

# Varieties of Emergence: Minds, Markets and Novelty

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*Mind, Society, and Human Action* is a multi-faceted work, which offers interesting and insightful reflections on many aspects of economics. The book contains extended discussions of substantive issues in economic theory, such as property rights, Austrian business cycle theory, and the political economy of public policy. However, notwithstanding such examples, much of the discussion is pitched at a rather higher level of abstraction, focusing less on substantive theory and more on the assumptions about the nature of the social world that inform attempts to theorise about socio-economic affairs. In other words, much of the book can be thought of as an exercise in social ontology; that is, as an attempt to set out (the nature of) the basic constituents or building blocks of the social world. The insights thereby obtained are then used by Wagner to offer guidance about the analytical tools that are most likely to yield fruitful substantive theories. In adopting this approach, as Wagner explicitly acknowledges, *Mind, Society, and Human Action* can be thought of as the latest in a series of works that attempt to reorient methodological discussion in economics away from its traditional concentration on epistemic issues towards an emphasis on using explicit reflection on the ontology of the social world to inform and guide more substantive modes of economic analysis (see, for example, Lawson 1997, 2003; Lewis [ed.] 2004; Dopfer and Potts 2008) (pp. 16-18).<sup>1</sup>

*Mind, Society, and Human Action* contains extended discussions of a number of important aspects of the ontology of the social world, including – to name but a few – (the nature of) human action, entrepreneurship, uncertainty, capital, competition, the market, and the relationship between the polity and the economy. One particular feature of social reality to which Wagner devotes significant attention is ‘emergence.’ Indeed, he states explicitly that his goal in writing the book is to set out a research programme in ‘emergent dynamics’ (p. x). Yet despite the centrality of emergence to his arguments, Wagner does not define the concept in a clear, explicit and systematic way. In particular,

references to the large philosophical literature on emergence and emergent properties are conspicuous by their absence from the text. Such lacunae sometimes leave the reader feeling uncertain about precisely what Wagner intends when he uses the term. That uncertainty is especially acute because there are occasions when Wagner appears either to conflate ‘emergence’ with other phenomena from which it is analytically distinct (mostly notably ‘spontaneous orders’) or to run together analytical perspectives that actually presuppose rather different accounts of emergence (as when he elides the distinction between his own preferred approach to political economy, which – as we shall see – implies a ‘strong’ version of emergence according to which emergent properties can react back on and shape the individual parts from whose interaction they arise, and various game-theoretic and agent-based models of self-organising systems, which presuppose weaker versions of emergence that deny the possibility of such downward causation). Given such confusions, and given also the centrality of the notion of emergence to Wagner’s enterprise, it is worth distinguishing clearly and explicitly between the various senses in which he uses the term. Having done so, it will then be possible to draw out the implications of some of the positions on emergence to which he is – more or less explicitly – committed.

The structure of the paper is as follows. Section 2 draws on the literature in philosophy and social theory to provide an explicit account of the nature of emergence and emergent properties. The following sections build on that foundation by making explicit the various ways in which the notions of emergence and emergent properties feature in Wagner’s work, most notably in his analysis of the market as a spontaneous order (Section 3) and in his account of the human mind (Section 4). Section 3 also elaborates on the differences between ‘emergence’ and ‘spontaneous order’, while Section 4 discusses the relationship between ‘emergence’, ‘novelty’, and ‘(radical) uncertainty’. Section 5 brings together the accounts offered in the previous two sections by considering the relationship between human agency and social structure implied by Wagner’s approach, in particular by using the notion of downward causation to analyse how the human mind is shaped by the social structures that govern the way in which people interact with one other. Section 6 concludes with reflections about the significance of Wagner’s use of the notions of emergence and emergent properties for the relationship between his preferred approach to economic analysis and the approaches adopted by other prominent schools of economic thought, most notably the Austrian school of economics, (old) Institutionalism, and evolutionary economics.

## Emergence

The term *emergence* denotes the phenomenon whereby, when certain elements or parts stand in particular relations to one another, the whole that is formed has properties that none of its individual components possess on their own. *Emergent properties* are structural or *relational* in the sense that their existence depends on the constituent parts standing in specific relations to one another, so that they form a particular structure. The properties of the structured whole, or emergent entity, that is formed when the parts are connected in the requisite way are ontologically distinct from, and irreducible to, the properties of the constituent parts in the sense that they are not possessed by any of those parts taken in isolation (Stephen 1992: 27; Elder-Vass 2007a: 28).

The paradigm of emergence is provided by water, many of whose properties – such as being liquid at room temperature, possessing the capacity to extinguish fires, and having the ability to slake a person's thirst – are quite different from those of the individual atoms of which water is composed. The emergent properties just mentioned obtain only when a collection of hydrogen and oxygen atoms is organised into the specific form of water molecules. Water, then, is an emergent entity, whilst many - though not, of course, all - of its properties are emergent properties.

The notion of emergence suggests that reality is stratified in the sense that it consists of a hierarchy of ontologically distinct 'layers' or 'levels' of emergent entities, such as the physical (including both the sub-atomic and atomic), the chemical (including the molecular), the biological (embracing both molecular and cellular phenomena), and – as we shall see below - the individual (mental or psychological) and the social. Entities situated at each of those levels are ontologically distinct from, and irreducible to, their lower-level constituent parts just because they have their own distinctive properties. For example, the emergent property of 'liquidity' is possessed only by a particular 'higher-level' entity, namely water molecules, and not by the 'lower-level' atoms of which water molecules are composed. The existence of entities in the higher strata always depends upon their constituent and lower-level components – if hydrogen and oxygen atoms did not exist, then neither would water - but at the higher levels there are emergent properties that arise only as a result of the relations that obtain between lower-level entities and which – as we have seen – are ontologically irreducible to the properties of those lower-level entities taken in isolation (Lawson 1997: 63-64, 175-77; Sayer 1992: 118-19, 2010).

