure coordination game is that no player has a dominant strategy or, in plain English, that the single-minded pursuit of each player's most favoured outcome will result in the worst outcome for both, the parties do not require the assistance of exogenous sanctions or norms to reach desirable outcomes.

The challenge posed by coordination problems is thus not how to prevent backsliding into stable yet undesirable outcomes,[59] but instead how to choose between the multiple coordination equilibria. As Ullmann-Margalit notes, 'the best choice for each depends upon what he expects the others to do, knowing that each of the others is trying to guess what he is likely to do'.[60] The challenge arises because there is nothing within the payoff structure of the game to suggest what the other player will do in circumstances. Unlike Prisoners' Dilemmas, coordination problems could be solved by prior agreements between the parties. The problem is that, in situations such as that faced by the drivers in the Intersection Game, prohibitive bargaining costs prevent prior agreements.[61]

Where bargains are impossible, what the parties need is some notorious belief about how others will behave in the circumstances. In homage to Hume, the existence of such a belief is known as a 'convention'. In economics and philosophy, a convention is not a mere regularity of behaviour, but an act done in the expectations

54 The dominance of the decision to 'defect' is why, at least in its one-shot variety, the Prisoners' Dilemma is strategically uninteresting.

55 For an enlightening account from a political economist, see Anja Shortland, *Kidnap: Inside the Ransom Business* (Oxford University Press, 2019) <https://doi.org/10.1093/oso/9780198815471.001.0001>.

56 Over the course of two computerised tournaments, Robert Axelrod famously demonstrated that cooperation can be a rational strategy in an iterated version of the Prisoners' Dilemma. See Robert M Axelrod, *The Evolution of Cooperation* (Basic Books, 1984). Importantly, the success of cooperative strategies depends upon both the time horizon of the game and the mix of other strategies with which they must interact. These caveats obviously limit the practical applicability of his conclusions. For discussion, see Binmore, *Fun and Games* (n 49) 433–4.

57 Ken Binmore, *Rational Decisions* (Princeton University Press, 2009) 27 <https://doi.org/10.1515/9781400833092>.

58 In other words, societies solve various Prisoners' Dilemmas by transforming them into other sorts of games. For a theory of norm generation in 'PD-structured' interactions, see Ullmann-Margalit (n 51) ch 2.

59 Ibid 29.

60 Ibid 78 (emphasis omitted).

61 To adopt the standard nomenclature, this makes the Intersection Game a 'noncooperative game'. For a helpful discussion of the difference between cooperative and noncooperative games, see Richard A Ippolito, *Economics for Lawyers* (Princeton University Press, 2005) 383 <https://doi.org/10.23943/9781400829224>.

that others expect it to be done. To adapt Cooter's Hartian-inspired example,[62] a man removes his hat both in a boiler room and when entering a church. However, in the former case, he merely does so because he is hot, whereas in the latter, he does so because he expects that others expect him to. As Postema explains, a convention solves a coordination problem because it '"anchors" free-floating, mutually conditional preferences or expectations to a single equilibrium'.[63]

B Is Property a Coordination Problem?

Two key points emerge from the foregoing analysis. First, even if there is a substantial conflict of interests between the parties, a problem of social interaction will call for 'coordination' rather than 'cooperation' if the single-minded attempt by each party to pursue his or her most favoured outcome will result in the worst outcome for both. Secondly, unlike in the Prisoners' Dilemma, the convention that solves a recurrent coordination problem is self-enforcing because conformity is its own reward. What, however, does any of this have to do with spontaneously emergent property rights?

Initially, one might think that the answer to this question is 'nothing'. This is particularly so if one conceives of disputes over scarce resources in purely zero-sum terms, such that there is no incentive for parties to create norms or institutions as an alternative to force. In such a world, 'the dominant exact what they can and the weak concede what they must'.[64] This view is not confined to the members of the ancient Delian League. It is tacitly conceded in Locke's famous 'proviso', according to which unilaterally created property rights are only valid if there is 'enough, and as good, left in common for others'.[65] The same sentiment is also implicit in Calabresi and Melamed's remark that, '[i]f Taney owns a cabbage patch and Marshall, who is bigger, wants a cabbage, he will get it unless the state intervenes.'[66] Whilst this might be true if Marshall were a front row forward and Taney a frail pensioner, 'might makes right' is not a principle of general application because it is seldom true that a predator has nothing to fear from his prey. Whilst people certainly differ in strength, wit and ferocity, as Hobbes famously opined:

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62 Cooter (n 6) 426. Cooter's example is plainly inspired by HLA Hart, *The Concept of Law* (Clarendon Press, 2nd ed, 1994) 55.

63 Gerald J Postema, *Legal Philosophy in the Twentieth Century: The Common Law World* (Springer, 2011) vol 11, 490.

64 Thucydides, *The Peloponnesian War*, tr Martin Hammond (Oxford University Press, 2009) 302 <https://doi.org/10.1093/oseo/instance.00266021>.

65 Locke (n 21) 111–12 [27]. Locke's jarring proviso is the subject of a large literature: see, eg, Nozick (n 40) 174–82; Waldron, *The Right to Private Property* (n 34) 209–18; Carol M Rose, '"Enough, and as Good" of What?' (1986) 81(3) *Northwestern University Law Review* 417; Michael JR Crawford, 'Justifying Possession (or How We Get from Here to There)' in Simone Degeling, Michael Crawford and Nicholas Tiverios (eds), *Justifying Private Rights* (Hart Publishing, 2020) 155, 170–2 <https://doi.org/10.5040/9781509931989.ch-008>. For a radical inversion of the proviso, which sees property rights as the basis for positive-sum transactions, see Schmidtz's fascinating argument in David Schmidtz, 'When Is Original Appropriation *Required*?' (1990) 73(4) *Monist* 504 <https://doi.org/10.5840/monist19907342>.

66 Guido Calabresi and A Douglas Melamed, 'Property Rules, Liability Rules, and Inalienability: One View of the Cathedral' (1972) 85(6) *Harvard Law Review* 1089, 1091 <https://doi.org/10.2307/1340059>.

> [Y]et when all is reckoned together, the difference between man, and man, is not so considerable, as that one man can thereupon claim to himselfe any benefit, to which another may not pretend, as well as he. For as to the strength of the body, the weakest has strength enough to kill the strongest, either by secret machination, or by confederacy with others, that are in the same danger with himselfe.[67]

The truth that even the 'weakest has strength to kill the strongest' means that 'A wins' or 'B wins' are not the only possible outcomes of a conflict over a scarce resource. It is also possible that one or both protagonists will be injured or killed, that the resource will be destroyed, or that the one or both of the protagonists will be injured or killed *and* the resource will be destroyed.[68]

The possibility of sustaining a catastrophic injury explains why basic property interactions share neither the structure of Prisoners' Dilemmas, in which the worst outcome is the 'sucker's payoff',[69] nor a zero-sum game in which the worst outcome is simply losing the disputed resource to the other player. As biologists,[70] and more recently lawyers,[71] have come to appreciate, basic property interactions are often modelled by a coordination game known as 'Hawk-Dove' or 'Chicken', named after the game of nerve in which adolescent males demonstrate their bravura by simulating a head-on car accident. To adopt the standard nomenclature, 'Hawk' describes a belligerent strategy. Someone who adopts this strategy will invariably fight for mastery of a disputed resource. 'Dove', on the other hand, is a submissive strategy. Someone who adopts this strategy may feign aggression but will defer to his opponent at the first sign of conflict. Assuming approximate equality in fighting ability, the payoffs of Hawk-Dove are set out in Figure 4.

		Player A	
		Hawk	**Dove**
Player B	*Hawk*	*-2*, **-2**	*2*, **0**
	Dove	*0*, **2**	*1*, **1**

Figure 4

As with the Intersection Game set out in Figure 2, the coordination events, represented in the northeast and southwest quadrants, are stable despite being unequal. The set of strategies, 'Hawk plays Dove' and 'Dove plays Hawk' constitute Nash equilibria because neither player can unilaterally improve on her position

67 Thomas Hobbes, *Leviathan*, ed CB Macpherson (Penguin Books, 1968) 183. For a less famous expression of the same idea, see Hart (n 62) 195.

68 And this is to say nothing of the psychological unpleasantness of the prospect of violence, even if conflict is ultimately averted.

69 Represented by the northeast and southwest quadrants of Figure 3.

70 The classic work is John Maynard Smith, *Evolution and the Theory of Games* (Cambridge University Press, 1982) <https://doi.org/10.1017/CBO9780511806292>.

