Spontaneous Order: Analysis and Implications

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5 December 2025

Summary

- Spontaneous order is crucial for understanding fundamental human institutions (e.g., language and the law, morals, markets and money) and for defending individual liberty. But its operation is often overlooked.

- Spontaneous orders are self-generating, self-adjusting complex adaptive systems. They exist when a pattern that has not been arranged by any coordinator emerges from the interactions of multiple, dispersed individual elements.

- Characterised by Adam Smith as the 'invisible hand' and by Ferguson and Hayek as 'the result of human action, but not of human design', spontaneous order in human institutions is perhaps more clearly understood as the 'unintended coordination of intentional action'.

- Spontaneous orders can integrate knowledge that is dispersed, dynamic, tacit and privileged. They can thus handle great complexity and arguably do so better than deliberately constructed orders.

- Spontaneous orders respect individual liberty: they are essentially non-coercive, prove that order does not require law, and only function properly if their component elements can freely react to changing circumstances.

- The power and pervasiveness of spontaneous orders show that government action, far from being essential, is seldom necessary and is often positively counterproductive. Spontaneous order justifies challenging regulation proposed for correcting market failure, promoting efficiency, or dealing with complex problems, including climate change, public health and welfare, and economic growth.

- Empirical studies have confirmed that spontaneous order has been better than coercive regulation at generating economic growth, managing natural resources and providing key public services, and better than imposed rules at detecting fraud and disease.

Note: This paper draws heavily on Sternberg (2021).

About the author

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Elaine earned her Ph.D. in philosophy at the London School of Economics, where she was a Fulbright Fellow and a Lecturer. She has held academic appointments in the UK at the Universities of Leeds and of Buckingham. In the US, she is a Visiting Scholar in Philosophy at the University of Miami (FL), and has been a Visiting Scholar at the Social Philosophy and Policy Center and at Tulane University's Murphy Institute. Elaine is the on the academic advisory council of the IEA and of Protect, the UK whistleblowers' charity.

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Introduction

Spontaneous order is crucial for understanding human institutions as fundamental as language and the law, morals, markets and money. But although the role of the 'invisible hand' is generally appreciated by economists, the operation of spontaneous order is seldom recognised by others. In particular, it's potential for supporting individual liberty and evaluating public policy is often overlooked. The possibility of spontaneous order provides strong grounds for resisting government action, especially when it is proposed to avoid market failures or to promote efficiency via harmonisation or centralisation.

Spontaneous order is indeed so important that, according to Nobel Laureate James Buchanan (2001 [1977]: 96):

> ...Apart from this principle there would be no basis for general public support for economics as a legitimate academic discipline, no place for economics as an appropriate part of a liberal educational curriculum. I refer, of course, to the principle of the spontaneous order of the market....

Meaning

Nevertheless, many people find the notion of spontaneous order counter-intuitive, seeing nothing between anarchy and planning. Order that is neither intended nor constructed can, however, emerge spontaneously from the movements of multiple dispersed individual items. Such spontaneous orders are unplanned and lack purpose; they are self-generating, self-adjusting complex adaptive systems.

Commentators sometimes refer to the 'invisible hand' mentioned by Adam Smith. Or they adopt a variation of a formula that was originated by Adam Ferguson in the eighteenth century and popularised by F. A. Hayek in the twentieth. Spontaneous order of human institutions, they say, is 'the result of human action, but not of human design'. Although strictly true, that shorthand description is unfortunately open to misunderstanding. Confusion may result from not recognising that orders are neither the same as, nor reducible to, either their constituent items or the relations connecting them[1].

An order is a state of affairs that consists of items and the relations among them; items are ordered if they exhibit some regularity or pattern. Orders are *natural* if they and their constituent items exist independent of human involvement, e.g., crystals, cats. Orders are *artificial* if they are man-made, e.g., sonnets, skyscrapers. Artificial orders are always constructed: they result from an agent's intentionally imposing some pattern or arrangement on the constituent items, typically to achieve a goal. Thus, parts are assembled to build a car; records are alphabetised to facilitate retrieval.

Orders can, however, also be of a third kind: they can be *spontaneous*. Unlike natural orders, spontaneous orders can have human actions and artefacts as their components. Unlike artificial orders, spontaneous orders are *never constructed*: they involve

[1] The same term is often confusingly used to refer both to the order itself and to the thing or institution exhibiting the order; it is sometimes even used to refer to the relations determining the kind of arrangement.

no intentional coordination of the constituent items. Natural examples include evolution and snowflakes. Insofar as the components of the order are human actions, design – intention – is indeed present, and essentially so. What is not intended or deliberately designed is the emergent meta-phenomenon – the order – that arises from those components' complex interactions. The integration of the components into a coherent system ensues automatically, without any arranger or planner deliberately coordinating them; not even the human actors themselves intend or seek that ordered outcome. *Spontaneous orders are self-generating, self-adjusting complex adaptive systems. They exist when a pattern that has not been arranged by any coordinator emerges from the interactions of multiple, dispersed individual elements.*

Obstacles to understanding

Spontaneous orders are often not recognised. Even people who eschew theological 'intelligent design' in favour of biological evolution often succumb to the 'argument from design' in respect of human institutions: how could law or money exist without government, they wonder.

But consider the institution of language. Without the use of language, how could any person have authoritatively associated meanings with particular sounds or symbols throughout a community? Language probably evolved from various individuals seeking to solve particular communication problems. They connected meaning with sounds or symbols in specific situations. Over time, some of those associations were sufficiently accepted by a community to constitute its language.