Emergent properties stand in stark contrast to so-called *resultant* or *aggregate* properties. The latter are the properties of wholes that *are* also possessed by the individual elements of which those wholes are comprised. The paradigm of a resultant property is 'mass'. The mass of a water molecule is

simply the sum of the masses of its constituent atoms. Resultant properties are possessed by the individual elements irrespective of how they are related to one another, obtaining both when those elements are taken in isolation and also when the elements take the form of an unstructured aggregate or 'heap'. In contrast, the existence of an emergent property requires that certain elements are connected in particular ways, thereby forming a distinctive structure or whole. It is in virtue of the existence of such emergent properties that an emergent entity is said to be more than the mere sum or aggregation of its constituent parts. The fact that water has both emergent and aggregate properties indicates, of course, that emergent entities typically possess both kinds of property.

Significantly for what follows, the emergent properties possessed by higher-level entities may include causal powers. The causal powers of an entity are its capacities to behave in particular ways and thereby generate certain kinds of changes in the course of events taking place in the world. For instance, water possesses the emergent causal power to extinguish fires and to slake a person's thirst. A second example would be the capacity of a society where production is organised under an elaborate division of labour to produce higher levels of output than one where households attempt to be self-sufficient (Sayer 1992: 104-16; Lewis 2000). In keeping with all emergent properties, an emergent entity's causal powers arise because of its structure and, more specifically, because it constitutes a causal mechanism the interaction between whose parts, when suitably arranged, produces certain kinds of effect. Mechanisms are able to generate such effects because of the way in which their component parts are connected and relate to one another (that is, in virtue of their structure). For example, it is in virtue of the structured interaction between its parts that a motor car has the power to carry people at a certain speed, while it is in virtue of the structured interactions between its inhabitants that an economy with an advanced division of labour has the capacity to produce more output than one where production is less specialized (Lawson 1997: 21-23).<sup>2</sup>

The fact that the existence of emergent properties depends not only on the presence of particular elements but also on their standing in certain relations to one another implies that emergent entities cannot be entirely eliminated from causal explanations that involve the exercise of their causal powers. That is to say, the ontological irreducibility of emergent properties also underwrites their epistemic or explanatory irreducibility. To be sure, it may be possible to explain how the properties or causal powers of an emergent entity like water result from the properties of its parts and the interaction that takes place between them when they are arranged the specified way (i.e. one can identify and illuminate the working of the causal mechanism responsible for the existence of the emergent property). However, this is not the same thing as an

*eliminative reduction* in which the properties of the emergent entity itself can be explained away and, therefore, entirely eliminated from causal explanations involving the emergent causal powers of that entity.

To see why, suppose that we have an explanatory reduction that enables us to give an account of the existence of an emergent property in terms of (i) the constituent parts of some emergent entity H, plus (ii) the relations that obtain between those parts when they are organised into the form of an H. In that case, while we can give an account of how the property arises as a result of the causal interaction between the parts when they are an H, we have done no more than explain that emergent property in terms of a *configuration* – the parts *and* their relations – that exists *only* when the emergent entity H exists, so we can eliminate neither that entity nor its emergent properties from our causal explanations. Given that the emergent property depends upon the existence of a particular set of relations between the parts of an entity like H, and given also that an emergent entity like H consists of nothing more - and nothing less - than its parts and their organisation, then any causal explanation that depends upon *both* the properties of the parts and *also* upon the way in which they are typically related when they form an H is in effect an explanation in terms of that emergent entity H. If the parts in question were not organised to form an H, then the causal influence that depends upon the parts being arranged in that particular way would not obtain, simply because H's parts would not have the causal power were they not configured as an H. The causal power is a *sui generis* property of the H, not of the individual parts taken either in isolation or as an unstructured aggregate. In addition to being ontologically irreducible, therefore, emergent causal properties – and the higher-level entities that bear them – are epistemically or explanatorily irreducible in the sense that they cannot be excised or eliminated from causal accounts that depend on the exercise of those powers.

For example, while we can explain the liquidity of water in terms of its atomic constituents and the relations (chemical bonds) obtaining between them when they assume the form of water molecules, the property of liquidity obtains only when the emergent entity, water, is present. The causal power to extinguish fires and to slake one's thirst is a property of water, not of the individual atoms of which it is composed. It follows, therefore, that causal explanations of how fires can be extinguished or thirst quenched have to make reference, if only implicitly, to that emergent entity, because it is only when hydrogen and oxygen atoms are arranged into the form of water that the relevant causal power is present (Sayer 1992: 118-19). As Elder-Vass has put it: 'Although emergent properties (and thus the causal powers of entities, whether natural or social) can be explained, *they cannot be explained away*. They exist only when the relevant type of whole exists, hence they are causal powers of this

type of whole and not of its parts ... [H]igher-level properties [can] be explained scientifically, but [this] does not allow them to be replaced with the properties of the parts in causal explanations because it is only when the parts are organised into this particular type of higher-level [emergent] entity that the causal power exists' (2007b: 415; emphasis added; also see Sayer 1992: 2010; Elder-Vass 2007a: 30-3; Hodgson 2007: 211, 217-22).<sup>3</sup>

### **Emergence in Wagner's Account of the Market**

To see that Wagner invokes both ontological and also epistemic/explanatory emergence, consider his accounts of the coordinative powers of the market economy and of the human mind.

Wagner (pp. 13-16, 27-28, 31-32) adopts what, following Potts (2000), he describes as a 'network-based' approach to economic analysis whereby people are portrayed, not as isolated atoms, but as social beings whose (inter)actions are structured by various social institutions, perhaps most notably – in the case of economic life - the legal system. Those institutions are conceptualised as rule-governed networks of relations between various roles or positions.<sup>4</sup> For example, the market economy is thought of as the network of relations between various positions – such as buyers and sellers, creditors and debtors, and lenders and borrowers – that arise when people's interactions are structured by the abstract rules of property, contract and liability law (p. 4). Those legal rules define those positions and set out the rights and obligations that are incumbent upon their occupants (e.g. legally binding employment contracts specify both what employers will pay their employees and also the hours and kind of work that employees must provide in return). In this way, the rules of the legal system govern in broad terms how people must relate to one another in a market system (pp. 27-28, 35, 47). If the process of market competition that takes place when people seek to trade with each other is structured by such rules, then an array of relative prices is generated that indicates to people the relative scarcities of the various resources in the economy (pp. xiv-xv, 14, 39, 95-103). Taken in conjunction with the stable background knowledge provided by institutions such as the legal system, these price signals provide people with enough information for them to be able to adjust their plans to one another, so that each of them has a decent chance of bringing his or her chosen project to a successful conclusion (pp. 111-12; also see Lewis 2011b: Section 4).