71 For excellent discussions, see James E Krier, 'Evolutionary Theory and the Origin of Property Rights' (2009) 95(1) *Cornell Law Review* 139; Jeffrey Evans Stake, 'The Property "Instinct"' (2004) 359(1451) *Philosophical Transactions of the Royal Society B* 1763 <https://doi.org/10.1098/rstb.2004.1551>.

given the other party's choice. Whilst everyone would prefer to play Hawk, it will not pay for anyone to play Hawk if she believes that her opponent will too. A decision to do so will only lead to the 'Hawk plays Hawk' miscoordination event, represented in the northwest quadrant, which models a violent confrontation with the attendant possibility of serious injury, or worse. When faced with an opponent intent on playing Hawk, one's best interests are served by adopting the deferential strategy of Dove, the effect of which is to treat the other player as the de facto owner of the resource.[72]

What differentiates Hawk-Dove from the Intersection Game is not the ordinal ranking of payoffs,[73] but the sum of the payoffs represented by the more benign of the two miscoordination events. The sum of the payoffs in the southeast quadrant of Figure 2 is zero, reflecting the fact that, whilst the parties have avoided the worst possible outcome of a collision, they have also failed to solve their original problem. In contrast, the payoff in the southeast quadrant of Figure 4 is not only positive, it also sums to the same payoff as the two coordination equilibria 'Hawk plays Dove' and 'Dove plays Hawk', represented in the northeast and southwest quadrants. The 'Solomonic solution' thus appears to be the best solution because it yields the same aggregate payoff as the proper coordination equilibria, but without incurring the 'demoralization costs'[74] occasioned by that 'which is worst of all, continuall feare, and danger of violent death'.[75]

Despite its appeal, there are two problems with the Solomonic solution. First, unless the resource is readily divisible, it forces the parties into the position of co-owners. Consequently, as Rose has noted,[76] the Solomonic solution jettisons what is perhaps the greatest advantage of private property: exclusive resource management. Secondly, and more importantly, even if the resource is readily divisible and thus no longer raises the collective action problem caused by the co-ownership of undivided shares, 'Dove plays Dove' is not a Nash equilibrium because either party can, and thus will, unilaterally improve his position by switching strategy from Dove to Hawk. Consequently, whatever its virtues, 'Dove plays Dove' is not a viable convention of property.

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72 One point to note is that this outcome assumes some minimal level of abundance. As resources become scarcer, the cost of forgoing some resource will become greater. Because greater scarcity will also lead to more ferocious, and thus costly, fighting, we would expect the set of strategies 'Hawk plays Dove' and 'Dove plays Hawk' to remain in equilibrium for some time. However, as resources near exhaustion, and the cost of forgoing the resource is near certain death from starvation, the payoffs will be so altered that these 'bourgeois' strategies will cease to be equilibria: see Maynard Smith (n 70) 96; Krier (n 71) 156. Importantly, this is not a shortcoming in the model. Even the most draconian sanctions imposed by a Leviathan could not persuade a starving man not to steal.

73 In this sense, Hawk-Dove and the Intersection Game are the same game.

74 Frank I Michelman, 'Property, Utility, and Fairness: Comments on the Ethical Foundations of "Just Compensation" Law' (1967) 80(6) *Harvard Law Review* 1165, 1214 <https://doi.org/10.2307/1339276>.

75 Hobbes (n 67) 186.

76 Carol M Rose, 'Psychologies of Property (and Why Property Is Not a Hawk/Dove Game)' in James Penner and Henry E Smith (eds), *Philosophical Foundations of Property Law* (Oxford University Press, 2013) 272, 281 <https://doi.org/10.1093/acprof:oso/9780199673582.003.0012> ('Psychologies of Property').

IV HOW DO COORDINATION EQUILIBRIA ARISE?

A The Problem of Mixed Strategy Equilibria

According to the Hawk-Dove game, basic conventions of property can be understood as coordination equilibria in an iterated game. Whilst the threat of injury or death explains why egoists will defer to the property claims of others in the absence of a central authority capable of imposing sanctions, it is only a partial explanation. What it does not tell us is how the players choose between the available coordination equilibria. As with all coordination games, this problem arises because common knowledge of the payoffs does not assist protagonists who are faced with multiple coordination equilibria but no reason, endogenous to the game, for selecting one rather than another. In other words, the structure of the game is not normative because it does not guide the behaviour of the players by telling them *how* they are to coordinate their actions.

If all that each player knows of the other is his or her payoffs,[77] then no convention will emerge. The game will instead settle down into a 'mixed strategy Nash equilibrium' in which the players randomise their strategies, playing Hawk with some probability x% and Dove with some probability 1–x%.[78] On the payoffs given in Figure 4, Player A will play Hawk with probability 1/3 and Dove with probability 2/3. Since the parties' payoffs are symmetric, Player B will settle into the same equilibrium. Unlike the two 'pure strategy' equilibria of 'Hawk plays Dove' and 'Dove plays Hawk', the mixed strategy equilibrium does not amount to a 'convention' of property for the obvious reason that the parties actively avoid exhibiting any regularity of behaviour.[79] If the sole equilibrium in these purely 'symmetric'[80] interactions is mixed and not pure, then property norms cannot arise spontaneously. How, then, can we explain the unconscious emergence of those observed regularities of social life that we call 'conventions'?

B When Being Irrational Pays Off

If humans were computer programmes coded to maximise their individual payoffs within the constraints of the game, then we could not. The strict discipline of a purely formal system would trap us in the unpleasant world of randomised strategies in which we would be forced to accept that, depending on the payoffs, a certain fraction of interactions would end in the least-favoured Hawk-Hawk interaction.

Happily, however, humans are not as disciplined as computers and do not regard other 'players' as mere units in a homogenous mass. Instead, our lively

77 Each player must also assume that the other is instrumentally rational, meaning that each has a complete and transitive set of preferences.

78 For discussion, see Robert Sugden, 'Salience, Inductive Reasoning and the Emergence of Conventions' (2011) 79(1–2) *Journal of Economic Behavior and Organization* 35, 38–9 <https://doi.org/10.1016/j.jebo.2011.01.026> ('Salience').

79 A point also noted in Richard H McAdams, 'A Focal Point Theory of Expressive Law' (2000) 86(8) *Virginia Law Review* 1649, 1695 <https://doi.org/10.2307/1073827>.

80 On which, see Maynard Smith (n 70) 22.

imaginations lead us to notice things 'outside' the formal structure of the game that, according to classical game theory, should be irrelevant to our choice of strategy. Eventually, our attention falls on some feature of the interaction that allows us to distinguish any pairwise combination of players in any round of the game.[81]

To illustrate the point with the Intersection Game, drivers might notice that one car approaches from the left, whilst the other approaches from the right, that one approaches from a large road and the other from a small road, and so on. Amongst players capable of remembering previous encounters and reasoning inductively, recognition of these distinguishing 'asymmetries' shatters the homogeneity of the formal game and allows for the emergence of new pure strategy equilibria. So, in addition to the mixed strategy equilibrium of 'maintain speed with probability x% and yield with probability 1–x%', the pure strategy equilibria 'maintain speed if on the right and yield if on the left', and vice versa, become viable. Once a critical mass of people come to believe that, for instance, drivers approaching from the right routinely maintain speed, the resulting 'bandwagoning' effect will drive out both the competing pure strategy equilibrium of 'maintain speed if on the left, yield if on the right' *and* the mixed strategy equilibrium. The pure strategy equilibrium that remains after this process is complete is a 'convention' in the relevant sense.[82]

Two, rather surprising, things should be noted about the asymmetries on which such conventions are based. First, the behavioural asymmetry that people fancy they observed need not have existed. Indeed, it may have been a falsehood. All that matters is that some threshold of the population *believes* it to be true. Once the belief has spread throughout the population, the resulting asymmetry in behaviour becomes a self-fulfilling prophecy. Secondly, the asymmetry can be completely arbitrary in the sense that it does not confer any strategic advantage on the favoured party. In other words, the asymmetry need not change the parties' payoffs.[83] A striking example is provided by Hargreaves Heap and Varoufakis, who demonstrated that, in an iterated Hawk-Dove game, simply labelling the players as either 'reds' or 'blues' is sufficient to create a convention of property that turns on the asymmetry of colour.[84] Because the players were labelled at random, there was no reason to believe that members of one colour group were stronger, more bellicose or valued the resource more than members of the other group. Nevertheless, answers to questions of ownership came to depend on the fluke of which colour one was assigned at the beginning of the experiment. How can this be? The answer is given by Hargreaves Heap and Varoufakis, who explain that fixing on the asymmetry of colour

> [i]s a simple psychological response to uncertainty. Indeed there is much evidence to support the idea that people look for 'extraneous' reasons to 'explain' what are in fact purely random types of behaviour. Of course, once they do so, an initial, random difference in the behaviour of the 'reds' and the 'blues' gets a bandwagon

81 Sugden, 'Salience' (n 78) 38.

82 For a helpful discussion of this process, see Sugden, *The Economics of Rights, Co-operation and Welfare* (n 29) 44–5; McAdams, 'Focal Point Theory of Expressive Law' (n 79) 1693–6.