On this view, the coordinative power of the price mechanism is an emergent property of the institutions of the liberal polity, most notably the legal system that defines property rights and specifies how they can be transferred between individuals, but also of the moral rules people's commitment to which

inhibits malfeasance (pp. 46-48; Gaus 2006: 241-42; Lewis 2012). The power in question is *emergent* because it is possessed only by a particular whole - namely the free market system that is constituted by a group of people whose interactions are structured by the rules of property, contract and liability law – and not by individual people taken either in isolation or as a group whose interactions are governed and structured by some other set of rules. It is, in Wagner’s words, ‘an emergent quality of the *nexus* of social interaction’ (p. 77; also see p. 47). Moreover, in keeping with the account of emergence presented above, Wagner contends that both the coordinative power of the market and also the higher-level entity that bears it – namely, the structured network of relationships that is the market system – are ontologically distinct from, and irreducible to, human action (pp. xiii, 62). The coordinating power of the market is, Wagner writes, ‘a property of a rightly arranged nexus of relationships and not a property of individual action or rationality’ (p. 20), while the social institutions that underpin it are ‘ontologically real ... phenomena in their own right’ (pp. 138, xiii; also see pp. 2, 14, 66). Viewed in this way, Wagner’s analysis of the coordinative powers of the market exemplifies his general description of the neo—Mengerian approach, namely that it ‘postulates the reality of social structure’, that such structures are ‘conceptualised in terms of networks of relationships’, and that ‘the [emergent] properties of any such network depend on how that network is constituted’ (p. 15).

Wagner also acknowledges that the ontological irreducibility of such emergent wholes implies that they are explanatorily irreducible, in the sense that they cannot be replaced by descriptions of (the properties of) individuals and thereby eliminated from causal explanations that involve the emergent property in question (pp. xi-xv, 137-38). ‘Societal evolution,’ Wagner (p. 58) contends, ‘cannot be reduced to some kind of model of the evolution of a single, representative or average individual’:

It is rather predicated on a presumption that the characteristic features of some aggregate population are not duplicated within each entity. Hence, societal configurations and their changes can only be rendered genuinely intelligible by a mode of thinking that takes into account an entire population and their relationships and patterns of interaction.

For instance, because the coordinative power of the price mechanism is a *sui generis* property of the emergent entity that is formed when people’s interactions are structured by the rules of property, contract and liability law, not a property possessed either by individual people taken in isolation or by an unstructured group of individuals, that emergent whole can be eliminated neither from

causal explanations of the coordinative properties of free markets, nor from explanations which invoke that coordinative power. As Wagner puts it, the fact that coordinative power of the market is an emergent property which arises only when people's interactions are structured by certain institutions 'shifts the analytical emphasis onto the various societal configurations and conventions ... bringing to the foreground [of our causal explanations] the ability of institutions to promote or impede beneficial social interaction' (pp. 61, 77; also see pp. 134-35 and Dopfer and Potts 2004: 9). For Wagner, therefore, the rule-governed, relationally-defined social wholes that structure people's interactions are causally efficacious, explanatorily irreducible factors in their own right and as such a key concern for social theorists. On this view, social outcomes of interest, such as the possibility of order in decentralised market economies, are best explained non-reductively, in terms of 'the structured network of individual interactions that constitute a society' (p. 20) (also see Elder-Vass 2007a: 30-31; Hodgson 2007: 217-22).<sup>5</sup>

The market order is, of course, a spontaneous order. That is to say, it is a feature of the social world that – like money and the common law - is 'the result of human action but not the result of human design' (Adam Ferguson, quoted in Hayek [1946] 1948: 7). It is noteworthy in this regard that Wagner seems at times to treat the terms 'emergence' and 'spontaneous order' as synonyms. This reflects at least in part the fact that one of the main foils against which Wagner sharpens his account of the neo-Mengerian approach is provided by Walrasian equilibrium theory in general and representative agent modelling in particular (pp. xi-xv, 14-16, 50-51). The latter seeks to explain social phenomena of interest as the deliberately chosen outcome of a 'representative' agent, so that – as Wagner puts it - 'society is reduced to mind' (p. xiii). As is well known, the problem with the two perspectives in question is that – either because they focus analytical attention on equilibrium states in which the plans of different agents are already reconciled, or because they model the economy as if it were a single individual and so eliminate the very question of plan coordination – they ignore the central problem of economics, namely the question of how plan coordination is brought about in decentralised market economies with dispersed information. In Wagner's words, such approaches adopt a 'centralised mindset ... [that] render[s] many social-level phenomena genuinely unintelligible through the accompanying presumption that all socially relevant information is contained within the individual unit' (pp. 141, 21; also see Hayek [1937] 1945). In explaining how his preferred neo-Mengerian approach avoids such problems, Wagner makes frequent use of terms such as 'emergence' and 'emergent'. For instance, he remarks that in his view market outcomes 'are not objects of choice but emergent products of interaction':

[P]rices and forms of market configurations [are] objects that emerge and change through interaction among participants, and not ... data that inform individual efforts at optimisation. (p. xv)

Such interaction, Wagner goes on to claim, 'is the domain of emergent phenomena and spontaneously generated ordering' (p. xiv) and is the central focus of the discipline of economics: 'Economic theory seeks to explain how economising action by individuals generates self-organised patterns of activity in society' (p. 5). In advancing such claims, it seems fair to say that Wagner comes close to equating the notions of 'emergence' and 'spontaneous order.' Certainly, he does not distinguish explicitly between them.