83 Maynard Smith (n 70) 96.

84 Shaun P Hargreaves Heap and Yanis Varoufakis, *Game Theory: A Critical Text* (Routledge, 2nd ed, 2004) 232–4 <https://doi.org/10.4324/9780203489291>.

> rolling, leading to stable discrimination that succeeds in minimising costly conflict despite being non-rational … So *ex post*, it will seem to make sense as each player does take the best action given that chosen by the other, even though there is no reason *ex ante* for this selection of actions.[85]

Although psychologists and behavioural economics delight in exploding the myth of human rationality,[86] coordination games are an instance when our tendency to mistake noise for signal is a feature and not a bug. As Friedman has noted, we succeed in creating conventions 'because of, not in spite of, the bounded rationality of the players'.[87]

V WHICH CONVENTION?

A An Embarrassment of Riches

Amongst populations of *people*, as opposed to computer programmes, conventions emerge because people recognise, or fancy they recognise, some distinguishing feature, or 'asymmetry', on which they can condition their behaviour. The resulting regularity of behaviour makes the hitherto mixed strategy equilibrium unstable, leaving a convention in the sense described above. Whilst this solves one riddle, it raises another: which asymmetry?

Asymmetry selection is a riddle because there is an embarrassment of potential asymmetries from which to choose. This can be illustrated, once again, with the Intersection Game. Drivers who arrive simultaneously at an intersection might notice that one arrives from the left and the other from the right. However, they might also notice that one arrives from a minor road whereas the other arrives from a major road; that one is driving a blue car and the other a yellow car; that one is driving a hatchback and the other an SUV, and so on. Whilst we might expect the parties to notice the *same* asymmetry 'sooner or later', the problem is that, as Sugden notes, '"sooner or later" may be an astronomically long time'.[88]

B The Power of 'Salience'

The answer to this apparent gap in the game-theoretic account of spontaneous order is, rather surprisingly, not to be found in logic but psychology. As the pioneering work of Schelling has demonstrated,[89] there are some asymmetries that, for inscrutable reasons of human psychology, are 'salient' to those facing the same coordination problem. This is strikingly demonstrated by his famous

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85 Ibid 233–4 (citations omitted).

86 See, eg, Daniel Kahneman, *Thinking, Fast and Slow* (Penguin Books, 2011); Richard H Thaler and Cass R Sunstein, *Nudge: Improving Decisions about Health, Wealth, and Happiness* (Yale University Press, 2008).

87 Friedman (n 31) 5.

88 Sugden, 'Salience' (n 78) 39. See also Robert Sugden, 'The Evolutionary Turn in Game Theory' (2001) 8(1) *Journal of Economic Methodology* 113, 126–7 <https://doi.org/10.1080/13501780010023289>.

89 Schelling's classic work in this field is Thomas C Schelling, *The Strategy of Conflict* (Harvard University Press, 1960).

rendezvous experiment.[90] Schelling asked the respondents to imagine that they were to meet with someone in New York City but had made no prior arrangements and had no means of communication. All that each respondent knew was that their nominal partner had been given the same instructions. The respondents were asked to select a meeting place and time. Given the number of potential meeting places in New York, this was a coordination problem with, in effect, an infinite number of coordination equilibria. Consequently, the problem should have been insoluble. Remarkably, however, an absolute majority of respondents selected the information booth at Grand Central Station as the rendezvous point and virtually all chose midday as the meeting time.

Plainly, this result cannot be explained away as a mere fluke. For purely psychological reasons, Grand Central Station at midday was 'salient' or 'focal' to the respondents.[91] To those of a particularly rigorous caste of mind, invoking the mysterious psychological notion of salience as a solution to the multiple equilibria problem is as unsatisfactory as the inclusion of a 'wild card' rule in an otherwise rigorously formal card game. Nevertheless, though we may not be able to explain *why* particular asymmetries are salient, the simple truth is that some are. Whilst people do not always succeed in solving coordination problems, the lesson of Schelling's experiments is undeniably that 'the chances of their doing so are ever so much greater than the bare logic of abstract random probabilities would ever suggest'.[92]

VI WHAT IS AND WHAT CANNOT BE

A The Evolutionary Imperative

The argument made thus far has demonstrated how nothing more than the mundane interactions of self-interested individuals can give rise to the conventions of property on which so much of our basic social order depends. If this is all that game theory and the study of conventions contributed to our understanding of basic norms, then that would be a remarkable achievement. However, the study of spontaneous order does more. It also helps to explain why some basic property norms are ubiquitous and others are conspicuously absent.

One of Hume's crucial insights was that 'the rule concerning the stability of possession … arises gradually, and acquires force by a slow progression, and by our repeated experience of the inconveniences of transgressing it'.[93] In modern jargon, he understood the significance of 'iteration'. This is important for the following reason: if we replace random genetic mutations with learning and viable

90 Ibid 55–6.

91 One possible explanation for the salience of the rendezvous point is that the respondents were students at Yale University in New Haven, Connecticut, and trains between New Haven and New York City arrived at, and departed from, Grand Central station. This, of course, cannot account for the salience of the meeting time.

92 Schelling (n 89) 57.

93 Hume, *A Treatise of Human Nature* (n 25) 490.

offspring with payoffs as the measure of 'fitness',[94] then it becomes clear that conventions are evolutionary phenomena. Proto-conventions compete, to borrow Sugden's metaphor, 'like … seedlings in a crowded plot of ground'[95] to establish themselves as *the* convention that resolves some recurrent coordination problem. They are, in Dawkinian terms, a sort of 'meme' that exists in the minds of the relevant population,[96] and the conventions that successfully replicate themselves and spread throughout a population are those that deliver the highest average payoff to the people confronted with the recurrent coordination problem that they purport to solve. Conversely, conventions that frequently lead to the least favoured miscoordination events are left to wither and die in the ruthless memetic struggle for survival.

B Four Constraints: Simplicity, Scalability, Thoroughness and Cheat-Resistance

This 'fitness' imperative imposes (at least) four strictures on basic property conventions. The first is what might be called the 'simplicity' imperative. As noted above, the asymmetry on which a successful convention turns can be completely arbitrary in the sense that it does not alter the players' payoffs. However, because it must reliably inform any given player of which strategy she should adopt in any given interaction, not any asymmetry will do. If the relevant asymmetry is difficult to apply and thus regularly causes confusion about who is to play 'Hawk' and who 'Dove', then the resulting miscoordination events will rapidly kill off the convention.

Sugden neatly illustrates the point by positing a hypothetical convention that turns on the asymmetry of beauty.[97] Because the convention solves a coordination problem, the players will not ask themselves what sort of features they *personally* find beautiful, but will instead attempt to determine what sort of features the *other* players are likely to find attractive, in the knowledge that the other players are asking themselves the same question. Consequently, as Sugden argues,[98] what we are likely to witness is the emergence of a convention for interpreting the original convention. Unlike the original convention, this sub-convention will turn on some asymmetry that is simple to apply. In time, the 'beauty' convention will become a convention that turns on, for instance, relative height. Whilst height is a crude and (potentially) culturally specific proxy for beauty,[99] it has the virtue that it is simple to apply and thus results in few costly miscoordination events.

A second restriction relates to the 'scalability' of the convention. As societies move from small bands to what Hayek called the 'Great Society',[100] the basic norms

94 McAdams, 'Focal Point Theory of Expressive Law' (n 79) 1690.
95 Sugden, *The Economics of Rights, Co-operation and Welfare* (n 29) 45.
96 Richard Dawkins, *The Selfish Gene: 40th Anniversary Edition* (Oxford University Press, 2016) ch 11.
97 Sugden, *The Economics of Rights, Co-operation and Welfare* (n 29) 104–5.
98 Ibid 105.
99 At least as it applies to females. The author is not aware of any society in which it is undesirable to be a tall male.
100 Hayek, *Law, Legislation, and Liberty* (n 1) 47.

that determine who own what must be capable of applying to, at least prototypically, groups ranging from two people to *n* people without becoming impracticable.

A third restriction, and one that is related to the problem of scaling, is what might be called the requirement of 'thoroughness'.[101] Recall that in the Intersection Game there were numerous asymmetries capable of distinguishing parties to a pairwise interaction. In addition to 'maintain speed if on the right and yield if on the left', and vice versa, another potential convention could be 'drivers in hatchbacks yield to drivers in SUVs', or vice versa. Whilst such a convention satisfies the 'simplicity imperative', its obvious flaw is that it cannot solve the coordination problem faced by two SUV drivers, or two hatchback drivers. A solution to their problem could be found in a further convention, such as 'drivers in red hatchbacks/SUVs must yield to drivers in blue hatchbacks/SUVs'. However, whilst this convention solves one problem, it creates another, *viz* that caused by hatchbacks/SUVs with identical paint schemes, for which we will need yet *another* convention. Because the need to memorise and apply multiple conventions is epistemically demanding, their use in oft-repeated coordination problems will, *ceteris paribus*, lead to mistakes that will in turn cause costly miscoordination events. In iterated play, we would thus expect to see multiple conventions replaced by a single convention that is 'thorough' in the sense that it applies to *any* pairwise combination of drivers. Proof of this is that the Intersection Game problem is in fact solved by a 'thorough' convention, because the convention 'give way to the left/right' applies to any conceivable pairwise combination of drivers arriving simultaneously at an intersection.