However, while it indeed the case – as we have seen – that satisfactory explanations of how the spontaneous order of the market is generated rely on emergent properties, this should not be taken to imply that – as readers might be forgiven for inferring from Wagner's book – that *all* emergent entities and properties arise spontaneously. The reason is that the two concepts – of 'emergence' and 'spontaneous order' – refer to different things. The notion of a 'spontaneous order' pertains to the process through which phenomena arise, referring in the case of the social world to phenomena that are the *unintended* consequences of human action. The concept of emergence, on the other hand, concerns the possibility that certain structured arrangements of objects may bear properties that are possessed by none of those objects taken in isolation. However, and here is the key point, the concept of emergence *implies nothing about how the relevant structure comes to be in place*, and it is perfectly possible that there exist emergent properties whose bearers were consciously designed. Consider, for example, the high level of productivity facilitated by the division of labour within a firm. The capacity to produce a high level of output arises only when production is organised so that workers specialise in different stages of the same production process. It is, therefore, an emergent property of the structured arrangement of people that constitutes the production process in question. But of course the division of labour within a firm is primarily established through the conscious direction of an entrepreneur, who deliberately allocates the relevant parts – in this case, the workers – between the various stages of production. The division of labour within a firm is, therefore, a directed rather than a spontaneous order. Yet it still involves emergent properties, implying that the notions of 'emergence' and 'spontaneous order' are not identical, and are best kept distinct.

## Emergence in Wagner's Account of the Human Mind

A second example of emergence that is of particular importance for present purposes can be found in the case of Wagner's account of the human mind (pp. 66-69, 112). For Wagner, the human brain consists of a layered hierarchy of neurons, the interaction between which generates mental phenomena such as sense impressions, reasons, and purposes. Although Wagner does not explicitly use the terminology of emergence in this context, it seems clear enough that his is an emergentist theory of mind that portrays mental phenomena as emergent properties of the structured arrangement of neurons that constitutes the human brain. Wagner's description of the neo-Mengerian approach as being underpinned by a 'structural notion of mind' (p. 67) lends credence to this interpretation, as does his use of the term 'network' to describe the ordered arrangement of neurons that constitutes the human brain (pp. 67, 15), the reason being that both claims point towards the importance of the set of connections between the neurons for the generation of mental phenomena (pp. 15, 57). Wagner does not explain in detail precisely *why* such connections are important (a question to which Hayek devoted considerable attention in *The Sensory Order* [1952b]). But what is significant for our present purposes is simply the fact that, for Wagner, the very possibility of mental phenomena requires the existence of a suitably structured network of individual neurons, because it is only when those neurons interact in the appropriate way that the world of sense impressions and the ability to formulate plans and to act in a purposeful, goal-driven fashion are generated. As Wagner puts it, 'brain structure influences [in the sense of making possible] the experiences and actions of [human] subjects' (p. 69). And if it is indeed the case that mental phenomena and intentional human agency arises only when individual neurons are organised into the kind of networks that typically characterise the human brain, then those phenomena must be regarded as an emergent property of the brain, rather than as phenomena that are reducible to the properties of the individual neurons taken either in isolation or as an unstructured 'heap' (Lewis 2011b: Section 5).

The emergent properties of individual people include the scope to exercise creative human agency. On this view, far from being a determinate response to their circumstances, people's actions are genuinely *chosen* in the sense that if in any given set of circumstances  $x$  a person decided to do  $y$  then (s)he could also have taken some other course of action not- $y$  (pp. 21, 64-65, 93). In other words, people possess the causal power to act in a purposeful, creative fashion and thereby to initiate new trains of events in the social world. And that causal power is emergent in the sense that it is a product of the 'polycentric process' of structured neuronal interaction that takes place in the

human brain (p. 57) and is irreducible to the properties of the individual physical and biological components or modules of which the brain is composed (Elder-Vass 2007c; Lewis 2011b).

One important aspect of such creative action lies in its capacity to introduce novelty into the socio-economic world, and to do so endogenously, as an inherent part of the economic process, rather than only as a result of exogenous shocks (pp. 10, 56, 63-65, 73, 92-93). By combining concepts and pieces of knowledge that have hitherto been viewed as unconnected, and thereby making it possible to view various aspects of the world in a new light, people are able to introduce new ideas – about products, processes and ways of acting – into the economic system, thereby giving rise to new lines of economic development (Nonaka and Takeuchi 1995; Hodgson 1997: 406-08, 2004a: 237-39; Nooteboom 2007: 137-45; Loasby 2011: 775-76). As Wagner puts it:

For the most part, what we call invention is a recombination of the familiar ... Entrepreneurial invention takes the typical form of making different patterns of connection in combinatorial space, most of which has been previously explored even if not in those particular patterns. While the entrepreneurial journey enters new territory, it also brings a good deal of familiar territory in its train. (pp. 81-82)

This brings us to another sense of emergence in Wagner's work, namely that of emergence-as-the-endogenous-generation-of-novelty. The properties of the new combinations of knowledge, capital and rules to which creative human action gives rise are emergent in the sense that they that they are irreducible to the properties of the individual parts from which those combinations are formed: new combinations of words, and the concepts those words express, give rise to new (emergent) meanings and concepts via the use of metaphor and analogy (Lewis 1999: 89); new combinations of capital goods give rise to emergent capacities that are not possessed by any of the individual components taken in isolation, as for example when the appropriate assembly of the parts of an iPhone gives rise to a completed product that has its own distinctive (emergent) communicative and data-transmitting capabilities (Harper and Endres 2011); while new combinations of rules for governing human interaction yield new (emergent) properties, for example at the level of the firm – as when new combinations of rules for organising production give rise to (emergent) capacities to innovate (Spender 1994; Hodgson and Knudsen 2007; Hodgson 2008) - and indeed also at the level of the economic system as a whole, as when the (often intentional) combination of the set of rules characteristic of the liberal polity first gave rise to an economic system with the

(emergent) causal power to sustain faster economic growth and a greater population than non-capitalist systems (Hayek [1967] 1967: 67-72, 1960: 37; Gaus 2006; Lewis 2011b).