Finally, a convention must be relatively resistant to cheating,[102] for the following reason. If the relevant convention assigns Player A the role of Hawk, or de facto owner, and Player B the role of Dove, or de facto non-owner, then people will wish to be assigned the role of Player A all the time. If relevant convention assigns the role of Player A in accordance with some characteristic that can be easily faked, then we should expect mass fraud, the consequence of which is that every player will play Hawk in every round of the game. Because every interaction will result in the least-favoured Hawk-Hawk miscoordination event, the cheat-prone convention will be rapidly destroyed.

The problem of cheating is neatly illustrated by the beauty example given above. Recall that a convention that originally turned on relative beauty would rapidly become a convention that turned on, for instance, height. Height is a plausible convention of property because it is easy to apply and hard to fake. A five-foot nine-inch man wearing three-inch Cuban heeled boots is still appreciably shorter than a six-foot man in bare feet. By contrast, a convention that turned on hair colour would fail because people whose hair colour assigned them the role of Dove would immediately make an appointment with their preferred hair colourists, resulting in a population comprised of entirely (blonde) Hawks.[103]

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101 So far as I am aware, this point is not discussed in the existing literature.

102 For discussion, see Sugden, *The Economics of Rights, Co-operation and Welfare* (n 29) 103–4.

103 One is at this point reminded of the merry-go-round in the Dr Seuss story *The Sneetches*.

C What Is…

The evolutionary strictures discussed above are not of merely general intellectual interest, they also do much to explain the ubiquity of certain property norms. Take, for instance, the concept of possession. The care-worn cliché that 'possession is nine points of the law' is an exaggeration, but only just. In the positive law, the fact of possession is the principal 'root of title'[104] or means of creating original property rights in tangible things.[105] The question of who has taken possession, and when, is crucial to the resolution of disputes over the adverse possession of valuable land,[106] lost and abandoned goods,[107] and anything else that is *res nullius*, from wild animals[108] to horse dung.[109] Indeed, respect for possession as a source of property rights is so strong in the law that proof of prior possession even enables a thief to recover stolen goods from police whose statutory powers of seizure have expired.[110] In the realm of custom, first possession decides who gets the prime spot in a carpark or on the beach, or the best seats at the cinema or on the train.[111] Whilst the possession convention has been criticised as a morally unappealing way of

104 Frederick Pollock and Robert Samuel Wright, *An Essay on Possession in the Common Law* (Clarendon Press, 1888) 22.

105 The leading authority at common law is *Armory v Delamirie* (1722) 1 Str 505; 93 ER 664 ('*Armory*'). For classic discussions, see Epstein, 'Possession as the Root of Title' (n 33); Carol M Rose, 'Possession as the Origin of Property' (1985) 52(1) *University of Chicago Law Review* 73 <https://doi.org/10.2307/1599571> ('Origin of Property'). On the distinction between dependent and independent acquisition, see Ben McFarlane, *The Structure of Property Law* (Hart Publishing, 2008) 154–6.

106 In a successful claim of adverse possession, the adverse possessor prevails over the owner because statute bars both the owner's claim and extinguishes her title: see, eg, *Limitation Act 1969* (NSW) ss 27(2), 65(1).

107 See generally Robin Hickey, *Property and the Law of Finders* (Hart Publishing, 2010); Michael JR Crawford, *An Expressive Theory of Possession* (Hart Publishing, 2020) ch 6 <https://doi.org/10.5040/9781509929955> ('*Expressive Theory of Possession*').

108 See (inevitably) *Pierson v Post*, 3 Cai R 175 (NY Sup Ct, 1805). For proof that the rules are of more than merely historical interest, see *Borwick Development Solutions Ltd v Clear Water Fisheries Ltd* [2020] EWCA Civ 578.

109 *Haslem v Lockwood*, 37 Conn 500 (1871).

110 See, eg, *Costello v Chief Constable of Derbyshire Constabulary* [2001] EWCA Civ 381 ('*Costello*'). Whilst the outcome in *Costello* may appear morally unappealing, it nevertheless follows from a straightforward application of the principle of relative title: see the comments of Lightman J at [31]. For discussion, see Robin Hickey, 'Possession Taken by Theft and the Original Acquisition of Personal Property Rights' in Nicholas Hopkins (ed), *Modern Studies in Property Law* (Hart Publishing, 2013) vol 7, 401 <http://dx.doi.org/10.5040/9781474200837.ch-018>; Crawford, *Expressive Theory of Possession* (n 107) 174–85; Luke Rostill, *Possession, Relative Title, and Ownership in English Law* (Oxford University Press, 2021) 106–7 <https://doi.org/10.1093/oso/9780198843108.001.0001>.

111 Amongst property theorists, a cherished case study concerns an informal parking norm in wintertime Chicago, according to which a person who clears snow from a kerbside car spot and marks it with lawn furniture is entitled to its exclusive use until the snow thaws: see (amongst others) Richard A Epstein, 'The Allocation of the Commons: Parking on Public Roads' (2002) 31(S2) *Journal of Legal Studies* S515, S528–33 <https://doi.org/10.1086/342023>; Rose, 'Origin of Property' (n 105) 81; Robert C Ellickson, 'The Inevitable Trend toward Universally Recognizable Signals of Property Claims: An Essay for Carol Rose' (2011) 19(4) *William and Mary Bill of Rights Journal* 1015, 1025–6 ('The Inevitable Trend'). Interestingly, the same norm does not apply to kerbside car spots in wintertime New York. Heller and Salzman report that an attempt to claim a kerbside carpark by marking it with lawn furniture will result in the loss of both the space and the furniture!: Michael Heller and James Salzman, *Mine! How the Hidden Rules of Ownership Control Our Lives* (Doubleday, 2021) 45.

creating rights to scarce resources,[112] it remains ubiquitous, if not all-pervasive, in both the law and life. What explains this?

Though many eminent jurists have attempted to explain why the unilateral act of possession should generate non-consensual duties, almost all have failed.[113] What derailed these writers was a version of what Hayek described as the trap of 'constructivist rationalism';[114] the failure to appreciate that possession is not an artefact of positive law created by a designing mind, but instead of the unconscious forces exerted by the evolutionary imperatives discussed above.[115] Because the possession convention turns on an observable physical connection between a person and an object of property, it is cheat-proof and relatively simple to apply.[116] Moreover, because it is a particular instantiation of the more general norm of 'first in, best dressed' and thus depends on the outcome of a race,[117] it is both 'thorough' and infinitely scalable. To borrow Epstein's pithy summation:

> The first possession rule represents an ingenious, if intuitive, recognition that time provides the best one dimensional ruler for making the needed mapping. Time offers a unique measuring rod, sufficient in principle to resolve two or two thousand competing claims for priority. Whoever got there first, wins. Except in the improbable case of ties, an enormous decision-making capability is contained in a single variable. Getting a lot of results out of a little bit of information surely enhances the overall efficiency of the system.[118]

Whilst, in the abstract, we might conceive of a more ethically appealing way of assigning rights to scarce resources, Epstein is correct to conclude that, '[a]s an institutional matter … it is difficult in the extreme to conceive of any other system'.[119]

D … And What Cannot Be

Smith has remarked that a good theory of property must be 'as attentive to how things are *not* as to how things are'.[120] If it seems that the basic structure of some system could have been different, but in fact never is, '*that* is a fact worth

112 See, eg, Singer, 'Original Acquisition of Property' (n 20) 763.

113 On the famous debate between the German jurists, see James Gordley and Ugo Mattei, 'Protecting Possession' (1996) 44(2) *American Journal of Comparative Law* 293, 293–300 <https://doi.org/10.2307/840711>.

114 Hayek, *Law, Legislation, and Liberty* (n 1) 31–4.

115 For a fuller discussion, see Crawford, *Expressive Theory of Possession* (n 107) 86–93.

116 Sugden, *The Economics of Rights, Co-operation and Welfare* (n 29) 105. Although legal scholars make much of the disagreement in famous cases such as *Pierson v Post*, the reality is that most applications of the possession rule are so uncontroversial that they pass unnoticed. For the same observation, see Thomas W Merrill, 'Possession as a Natural Right' (2015) 9(2) *New York University Journal of Law and Liberty* 345, 358.

117 See also Thomas W Merrill, 'Accession and Original Ownership' (2009) 1(2) *Journal of Legal Analysis* 459, 463 <https://doi.org/10.1093/jla/1.2.459>.

118 Richard A Epstein, 'Past and Future: The Temporal Dimension in the Law of Property' (1986) 64(3) *Washington University Law Quarterly* 667, 670.