The key point to note here is that, though composed of familiar elements, these new combinations possess (emergent) properties that cannot be deduced from, or predicted on the basis of, a prior knowledge of the properties of their individual component parts (Lawson 1997: 176; Hodgson 2000a: 113-14). Such properties are novel in the sense that they lie outside the realm of what people would normally conceive as possible, given their background knowledge, and the possibility of their coming-into-existence is therefore a source of radical uncertainty in social-economic life (Shackle 1972; Runde 2009: 498-502). Being by their very nature impossible to anticipate, such injections of novelty into the economic system will upset the plans of at least some economic actors (p. 93), thereby inducing them to modify *their* behaviour in order to create and exploit new profit opportunities, which in turn leads to still further infusions of novelty and creative entrepreneurial responses (p. xi-xii, 10, 16-19, 85, 89). The creative entrepreneurial discovery of novel emergent properties can thus be seen to provide one of the motors that drive the economic process (Potts 2000: 4; Dopfer and Potts 2004; Hodgson 2004a: 245-7, 407). For Wagner, then, the economic is an ‘open system[.] characterised by ongoing processes of development where people have limited and individually specific knowledge’ (p. xi). It is a system whose ‘emergent dynamics’ are ‘driven by the continual creation of knowledge and injection of novelty into society’, but where ‘institutional arrangements arise to facilitate the revision and abandonment of plans’, thereby making possible the creation of an ‘emergent-dynamic order’ in which purposeful human conduct remains possible (pp. 10, 16, 19).

### **Mind-Society Interaction and the Possibility of Downward Causation**

Wagner’s account of social structures and people as each possessing their own distinctive emergent properties, including causal powers, suggests that the social world can be divided into two ontologically distinct, but interdependent realms, namely those of social structure and human agency (p. 2):

[B]oth individual minds and society [are] ontologically real, and with causation running in both directions ... [T]he relationship between mind and society is bi-directional. In one direction, interaction among minds generates such social configurations as property rights,

contractual relationships, and organisational forms: this is the standard direction of movement for economic theory. In the other direction, however, those emergent configurations influence the substantive content of mind and hence the objects of human action. (pp. xiii, 1)

For Wagner, social structure and human agency are mutually dependent or recursively related in the sense that each is both a necessary condition for, and also a consequence of, the other: pre-existing social structures facilitate intentional human agency, as when entrepreneurs rely on the legal system in order to draw up business contracts; while the continued existence of social structures such as the legal system depends on people continuing to make use of them when they act (though, as Wagner makes clear, the fact that people's actions sustain the continued existence of some social structure like the legal system may be an unintended consequence of actions taken for quite some other reason). On this view, the relationship between structure and agency is one of non-reductionist co-development: both social structure and human agency possess their own *sui generis*, emergent causal powers, so although each depends on the other neither has ontological or analytical priority (cf. Lewis 2008: 844-51, 2011a).

The claim that social structures can causally influence human action leads to the question of precisely what that influence involves. Is it simply the case that the institutional environment in which people are embedded shapes their choices of actions by determining the incentives they face and the information they possess, without changing the dispositions and preferences that govern how people respond to the information or incentives that confront them? Or is the causal influence more profound, in the sense that the institutional context in which people are embedded shapes the very dispositions and preferences that condition how they interpret and respond to those external influences?

Wagner invokes a number of examples in which the causal influence of social structures appears to be restricted to shaping the incentives and information that confront people, rather than operating more radically to alter the very dispositions and preferences that are the wellsprings of human action. In his discussions of traffic jams and racial segregation as paradigms of emergence, for example, Wagner focuses on the unintended consequences of human action based on given preferences (p. 14, 138, 141). Were Wagner to restrict his account of the causal influence of social institutions to such examples, his approach would be in keeping with that adopted by most Austrian economists, according to whom people's preferences and dispositions

ought to be treated as a ‘given’ for the purposes of economic analysis (cf. Hayek [1943] 1948: 67; also see Caldwell 2001 and Hodgson 2004b).

However, as Wagner notes, he is only partially aligned with the Austrian school (p. x), and there is also ample evidence that he admits the possibility that the emergent causal powers of higher-level social structures include the capacity to shape or reconstitute the dispositions that govern how people conceptualise and respond to their circumstances. Far from assuming that people have given preferences, then, the neo-Mengerian approach ‘postulates that some preferences arise through particular patterns of social relationships’, acknowledging that ‘preferences have social as well as genetic sources’ (p. 15). One notable example of such downward causation, as it is known, centres on the scope for social institutions – and, in particular, for the social rules of which those institutions are formed – to shape the people whose interactions they structure. ‘What is of particular interest for a theory of social economy,’ Wagner writes, ‘is how the social-level interactions might influence [people’s] moral imaginations’, that is the way in which they use moral rules to judge and govern their actions (p. 69; also see pp. xiv, 43-44). Briefly, the point is that repeated action in conformity with a social rule can cause neurological changes that lead to the formation of new cognitive structures and, therefore, to people acquiring new habits or dispositions. In this way, social rules can – quite literally – become physically embodied in people, in the sense that people’s experience of the outcomes that arise when their interactions with others are structured by those social rules shapes the arrangement of neurons found in their brains. Moreover, given that people’s neural structures dispose them both to interpret and perceive certain classes of external stimuli as constituting particular types of situation, and also to respond to those situations by acting in particular ways, it can be seen that by moulding those neural networks social rules also causally influence – without, of course, entirely determining – the way in which people perceive, think and act. In short, social rules possess the emergent causal power to shape human agency (Hodgson 2004a: 184-86, 2007; Elder-Vass 2007c; Fleetwood 2008b).

Consider, for example, the capacity of the market economy to coordinate people’s plans. The capacity, it will be recalled, is an emergent property of the set of institutions that comprises a market economy, obtaining only when people’s interactions are structured by the rules of property, contract and tort law. The key point to note in the current context is that, by facilitating mutually beneficial interaction between anonymous others, the emergent causal power in question leads to the people who inhabit market economies having particular types of experience, perhaps most notably that interacting with people from outside one’s own immediate community can lead, not to violence, but to peaceful and mutually beneficial exchange. Such experiences in

turn affect people's neural structures, because – on a Hayekian account of the mind, such as that to which Wagner subscribes - they lead to the formation of connections between the neurons that are stimulated by the experience of greater wealth and prosperity, on the one hand, and by the experience of trade with anonymous others, on the other.<sup>6</sup> In Wagner's words (p. 69): 'the experiences of subjects ... modify brain structure by inducing changes in the relationships and connections among [neuronal] modules'. The alterations in people's neurophysiology lead in turn to changes in their dispositions: they tend to associate anonymous others with the possibility of beneficial exchange more than they did in the past; and, as a result, they tend to respond more favourably to such people than they did in the past, being more likely to trade with them rather than shying away from or even assaulting them. In this way, the institutional context that governs how people interact with one another also shapes their dispositions so that – in the example considered here – people become more inclined to treat strangers as honorary friends (Seabright 2004). This shaping of people's dispositions by the social rules that govern how they interact with each other is precisely what downward causation involves, and the account just offered implies therefore that the notion of downward causation is quite consistent with the theory of the mind that Wagner sketches in *Mind, Society, and Human Action*. Overall, then, given that Wagner suggests that the neurophysiological structure of the human brain is sensitive to the experiences that people have, and given also that those experiences are shaped by the social rules that structure how people interact with each other, then *a fortiori* on his account the human mind must also be sensitive to - in the sense of being causally influenced by – those social rules and relations.<sup>7</sup>

Here we have an example of the ambiguity created by the Wagner's failure to provide a clear and explicit account of emergence that engages with the philosophical literature on the topic. On the one hand, Wagner's use of examples like traffic jams and racial segregation as exemplars of emergence, along with his favourable references to the agent-based modelling work of authors such as Vriend (2002) and Epstein (ed., 2006) (pp. 13-14, 184 n.2, 6), lend support to the view that he adopts only a weak notion of emergence that equates it simply with the spontaneous generation of orderly patterns in complex systems of heterogeneous agents and exclude the possibility of downward causation (Sawyer 2005: 72-78, 157-59). On the other hand, as we have seen, Wagner explicitly admits the possibility of stronger forms of emergence whereby social properties possess the irreducible causal power to shape the individuals from whose interactions they arise. More explicit reflection about the nature of emergence might have helped Wagner to avoid running together such different analyses of emergence.

## Conclusions

It is readily apparent from *Mind, Society, and Human Action* that Wagner has considerable sympathy for the Austrian school of economics. As his use of the term 'neo-Mengerian' to describe his preferred mode of economic analysis suggests, Wagner supports many of the central tenets of Austrian economics, most notably its emphasis on entrepreneurial creativity, on competition as rivalry, on radical uncertainty, and on the importance of viewing the market as a process in real, historical time.

However, in embracing wholeheartedly, if not always explicitly, the notion of emergence in all the various guises outlined above, Wagner adopts an approach that differs from standard Austrian pronouncements about how to conduct economic analysis in a number of significant ways. First, in embracing the emergent causal powers of social structures as ontologically and explanatorily irreducible parts of causal explanations, Wagner moves beyond what can reasonably be termed methodological individualism (Hodgson 2007; Lewis 2005: 308-11, 2008: 851-52; Nooteboom 2007: 137, 151). Second, by acknowledging the scope for the emergent causal powers of social structures to reshape people's dispositions and preferences, Wagner moves beyond the standard Austrian approach of taking people's preferences as given and adopts an approach that is in many respects more akin to sociology and (old) Institutionalist economics than imperialistic rational choice theory: 'I treat economics and sociology as complementary domains of inquiry,' Wagner (pp. xiii-xiv) writes, continuing by noting that, 'In this respect, my focus on emergent processes of mind-society interaction fits comfortably within the Germanic tradition of historically-oriented scholarship that is often treated as the *bête noire* of Austrian thought' (also see Hodgson 2000b, 2004b).<sup>8</sup> Third, by emphasising emergent properties as a source of novelty in economic life, Wagner's approach bears considerable affinity with contemporary evolutionary economics, to the extent that '[t]his emergent-dynamic research program could alternatively be called an evolutionary program' (p. 10). In pursuing the research agenda yielded by his insights into the role of emergence in economic life across the boundaries of established schools of thought, and thereby blending the emphasis on entrepreneurship and the market as a process characteristic of Austrian economics both with (old) Institutionalism's recognition of the malleability of human psychology and also with evolutionary themes, Wagner has made a notable contribution towards the goal of underlabouring for a more rounded, coherent and general heterodox approach to economics (Lawson 2006: 493-98; Lewis 2010: 295). This is a notable achievement, for which he deserves to be warmly commended.

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## Notes

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<sup>1</sup> All otherwise unattributed page references are to Wagner (2010).

<sup>2</sup> Causal powers may exist unexercised (a car still possesses the capacity to transport people even when its engine is not switched on). Moreover, even when exercised, their impact on observable events may not be readily apparent if it is offset by the countervailing impact of other causal mechanisms (as, for example, when a natural disaster destroys much of an economy's stock of capital, thereby offsetting – at least for a time – the impact of an advanced division of labour on productivity). On the view outlined here, therefore, causal powers are best understood as *non-empirical* tendencies to produce particular kinds of effect rather than – in Humean fashion – constant conjunctions of events. For more on this, see Lewis (2011a).