119 Epstein, 'Possession as the Root of Title' (n 33) 1242.

120 Henry E Smith, 'Property as the Law of Things' (2012) 125(7) *Harvard Law Review* 1691, 1692 (emphasis in original).

explaining'.[121] Consistently with Smith's remarks, the virtue of the spontaneous order explanation is not only its power to account for the presence of the conventions that we do see, but to explain the absence of those that we do not. As noted above, the possession norm is ubiquitous but, at least according to some, morally unattractive.[122] If this is true, why do we not see more ethically attractive alternatives to the possession rule as a means of determining who gets what? Why, for instance, does the chemist continue to serve the customer at the head of the queue, instead of the customer who is most 'deserving'?

The answer is that such a convention fails precisely because it lacks all the evolutionary desirable attributes of a 'first come, first served' norm. Whilst a convention based on relative desert may be 'thorough' in the sense described above, it is not scalable, is subject to cheating and would run afoul of the simplicity imperative. This last point is not to deny that there are cases in which, contrary to the view of logical positivists,[123] we can make interpersonal comparison of utility between the disputants. It is instead to point out that the multitude of borderline cases would render such a convention unworkable in practice.[124] As with the hypothetical beauty convention, a convention based on relative 'need' or 'desert' would rapidly be replaced by one that turned on an asymmetry that is a crude approximation of the original but is simple to apply.

One of the great insights of evolutionary game theory is that apparently arbitrary asymmetries can give rise to pure coordination equilibria in iterated play. However, whilst asymmetries need not change the players' payoffs in order to create the set of self-reinforcing expectations known as a 'convention', the imperatives discussed above demonstrate that not any asymmetry will do. The spontaneous order account or property is thus an example of what Sowell has called the 'constrained vision'[125] because it not only explains what *is*, but also what *cannot* be. Whilst, in the abstract, it would be desirable to distribute resources based on one party's superior desert, it is only in extreme settings, such as a hospital emergency ward,[126] that the benefits of departing from the norm of 'first come, first served' justifies the costs.[127]

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121 Ibid 1699 (emphasis in original).

122 For the opposite view, see David Schmidtz, *Elements of Justice* (Cambridge University Press, 2006) 155–6 <https://doi.org/10.1017/CBO9780511817519>.

123 This argument is that such comparisons are inherently normative, and not positive, because they depend upon the unproveable assertion that people have an equal capacity for satisfaction. See especially Lionel Robbins, 'Interpersonal Comparisons of Utility: A Comment' (1938) 48(192) *Economic Journal* 635 <https://doi.org/10.2307/2225051>.

124 For the same observation, see Sugden, *The Economics of Rights, Co-operation and Welfare* (n 29) 104.

125 Thomas Sowell, *A Conflict of Visions: Ideological Origins of Political Struggles* (Basic Books, rev ed, 2007) 11–15.

126 Even then, note that the initial triage stage *does* operate on a queuing principle.

127 One might note other exceptions to the 'first come, first served' principle. So, for instance, a sovereign may distribute property, usually land, to his or her loyal followers after a successful military campaign. A good example is William's redistribution of land in the British Isles following the successful Norman Conquest of 1066, on which, see generally Robert Tombs, *The English and Their History* (Allen Lane, 2014) 47–60. This is not, however, relevant to the discussion above, which is not concerned with Crown grants, or any other form of dependent acquisition.

VII ARE CONVENTIONS NORMATIVE?

A Conventions and Norms

In a nutshell, the account offered thus far has explained the spontaneous emergence of property norms as a rational response to the fear of violent conflict. Whilst this would be sufficient if we were content to limit our analysis to baboons, butterflies or, indeed, computer programmes,[128] it seems inadequate when applied to real people. What is missing is the 'ought' quality of norms, or something like what Hart called the 'internal aspect'[129] of rules.

This line of argument was recently pursued by Rose, who criticises the Hawk-Dove model of property on the grounds that it fails to explain why rational people respect property norms when the owner is unable to retaliate against the non-owner. She writes that

> the core attribute of property is precisely that the non-owner respects the owner's claim even when it is not defended. There is no question but that for some non-owners, rational fear is the only impediment to larceny. But that is not what makes a property regime work. By and large, in a functioning property regime, most non-owners are not larcenists, and they do not like larcenists. That set of sensibilities is what makes property regimes function: you do not have to guard your things all the time, because the 'world' of non-owners respects your ownership.[130]

Rose's point is essentially that Hawk-Dove, and other game-theoretic accounts, cannot account for the widely held view that theft is not only illegal, but 'wrong'. This critique becomes particularly powerful when one recalls that the evolutionary imperatives that shape conventions make their content morally arbitrary. Why should someone feel that he or she *ought* to follow a convention of property, particularly if it entrenches an unequal status quo that disproportionately favours others relative to him or herself?[131]

B Explaining the Normativity of Conventions

The answer, once again, can be found in Hume. Having explained the emergence of property conventions as a response to people's self-interested desire to avoid social collapse, Hume's next task was to explain why, in his words, '*we annex the idea of virtue to justice, and of vice to injustice*'.[132] Why, in other words, do we discuss convention-breaching conduct in opprobrious terms even when it does not directly affect us?

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128 For a discussion of the 'bourgeois strategy' amongst animals, see Maynard Smith (n 70) 97–9.

129 Hart (n 62) 56.

130 Rose, 'Psychologies of Property' (n 76) 283 (emphasis omitted).

131 It is for this reason that Ullmann-Margalit discusses norms of private property under the rubric of 'norms of partiality', the purpose of which are to buttress some social inequality: see Ullmann-Margalit (n 51) 173. As should be apparent from the foregoing, I follow Sugden in implicitly rejecting the notion that impure coordination equilibria, such as those that arise in contests over scarce resources, are different in kind than any other sort of coordination convention: see Sugden, *The Economics of Rights, Co-operation and Welfare* (n 29) 172.

132 Hume, *A Treatise of Human Nature* (n 25) 498 (emphasis in original).

In very small societies, the answer is relatively simple because, as Hume explained, people can appreciate from first-hand experience that their 'selfishness and confin'd generosity … totally incapacitate them for society'.[133] In other words, people can observe the socially corrosive consequences of subversive behaviour. This explanation neatly mirrors Ellickson's explanation of the emergence of efficient endogenous norms in 'close-knit' groups whose members 'have credible and reciprocal prospects for the application of power against one another and a good supply of information on past and present internal events'.[134]

However, consistent with Ellickson's limitation of his efficiency thesis to small groups, we would not expect the same mechanism to apply in large, anonymous societies. As Hume commented, '[b]ut when society has become numerous, and has encreas'd to a tribe or nation, this interest is more remote; nor do men so readily perceive, that disorder and confusion follow upon every breach of these rules, as in a more narrow and contracted society'.[135]

Hume explained the normativity of emergent conventions by positing the existence of a hardwired psychological trait called 'sympathy' that enables one to stand in another's shoes.[136] As Hume explained it:

> [W]hen the injustice is so distant from us, as no way to affect our interest, it still displeases us; because we consider it as prejudicial to human society, and pernicious to every one that approaches the person guilty of it. We partake of their uneasiness by *sympathy*; and as every thing, which gives uneasiness in human actions, upon the general survey, is call'd Vice, and whatever produces satisfaction, in the same manner, is denominated Virtue; this is the reason why the sense of moral good and evil follows upon justice and injustice. … *Thus self-interest is the original motive to the* establishment *of justice: but a* sympathy *with public interest is the source of the* moral approbation, *which attends that virtue*.[137]

Hume's concept of sympathy thus describes a psychological propensity to condemn behaviour which undermines the conventions that make us better off *individually*, and not merely in aggregate. As Hume goes on to suggest, the moral approbation that we attach to conformity, and the moral opprobrium that we attached to contravention, further buttresses the coordination equilibrium underlying the convention.[138]

C The Morality of Reciprocity

Though he regards Hume's concept of sympathy as psychologically implausible,[139] Sugden offers a neo-Humean explanation of the normativity of morally arbitrary conventions. On his account, the *ought* quality of conventions

133 Ibid 498–9.

134 Ellickson, *Order Without Law* (n 7) 181.

135 Hume, *A Treatise of Human Nature* (n 25) 499.

136 In other words, this is what we would now more properly call 'empathy'. For a helpful discussion, see JL Mackie, *Hume's Moral Theory* (Routledge & Kegan Paul, 1980) 120–1.

137 Hume, *A Treatise of Human Nature* (n 25) 499–500 (emphasis in original).

138 In particular, Hume notes the way in which convention-flouting behaviour damages one's reputation: see ibid 501. See also Sugden, *The Community of Advantage* (n 44) 37.

139 See, eg, Sugden, *The Economics of Rights, Co-operation and Welfare* (n 29) 175.

arises because conventions create legitimate expectations about how, absent communication or agreement, people are to behave. He writes that:

> Suppose that almost everyone in the community follows [some convention] *R*. Then if I play a game against you, it is reasonable for me to expect that you will play *R*. For me to play *R* is for me to act in a way that I can reasonably expect to be in your interests … Equally, for you to play *R* is for you to act in a way that you can reasonably expect to be in my interests. Then if I play *R* but you do not, I have acted in the way best calculated to accommodate you, but you have failed to reciprocate. The moral intuition behind the principle of co-operation is that in such a case I have a legitimate complaint against you.[140]

I follow a convention only because I expect that everyone else does too. Thus, if someone fails to behave in the manner prescribed by the convention, I am not inclined to explain her behaviour as a mistake, but more discreditably as a failure on her part to do her bit. The normativity of successful conventions thus has nothing to do with their content, and everything to do with their internal logic. As Sugden explains, '[h]aving become a norm, a convention becomes a standard of fairness; but … it does not become a norm because it is seen to be fair'.[141]

What Sugden calls the 'principle of co-operation'[142] is thus best understood as the *morality of reciprocity*, and closely follows Hume's view that 'justice' establishes itself only on the basis that '*every single act is perform'd in expectation that others are to perform the like*. … 'tis only upon the supposition, that others are to imitate my example, that I can be induc'd to embrace that virtue'.[143]

The morality of reciprocity is, of course, purely instrumental and would not convince deontologists that one *ought* to follow a particular convention or Marxists that Robin Hood's efforts at income redistribution were morally wrong. However, neither of these critiques is relevant here. The point is not to show that contraventions of conventions of property *ought* to attract moral approbation, but instead merely to explain why they in fact do.[144] The morality of reciprocity explains, *contra* Rose, why spontaneously emergent norms continue to guide behaviour in settled societies in which non-owners do not, for the most part, live in fear of violent reprisals for acts of trespass.

VIII IMPROVING ON CONVETIONS WITH LAW

As Waldron notes,[145] the appeal of a theory of property often depends less on its internal coherence and more on the degree to which it conforms to the reader's ideological priors. So, for instance, conceiving of property as a coordination problem that is solved, not by the state, but by emergent conventions, is very appealing

140 Ibid 177.
141 Ibid 163 (emphasis omitted).
142 Ibid 177.
143 Hume, *A Treatise of Human Nature* (n 25) 498 (emphasis added).
144 See also Sugden, *The Economics of Rights, Co-operation and Welfare* (n 29) 179. The force of Sugden's argument cannot be honestly denied by anyone who has ever been the victim of, or even witnessed, a particularly brazen act of queue cutting.
145 Waldron, 'To Bestow Stability upon Possession' (n 26) 2.

to libertarians. On the other hand, the belief that all antagonistic interactions are manifestations of the Prisoners' Dilemma is attractive to those with an ideological preference in favour of interventionist legal policy.[146]

The argument thus far has been sympathetic to the former view, and not without reason. It is true that, as Ellickson concluded of his famous study of Shasta County cattlemen, 'some spheres of life seem to lie entirely beyond the shadow of the law'.[147] However, 'some' is not 'all'. Even when recurrent coordination problems could, in principle, be solved without assistance from a central authority, there are many reasons why the solution reached may be improved by legal intervention. Several of these are discussed below.

A The Existence of Theft

According to the spontaneous order account, the basic problem of scarcity at the heart of all systems of property is best modelled as a coordination problem. Because '[t]he nature of a co-ordination problem … is such that the parties involved in it either win or lose together',[148] the convention that solves it should be self-enforcing.

If it were possible to rouse Bentham from his slumber at University College London, he would gleefully point to the existence of locks and burglar alarms as proof of both the folly of this claim and the truth of his rival thesis that property cannot exist in the absence of positive law. The reality of theft is not, however, the devasting critique that it first appears to be. Whilst it is undeniable that some people steal some of the time, it is equally true that most people do not steal most of the time. To reprise Rose's remarks, '[b]y and large, in a functioning property regime, most non-owners are not larcenists, and they do not like larcenists'.[149]

According to the game-theoretic view, the important fact about larcenists is that they do not regard themselves as players in a coordination game. This point is not normative but positive. As Binmore reminds us,[150] payoff rankings are constructed using the law of revealed preference. They do not tell people what they *ought* to do, but merely reflect what they *actually* do.[151] A decision to steal thus reveals that the thief does not fear a Hawk-Hawk confrontation. This might be because, for instance, he is a strapping youth, whilst his victim is a frail octogenarian. Because the former does not fear the latter's reprisals, fighting becomes his dominant strategy.[152]

If the youth could be made to appreciate that he is a player in a repeated game with numerous opponents, some of whom will be bigger and more vicious than he, he might be persuaded that his decision to steal is not in his long-term best

146 Richard H McAdams, 'Beyond the Prisoners' Dilemma: Coordination, Game Theory, and Law' (2009) 82(2) *Southern California Law Review* 209, 212.
147 Ellickson, *Order Without Law* (n 7) 283.
148 Ullmann-Margalit (n 51) 84.
149 Rose, 'Psychologies of Property' (n 76) 283.
150 Binmore, *Rational Decisions* (n 57) 27–8.
151 Binmore describes the common failure to appreciate this point as the 'Causal Utility Fallacy': see ibid 19.
152 See also McAdams, 'Focal Point Theory of Expressive Law' (n 79) 1689.

interests. However, for so long as he 'yield[s] to the sollicitations of [his] passions, which always plead in favour of what is near and contiguous'[153] and prizes the present over the future, then some external form of sanction is required so that the expected short-term benefits of his actions are less than the expected costs. For outliers such as our strapping youth, the creation of the desired equilibrium in which people refrain from interfering with the property of others requires the sanctions of the criminal law.

B Inefficient Conventions

A second reason why the law may wish to change an established convention concerns efficiency. Whilst the conventions that solve coordination problems are always desirable in so far as they guide the players away from costly miscoordination events, there is no guarantee that they will be efficient. Take the coordination problem represented in Figure 5.

		Player A	
		Maintain Speed	**Brake**
Player B	*Maintain Speed*	*-10*, **-20**	*10*, **3**
	Brake	*1*, **5**	*-5*, **0**

Figure 5

The difference between this version of the Intersection Game and that depicted in Figure 2 is that the payoffs are no longer symmetrical. In Figure 2, the pure coordination equilibria, represented in the northeast and southwest quadrants, were equally desirable as they both yielded the same aggregate payoff. However, in this non-symmetric version, the equilibrium depicted in the northeast quadrant yields a higher aggregate payoff than that in the southwest quadrant. Despite this, the set of strategies 'maintain speed if Player A and brake if Player B', represented in the southwest quadrant, is a Nash equilibrium because any unilateral change of strategy by Player B, given Player A's choice to maintain speed, will lead to the devastating miscoordination event, represented in the northwest quadrant. Though the outcome is inefficient, the parties are stuck.

This problem can be illustrated with a simple example. Imagine that a society solves the Intersection Game with a convention according to which drivers on the left must give way to drivers on the right. Imagine further that a large freight loading depot has recently been built at the western end of an east-west road which, at its eastern end, leads to the main interstate highway. The east-west road thus sees a lot of heavy truck traffic. In contrast, the north-south road is largely used by small passenger vehicles. Though a hatchback would plainly come off second

153 Hume, *A Treatise of Human Nature* (n 25) 535. In modern terms, our thief has failed to delay gratification or has steeply discounted the future in favour of the present.

best in a collision,[154] a truck approaching the intersection from the west would still yield to a small hatchback approaching from the south.[155] Given the premium that a truck driver is likely to put on his or her time, and the differing costs in fuel and wear-and-tear caused by yielding, this is almost certainly an inefficient outcome. In the Coasean world of zero-bargaining costs,[156] this would be of no concern. Even though a move from the southwest to the northeast quadrant of Figure 5 would make Player A, the hatchback driver, worse off, the gains to Player B, the truck driver, are sufficiently large that the latter can use some of the surplus to 'bribe' the former, such that each is made better off by the departure from the convention. The 'cooperative' solution is thus, *ex hypothesi*, also the Pareto efficient solution. However, in our world of costly bargains, it does not pay for a truck driver to stop his or her truck and open negotiations with the driver of the hatchback. Consequently, the parties find themselves stuck with an inefficient convention.

How can the law help here? The answer is that, to use McAdams' nomenclature,[157] the law can use its 'expressive' power to create a new coordination equilibrium; in this case that represented by the set of strategies in the northeast quadrant of Figure 5. The law's ability to do this is neatly illustrated by a real example of the Driving Game, set out in Figure 1. Prior to 1967, Sweden was alone amongst its European neighbours in following the 'British' rule of driving on the left. Though well entrenched, the rule was undesirable both because it caused frequent accidents in Sweden's border regions and because most Swedes drove left-hand-drive cars, making the execution of right-hand turns particularly dangerous. For these reasons, Sweden decided to change the law.[158] At 5am on 3 September 1967, known as 'Dagen H' [H Day], it became the law to drive on the right-hand side of the road. Though the change was made with much trepidation, and in the teeth of a strong preference for the status quo, it was a resounding success.