<sup>3</sup> By way of contrast, eliminative reductions *are* of course possible in the case of resultant properties. The existence of such properties does not depend on the existence of specific relations between the parts of some higher-level entity (e.g. the mass of a car is simply the mass of its constituent parts, and would be the same irrespective of how those parts are organised). Hence, the causal power of a resultant property *can* be (ontologically) reduced to the powers of its constituent parts, so the higher-level entity can be eliminated from any causal explanations that invoke such a property, so that explanatory or epistemic reduction is also possible (e.g. in explaining why someone was crushed by a falling object, one can simply invoke the latter's mass without making any reference to whether the object was arranged into the form of a car or was simply a pile of scrap metal).

<sup>4</sup> On this view, institutions can be defined as durable system of social rules that structure social interaction (Hodgson 2006: 18; Fleetwood 2008).

<sup>5</sup> This point was also recognised by Hayek, for whom: 'It is the so-called wholes, the groups of elements which are structurally connected, which we have learned to single out from the totality of observed phenomena ... [and which] are the condition for the achievement of many of the things at which we as individuals aim, the environment which makes it possible even to conceive of our individual desires and which gives us the power to achieve them.' These institutions, Hayek continues, constitute 'a constant structural element [of society] which can be separated and studied in isolation' (1952a: 67, 145-46, 59; also see Lewis 2011b).

<sup>6</sup> There is now a burgeoning literature, some of which is referenced by Wagner (pp. 9, 47, 69, 109-110), concerning the idea that successful market transactions shape people's values and dispositions. More specifically, it is argued that by facilitating successful transactions between people who hail from different social groups – including those differentiated by culture, race and religion - markets can encourage the development of personal habits and dispositions such as tolerance, understanding, honesty, and a willingness to compromise (Hirschmann 1977; 1992; McCloskey 2006; Storr 2008,

2009). Hence, as Wagner puts it, the theory of the mind to which he subscribes ‘holds out the prospect that there is some scope for social configurations to influence those facets of the moral imagination that are represented by tolerance’ (p. 69; cf. Lewis 2012: Section 5). For more on this, see Wagner (2006).

<sup>7</sup> As Hayek puts it, ‘[I]ndividual reason is the product of inter-individual relationships’ (1952a: 160).

<sup>8</sup> This emphasis on the malleability of the human mind might be thought at first glance to sit rather uneasily with Wagner’s commitment to praxeology (pp. 28-29, 42, 54-63). For a suggestion about how the nature and significance of praxeology might be reinterpreted so as to be consistent with the broad ontological tenor of Wagner’s project, see Lewis (2010: 289-94).

## References

- Caldwell, Bruce. 2001. “Hodgson on Hayek: A Critique.” *Cambridge Journal of Economics*, 25: 539-53.
- Elder-Vass, Dave. 2007a. “For Emergence: Refining Archer’s Account of Social Structure.” *Journal for the Theory of Social Behaviour*, 37: 25-44.
- Elder-Vass, Dave. 2007b. “Luhmann and Emergentism: Competing Paradigms for Social Systems Theory?” *Philosophy of the Social Sciences*, 37: 408-32.
- Elder-Vass, Dave. 2007c. “Reconciling Archer and Bourdieu in an Emergentist Theory of Action.” *Sociological Theory*, 25: 325-46.
- Dopfer, Kurt and Jason Potts. 2004. “Evolutionary Foundations of Complexity.” In J.S. Metcalfe and J. Foster (eds.), *Evolution and Economic Complexity*. Cheltenham: Edward Elgar.
- Dopfer, Kurt and Jason Potts. 2008. *The General Theory of Economic Evolution*. London and New York: Routledge.
- Epstein, Joseph M. (ed.) 2006. *Generative Social Science: Studies in Agent-Based Computational*

- Modelling*. Princeton: Princeton University Press.
- Fleetwood, Steve. 2008a. "Institutions and Social Structures." *Journal for the Theory of Social Behaviour*, 38: 241-65.
- Fleetwood, Steve. 2008b. "Structure, Institution, Agency, Habit, and Reflexive Deliberation." *Journal of Institutional Economics*, 4: 183-203.
- Gaus, Gerald. 2006. "Hayek on the Evolution of Society and Mind." In E. Feser (ed.), *The Cambridge Companion to Hayek*. Cambridge: Cambridge University Press.
- Harper, David and Angela Endres. 2011. "The Anatomy of Emergence, with a Focus upon Capital Formation." Forthcoming in the *Journal of Economic Behavior and Organization*.
- Hayek, F.A. ([1937] 1948). "Economics and Knowledge." In Hayek (1948).
- Hayek, F.A. ([1943] 1948). "The Facts of the Social Sciences." In Hayek (1948).
- Hayek, F.A. ([1946] 1948). "Individualism: *True and False*." In Hayek (1948).
- Hayek, F.A. 1948. *Individualism and Economic Order*. Chicago: University of Chicago Press.
- Hayek, F.A. 1952a. *The Counter-Revolution of Science: Studies in the Abuse of Reason*. Indianapolis: Liberty Fund.
- Hayek, F.A. 1952b. *The Sensory Order: An Inquiry into the Foundations of Theoretical Psychology*. London and Henley: Routledge & Kegan Paul.
- Hayek, F.A. 1960. *The Constitution of Liberty*. London and New York: Routledge.
- Hayek, F.A. ([1967] 1967). 'Notes on the Evolution of Systems of Rules of Conduct.' In F.A. Hayek (1967), *Studies in Philosophy, Politics and Economics*. London: Routledge & Kegan Paul.