The fascinating thing about Sweden's daring experiment in changing conventions is not *that* it worked, but *why* it worked. Although the change in the law was accompanied by sanctions for those who continued to drive on what was now the *wrong* side of the road, the law did not change the applicable convention by changing the parties' payoffs. Because the deterrent effect of a fine is trivial when compared to the prospect of a head-on collision, the creation of a new coordination equilibrium could not depend on sanctions, but instead on making it common knowledge, in the game-theoretic sense,[159] that Swedish drivers now drive

154 As reflected by the unequal payoffs in northwest quadrant of Figure 5.

155 This general point is strikingly demonstrated by the fact that, at least in some countries, cars yield to pedestrians at designated pedestrian crossings, despite the fact that a pedestrian has far more to lose in a car-pedestrian collision.

156 Ronald H Coase, 'The Problem of Social Cost' (1960) 3 *Journal of Law and Economics* 1 <https://doi.org/10.1086/466560>.

157 McAdams, 'Focal Point Theory of Expressive Law' (n 79) 1650–3.

158 For an entertaining 'insider's account', see Maddy Savage, 'A "Thrilling" Mission to Get the Swedish to Change Overnight', *BBC Worklife* (online, 18 April 2018) <https://www.bbc.com/worklife/article/20180417-a-thrilling-mission-to-get-the-swedish-to-change-overnight>.

159 For a useful discussion, see Michael Suk-Young Chwe, *Rational Ritual: Culture, Coordination, and Common Knowledge* (Princeton University Press, 2013) 13–16 <https://doi.org/10.23943/princeton/9780691158280.001.0001>.

on the right. The law thus made the new coordination equilibrium 'drive on the right' viable because of a notorious belief that Swedish drivers obey the law. The success of Dagen H thus demonstrates that, in a population that routinely follows the law of the land, law's 'expressive' power alone can create new conventions.[160]

C Morally Repugnant Conventions

As McAdams has noted,[161] when antagonistic social interactions are characterised by the pernicious logic of the Prisoners' Dilemma, legal interventions that move the parties from the undesirable equilibrium, represented in the southeast quadrant in Figure 3, to the jointly maximal but unstable outcome, represented in the northwest quadrant, are an uncontroversial good. Such a move not only satisfies Pareto's creation of efficiency; it also benefits both parties equally. By contrast, in all but pure coordination problems, the benefits of coordination are divided unequally.

The fact of unequal outcomes is not, of itself, a damning indictment of any given convention. As discussed above, no convention of equal division could survive because the Solomonic solution is not a Nash equilibrium in an impure coordination problem. In any case, where the interaction is repeated, we should only be concerned if some person, or group, is consistently forced to play Dove in a world of Hawks. And even then, most economists would favour correcting any distributional or 'equity'[162] concerns through the transfer payment system.[163]

However, if the convention consistently discriminated against some group of people based on some innate characteristic, such as sex or race,[164] which they are powerless to change, then a society would have a non-distributive justification for changing the convention.[165] Because the only consequence of an individual act of defiance by a member of the disfavoured group is to guarantee the rebel the worst possible Hawk-Hawk payoff, there are only two ways to change such a convention. The first is by mass defiance and the second is through law. Because the first solution invites an intractable collective action problem, the convention is best changed by legal intervention. As discussed above, in law-abiding countries, the expressive

160 This, of course, highlights both the power and the limitations of law's expressive power. Dagen H was such a success because the Swedes are a famously conscientious and law-abiding people. In societies in which respect for the law is low, changes in the law will not create new conventions because no one expects anyone else to follow the law. Consequently, people will ignore the law and continue to behave as before. That a new law is backed by sanctions is unlikely to alter this outcome. This is because, as noted above, where the prospect of a miscoordination event dwarfs the prospect of a sanction, the threat of punishment will not change the existing coordination equilibrium. For discussion of other limitations, see McAdams, *The Expressive Powers of Law* (n 52) 62.

161 McAdams, 'Beyond the Prisoners' Dilemma' (n 146) 212–13.

162 This is 'equity' in the economist's sense, and not 'equity' in the lawyer's sense.

163 See, eg, Louis Kaplow and Steven Shavell, 'Why the Legal System Is Less Efficient than the Income Tax in Redistributing Income' (1994) 23(2) *Journal of Legal Studies* 667 <https://doi.org/10.1086/467941>.

164 Both of which are plausible, if ugly, conventions of property. For discussion, see McAdams, 'Beyond the Prisoners' Dilemma' (n 146) 247; Crawford, 'Justifying Possession (or How We Get from Here to There)' (n 65) 173–4.

165 That is, the convention is not merely an affront to their wallets, but also to their dignity and standing in the community.

power of law alone is sufficient to make another pure strategy equilibrium salient. Where this is not possible, the blunt instrument of legal sanctions can be used, as with theft, to change the parties' payoffs so that the existing convention ceases to be in equilibrium.

D Creating Sophisticated Systems

The final reason to invoke the 'made order' of the positive law concerns the hard limits that the evolutionary strictures, discussed in Part VII, place on the ability of simple conventions to mature into sophisticated legal orders.[166]

The possession norm furnishes an excellent example. As discussed above, the fact of possession has the effect of creating original property rights in the object possessed.[167] Although possession may not be the most morally attractive mechanism for deciding who gets what, it succeeds as an allocative mechanism because it is simple, scalable, cheat proof and thorough. Importantly, however, whilst these attributes are essential in allowing order to emerge from anarchy,[168] they become limitations once the system has got 'up and running'.[169] This is because, in well-ordered societies, an owner's plans for his or her property usually extend beyond the mere possession of it. If I own a car, I may wish to lend it to a friend, use it as collateral to secure a loan or declare a trust over it on behalf of a family member. The simplest of bailments, secured transactions and trusts belie Pollock's statement that, 'for the very reason that possession in fact is the visible exercise of ownership, the fact of possession, … [unless] otherwise explained, tends to show that the possessor is owner'.[170] To the contrary, these unremarkable dealings with property make possession an unreliable proxy for ownership in all but the most primitive of social systems.[171]

Because, as Austin has observed,[172] the possession convention instructs people to 'treat the possessor as owner', the separation of possession from ownership can readily blind third parties to the existence of other rights in the asset. This is

166 For discussion of this point, see Crawford, *Expressive Theory of Possession* (n 107) 191–8.

167 The other legally significant events are mixing and natural increase. For discussion, see McFarlane (n 105) 161–4; Crawford, *Expressive Theory of Possession* (n 107) 20–2. On the significance of accession, see Merrill, 'Accession and Original Ownership' (n 117); Yael R Lifshitz, 'Rethinking Original Ownership' (2016) 66(4) *University of Toronto Law Journal* 513 <https://doi.org/10.3138/UTLJ.3406>.

168 Hume, *A Treatise of Human Nature* (n 25) 503–4. See also Epstein, 'The Utilitarian Foundations of Natural Law' (n 38) 730–7.

169 For a similar observation that adopts Kahneman's famous distinction between 'System 1' and 'System 2' thinking, see James E Krier and Christopher Serkin, 'The Possession Heuristic' in Yun-chien Chang (ed), *Law and Economics of Possession* (Cambridge University Press, 2015) 149, 168–72 <https://doi.org/10.1017/CBO9781316017814.007>. On System 1 versus System 2 thinking, see Kahneman (n 86) 20–4.

170 Pollock and Wright (n 104) 25. The assumption that a possessor is the owner is also fundamental to von Jhering's famous theory of possession. For an overview, see Crawford, *Expressive Theory of Possession* (n 107) 88.

171 See also Eric A Posner, 'Law, Economics, and Inefficient Norms' (1996) 144(5) *University of Pennsylvania Law Review* 1697, 1716 <https://doi.org/10.2307/3312637>.

172 Austin (n 32) 189.

known as the problem of 'ostensible ownership',[173] examples of which include the purchaser of a car who discovers that her vendor was merely a gratuitous bailee who had borrowed it for the weekend,[174] a lender who discovers that she lent money on the strength of what turned out to be a second (or third) ranking mortgage or a trade supplier who discovers that the purchaser to whom he sold goods on credit is a corporate trustee with little capital and no beneficial interest in the assets it purports to control.[175]

Whilst prospective purchasers and lenders can minimise these dangers by asking questions of their vendors and debtors, information is not free. As with transaction costs, information costs are a source of friction and thus have the potential to stymie otherwise welfare-increasing transactions. A great contribution of the positive law has been to reduce these costs by steadily replacing possession with registration as the source of what Ellickson calls 'title assurance information'.[176] To be sure, this solution works imperfectly for low value assets that are frequently traded,[177] or even high value assets that are easily modified so that the asset no longer resembles its description in the register.[178] However, for assets that are valuable, seldom traded and difficult to alter, registers have largely replaced possession as the source of information about ownership. No one, for instance, would purchase a house from someone whose only claim to ownership was the possession of a set of door keys. Likewise, few would buy a second-hand car without consulting the Personal Property Securities Register to determine whether it is subject to an outstanding security right. In order to minimise the information costs imposed on third parties by sophisticated dealings with property, the 'grown order' of possession has, in many cases, given way to the 'made order' of registers as the primary source of information about who owns what.