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- Hirschmann, Albert O. 1977. *The Passions and the Interests: Political Arguments for Capitalism before its Triumph*. Princeton: Princeton University Press.
- Hirschmann, Albert O. 1992. *Rival Views of Market Society*. Cambridge, MA: Harvard University Press.
- Hodgson, Geoffrey M. 1997. "Economics and the Return to Mecca: The Recognition of Novelty and Emergence." *Structural Change and Economic Dynamics*, 8: 399-412.
- Hodgson, Geoffrey M. 2000a. "From Micro to Macro: The Concept of Emergence and the Role of Institutions." In L. Burlamaqui, A. Castro, and H.-J. Chang (eds.), *Institutions and the Role of the State*, Cheltenham: Edward Elgar.
- Hodgson, Geoffrey M. 2000b. "Shackle and Institutional Economics: Some Bridges and Barriers." In P.E. Earl and S.F. Frowen (eds.), *Economics as an Art of Thought: Essays in Memory of G.L.S. Shackle*. London and New York: Routledge.
- Hodgson, Geoffrey M. 2004a. *The Evolution of Institutional Economics: Agency, Structure and Darwinism in American Institutionalism*. London and New York: Routledge.
- Hodgson, Geoffrey M. 2004b. "Hayekian Evolution Reconsidered: A Response to Caldwell." *Cambridge Journal of Economics*, 28: 291-300.
- Hodgson, Geoffrey M. 2006. "What are Institutions?" *Journal of Economic Issues*, 40: 1-25.
- Hodgson, Geoffrey M. 2007. "Meanings of Methodological Individualism." *Journal of Economic Methodology*, 14: 211-26.
- Hodgson, Geoffrey M. 2008. "The Concept of a Routine." In M. Becker (ed.), *Handbook of Organizational Routines*. Cheltenham: Edward Elgar.

- Hodgson, Geoffrey M. and Thorbjorn Knudsen. 2007. "Firm-Specific Learning and the Nature of the Firm: Why Transaction Costs May Provide an Incomplete Explanation." *Revue Économique*, 58: 331-50.
- Lawson, Tony. 1997. *Economics and Reality*. London and New York: Routledge.
- Lawson, Tony. 2003. *Reorienting Economics*. London and New York: Routledge.
- Lawson, Tony. 2006. "The Nature of Heterodox Economics." *Cambridge Journal of Economics*, 30: 483–507.
- Lewis, Paul A. 1999. "Metaphor and Critical Realism." S. Fleetwood (ed.), *Critical Realism in Economics: Development and Debate*. London and New York: Routledge.
- Lewis, Paul A. 2000. "Realism, Causation and the Problem of Social Structure." *Journal for the Theory of Social Behaviour*, 30: 249-68.
- Lewis, Paul A. ed. 2004. *Transforming Economics: Perspectives on the Critical Realist Project*. London and New York: Routledge.
- Lewis, Paul A. 2005. "Agency, Structure and Causality in Austrian Economics: Tensions and Resolutions." *Review of Political Economy*, 17: 291-316.
- Lewis, Paul A. 2008. "Solving the 'Lachmann Problem': Orientation, Individualism and the Causal Explanation of Socio-Economic Order." *American Journal of Economics and Sociology*, 67: 827-57.
- Lewis, Paul A. 2010. "Certainly Not! A Critical Realist Recasting of Ludwig von Mises's Methodology of the Social Sciences." *Journal of Economic Methodology*, 17: 277–299.
- Lewis, Paul A. 2011a. "Far from a Nihilistic Crowd: The Theoretical Contribution of Radical

- Subjectivist Austrian Economics.” *Review of Austrian Economics*, 24: 185-98.
- Lewis, Paul A. 2011b. “Emergent Properties in the Work of Friedrich Hayek.” Forthcoming in the *Journal of Economic Behavior and Organization*.
- Lewis, Paul A. 2012. “What Does True Individualism Really Involve? Overcoming Market-Philanthropy Dualism in Hayekian Social Theory.” In L. Ealy, R. Garnett and P. Lewis (eds.), *Commerce and Community: Human Flourishing through Voluntary Action*.
- Loasby, Brian J. 2011. “Uncertainty and Imagination, Illusion and Order: Shackleian Connections.” *Cambridge Journal of Economics*, 35: 771-83.
- Nonaka, Ikujiro and Hirotaka Takeuchi. 1995. *The Knowledge-Creating Company*. New York and Oxford: Oxford University Press.
- Nooteboom, Bart. 2007. “Methodological Interactionism: Theory and Application to the Firm and the Building of Trust.” *Review of Austrian Economics*, 20: 137-53.
- Potts, Jason. 2000. *The New Evolutionary Microeconomics: Complexity, Competence, and Adaptive Behaviour*. Cheltenham: Edward Elgar.
- Runde, Jochen. 2009. “Dissecting the Black Swan.” *Critical Review*, 21: 491-505.
- Sawyer, R.Keith. 2005. *Social Emergence: Societies as Complex Systems*. Cambridge: Cambridge University Press.
- Sayer, Andrew. 1992. *Method in Social Science: A Realist Approach*. Second edition. London and New York: Routledge.
- Sayer, Andrew. 2010. “Reductionism in Social Science.” In R.E. Lee (ed.), *Questioning Nineteenth Century Assumptions about Knowledge II: Reductionism* Albany: State University

of New York Press.

Shackle, G.L.S. ([1972] 1992). *Epistemics and Economics: A Critique of Economic Doctrines*. New Brunswick and London: Transaction Publishers.

Spender, J.-C. 1994. "Organizational Knowledge, Collective Practice, and Penrose Rents." *International Business Review*, 3: 353-367.

Stephen, Achim 1992. "Emergence: A Systematic View on its Historical Facets." In Ansgar Beckermann, Hans Flohr and Jaegwon Kim (eds.), *Emergence or Reduction?* Berlin: de Gruyter.

Storr, Virgil. 2008. "The Market as a Social Space: On the Meaningful Extra-Economic Conversations that can take place in Markets." *The Review of Austrian Economics*, 21: 135-50.

Storr, Virgil. 2009. "Why the Market? Markets as Social and Moral Spaces." *Journal of Markets and Morality*, 12: 277-96.

Vriend, Nicolaas J. 2002. "Was Hayek an ACE?" *Southern Economic Journal*, 68: 811-40.

Wagner, Richard E. 2006. "States and the Crafting of Souls: Mind, Society, and Fiscal Sociology." *Journal of Economic Behavior and Organization*, 59: 516-24.

Wagner, Richard E. 2010. *Mind, Society, and Human Action: Time and Knowledge in a Theory of Social Economy*. London and New York: Routledge.