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173 On which, see generally Richard A Epstein, 'Inducement of Breach of Contract as a Problem of Ostensible Ownership' (1987) 16(1) *Journal of Legal Studies* 1, 10–11 <https://doi.org/10.1086/467822>; Douglas G Baird and Thomas H Jackson, 'Possession and Ownership: An Examination of the Scope of Article 9' (1983) 35(2) *Stanford Law Review* 175, 179–81 <https://doi.org/10.2307/1228662>.

174 This explains why modern registration regimes require the registration of many bailments, even though they may not secure the payment of a debt: see, eg, *Personal Property Securities Act 2009* (Cth) ss 12(3)(c), 13(1).

175 Consequently, those assets are not available for distribution in the trustee's bankruptcy: see *Bankruptcy Act 1966* (Cth) s 116(2)(a). The potential for trusts, which separate ownership from control, to create problems of ostensible ownership is also noted in Aruna Nair and Irit Samet, 'What Can "Equity's Darling" Tell Us about Equity?' in Dennis Klimchuk, Irit Samet and Henry E Smith (eds), *Philosophical Foundations of the Law of Equity* (Oxford University Press, 2020) 264, 284–5 <https://doi.org/10.1093/oso/9780198817659.003.0014>. On the particular problem caused by 'trading trusts', see, eg, Nuncio D'Angelo, 'The Trust as a Surrogate Company: The Challenge of Insolvency' (2014) 8(3) *Journal of Equity* 299, 301, 307–8, 313–14; Crawford, 'The Case Against the Equitable Lien' (n 42) 823–4.

176 Ellickson, 'The Inevitable Trend' (n 111) 1027.

177 See generally Steven Shavell, *Foundations of Economic Analysis of Law* (Belknap Press, 2009) 49–50 <https://doi.org/10.4159/9780674043497>.

178 Abraham Bell and Gideon Parchomovsky, 'Of Property and Information' (2016) 116(1) *Columbia Law Review* 237, 244. Diamonds are a good example of such an asset. Because they can be recut beyond recognition, they are a poor candidate for a system of registration, despite being extremely valuable.

Indeed, the positive law does much more than this. In addition to creating efficient systems for disseminating information about rights, it also abstracts rights in ways that could never be achieved spontaneously.[179] Take the following, familiar, examples. The doctrine of estates allows a freehold interest in land to be divided along a temporal dimension between a leaseholder or life tenant in possession and the holder of a fee simple in reversion or remainder.[180] Equitable assignments of choses in action created an entirely new class of commercial assets by allowing a promisee to sell all, or even part, of a contractual promise.[181] Subject to the rule against perpetuities, the law of trusts allows almost any right to be divided in practically limitless ways between an effectively infinite number of beneficiaries or objects.[182] In conjunction with sophisticated recording systems, security rights allow assets, whose value hitherto lay exclusively in their use, to be transformed into the capital necessary for development.[183] Intellectual property law has solved the intractable incentive problem caused by the non-rival nature of certain goods by creating entirely new categories of property in artistic works and novel processes.[184]

One could go on, but the point is clear. Although purely emergent forms of property are sufficient to govern the simplest of interactions with respect to external

179 See also Krier (n 71) 156.

180 To borrow Pollock and Maitland's famous phrase, property rights in land are 'projected upon the plane of time': Frederick Pollock and Frederic William Maitland, *The History of English Law before the Time of Edward I: Volume 2* (Liberty Fund, 2nd ed, 2010) § 1, 11. On the development of the doctrines of estates in land, see generally John Baker, *An Introduction to English Legal History* (Oxford University Press, 5th ed, 2019) 294–6 <https://doi.org/10.1093/oso/9780198812609.001.0001>. Although the owner of a chattel may create a bailment, the common law does not recognise estates in goods: see Swadling (n 47) 207–8 [4.130]. Note also that the leasehold and the fee simple absolute in possession are the only estates now recognised in English law. All other interests, including life estates, take effect as equitable interests only: see *Law of Property Act 1925* (UK) ss 1, 3.

181 Sarah Worthington, *Equity* (Oxford University Press, 2nd ed, 2006) 58–67 <https://doi.org/10.1093/he/9780199290505.001.0001>.

182 Hence Maitland's famous description of the trust as, 'the greatest and most distinctive achievement performed by Englishmen in the field of jurisprudence': Frederic William Maitland, 'The Unincorporate Body' in HAL Fisher (ed), *The Collected Papers of Frederic William Maitland* (Cambridge University Press, 1911) vol 3, 271, 272.

183 De Soto argues that modern systems of property tap the 'potential energy in assets': Hernando de Soto, *The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else* (Basic Books, 2003) 44. He writes that, '[w]hile houses in advanced nations are acting as shelters and workplaces, their representations are leading a parallel life, carrying out a variety of additional functions to secure the interests of other parties': at 51. See also the discussion at 62–4.

184 Pollock CB remarked that copyright 'is altogether an artificial right, not naturally and necessarily arising out of the social rules that ought to prevail among mankind assembled in communities, but is a creature of the municipal law of each country … and has no existence by the Common Law of England': *Jeffreys v Boosey* (1854) 4 HLC 815; 10 ER 681, 729. Some may dispute this characterisation, pointing to the historical recognition of so-called 'common law copyright' in cases such as *Millar v Taylor* (1769) 4 Burr 2303; 98 ER 201, and to the natural law justifications for intellectual property. For a helpful historical overview, see William Cornish, David Llewelyn and Tanya Aplin, *Intellectual Property: Patents, Copyright, Trade Marks and Allied Rights* (Sweet & Maxwell, 9th ed, 2019) [10-01]–[10-03]. For a helpful overview of the natural law theories, see Lionel Bently and Brad Sherman, *Intellectual Property Law* (Oxford University Press, 3rd ed, 2009) 35–6.

things, they are fundamentally constrained by the imperatives discussed in Part VII. Whilst the 'synthetic' rights and systems discussed above are comparatively expensive to both create and administer, their existence, as Krier notes,[185] is explained on the Demsetzian basis that,[186] as congestion increases and resources become more valuable, the benefits yielded by such rights eventually exceed their costs.

IX CONCLUSION

Although less influential, Waldron argues that Hume's 'conventional' alternative to Locke's natural rights thesis is the 'more respectable … foundational account for property professors to include in their textbooks'.[187] Waldron's reason for preferring Hume to Locke is that, in contrast to what he regards as the 'libertarian fantasies'[188] of Locke's just-so story, Hume's theory did not shy away from the 'conflict and depredation at the origins of property'.[189] If the account offered above is correct, then Waldon's conclusion is true, but not for the reasons he mentions. For present purposes, Hume's significance lies in the fact that his great *Treatise* is the progenitor of an intellectual tradition that demonstrates how and why order can emerge without positive law. If '[t]he curious task of economics is to demonstrate to men how little they really know about what they imagine they can design',[190] then the curious task of the spontaneous order tradition is to demonstrate to legal centrists how little of the basic order that they observe in the world is attributable to the made order of the positive law.

However, in rejecting one error we should not invite another. It would indeed be a 'libertarian fantasy' to argue that the law either does not, or should not, play any role in shaping the workaday norms that guide us through daily life. Purely emergent norms suffer from fundamental limitations and, as Hume was perfectly aware,[191] our 'bounded rationality' makes the existence of some central authority essential. Whilst the norms that provide for basic social order may have emerged without the assistance of courts or legislatures, they are often, if perhaps not always,[192] improved by them.

185 Krier (n 71) 159.
186 Harold Demsetz, 'Toward a Theory of Property Rights' (1967) 57(2) *American Economic Review* 347.
187 Waldron, 'To Bestow Stability upon Possession' (n 26) 12.
188 Ibid.
189 Ibid.
190 FA Hayek, *The Fatal Conceit: The Errors of Socialism* (Routledge, 2013) 76 <https://doi.org/10.4324/9780203734001>.
191 Hume, *A Treatise of Human Nature* (n 25) 537–9.
192 On the dangers of divergence between spontaneous and made orders, see, eg, Hayek, *Law, Legislation, and Liberty* (n 1) 112–15. Hayek was principally concerned with maintaining rules of general conduct which, unlike legislation, eschew the pursuit of particular purposes or ends. This theme is taken up in volume 2, 'The Mirage of Social Justice': see especially FA Hayek, *Law, Legislation and Liberty: A New Statement on the Liberal Principles of Justice and Political Economy* (Routledge & Kegan Paul, 1976) vol 2, 1–5.