Recognising the price system as an example of spontaneous order can be challenging, especially for non-economists. Extreme complexity is commonly believed to exacerbate the need for conscious direction. Arguably, however, deliberately constructed orders are *less* capable than spontaneous orders of handling complexity. Constructed orders are inflexibly limited by what the designing mind can encompass, and much of the information needed for price signalling is 'never so given to a single mind...' (Hayek 1945: 530).

The limitation is not one of conventional computing power. The problem is that the relevant inputs for economic coordination are neither static nor simply given. They are instead a) dispersed among innumerable human actors; b) dynamic, constantly interacting and responding to changing circumstances; and c) reflective of knowledge that is both tacit and privileged. Individuals have knowledge of how to do things, and also of local particularities of time and place, including their own personal preferences. Such knowledge cannot reliably be detected or predicted and in turn affects others' preferences. Technological identification of such data in real time would presumably require constant, comprehensive surveillance of every market participant via intrusive sensors. Even if (implausibly) such technological capture were possible and acceptable, its structure would presumably exhibit incentives reflecting the surveillants' objectives. So the data would still not match the inputs that routinely influence market prices.

According to Hayek, only a spontaneous order based on general rules is capable of

integrating such dispersed, dynamic information into a simple, real-time signalling system[2]. Full central planning is thus not only unnecessary, but theoretically impossible: it is incapable of solving the 'knowledge problem' (Hayek 1945). Unfortunately, this impossibility is ignored by the many who continue to advocate socialism and other command and control systems.

Controversy continues about spontaneous orders' support for human flourishing: are they necessarily optimal, or can they ever be improved via construction? The character of a spontaneous order depends on the environment from which it emerges and in which it develops. The capitalist free market developed in a context that included not only well-defined and enforceable private property rights, freedom of contract and freedom of exchange, but also the rule of law and a supportive moral code.

Whether or not spontaneous orders are necessarily optimal or can handle more complexity than constructed ones, they are clearly better as respecters of individual liberty. They are so in three ways. First, by their very nature, spontaneous orders cannot be coercive. Their emergence from independent individual choices involves no imposition, and *a fortiori* no forcible imposition. Second, the very existence of spontaneous order proves that deliberate organisation is not the only way that order can be established. Regulation therefore cannot be assumed to be necessary, and a basic presumption of coercive government is thereby undermined.

A third way that spontaneous orders support freedom is that they require it to operate. For spontaneous orders to be adaptive and self-correcting, their individual components must be free to react to changing circumstances. Especially when they involve knowledge that is tacit and privileged, the individuals who alone possess that knowledge need the freedom to act on it. Any interference with their doing so will impede operation of the spontaneous order; by preventing self-adjustment and self-correction, it will typically make things worse in the long term. To the extent that the benefits of spontaneous order are valued, this constitutes a strong argument against any interference – however well-intentioned – and in favour of individual liberty.

Key characteristics of spontaneous orders

The absence of a coordinator is the definitive feature of spontaneous order. Commentators offer many illuminating characterisations of spontaneous order, but typically fail to identify or emphasise this crucial element. When determining whether an order is spontaneous, it does not matter whether the coordinator consists of a single mind (a curator arranging an exhibition) or a group (a government drafting an army). Nor does it matter if its decisions are subsequently subject to revision (an architect's blueprint submitted for planning permission): the coordinated outcome needs only be one that is somehow explicitly recognised.

Equally irrelevant is whether the items being coordinated might themselves be con-

[2] '...under the enforcement of universal rules of just conduct, protecting a recognizable private domain of individuals, a spontaneous order of human activities of much greater complexity will form itself than could ever be produced by deliberate arrangement....' (Hayek 1966: 603).

structed: consider the interplay of constructed corporations in the spontaneously ordered economy. It does not matter whether the coordination is imposed by a constituent item (the officer of a private club) or some outside agency (the NHS). Finally, it is irrelevant whether the imposed pattern was wholly or partly planned in advance or was the subject of explicit deliberation: even if adopted on the spot (a salad improvised from leftovers), the construction is what counts. But although the absence of coercion is a necessary condition, it is not sufficient to constitute a spontaneous order. Constructed orders (e.g., partnerships) can be formed cooperatively and accepted voluntarily.

Correcting confusions

With respect to spontaneously ordered social institutions, a clearer short-form characterisation might be '*the unintended coordination of intentional action*'. Unlike the Ferguson/Hayek formula of 'action but not design', this *alternate formula* of spontaneous order more clearly differentiates orders from their components and also highlights the key constraint. It can therefore help clarify the identification of spontaneous orders.

Consider, for example, works created by committees. The outcome is often a compromise whose terms were not planned or specifically wanted by any of the human contributors. And it may be difficult to identify any coordinating intelligence responsible for the result of the committee's work – recall the old joke about camels being committee constructs. But regardless of their quality, committee actions do seem to be the result of intentional coordination. Committee members are designated in accordance with some constructed rule, and all are – at least nominally – presumed to be united by a common goal. Moreover, the official outcome gets determined by some constructed procedure of collective choice. Accordingly, committee results – like those produced by negotiation – would seem not to be examples of spontaneous order. Neither unintended consequences nor the absence of total planning suffices to qualify an order as spontaneous.

Where might instances of '*the unintended coordination of intentional action*' be found?

Extended examples 1: Natural resource management

A perhaps surprising example is in the management of shared natural resources: its operation there has confounded the expectations of conventional wisdom and the implications of basic game theory. Economists formerly held that there was a 'tragedy of the commons' that necessarily affected non-excludable and rivalrous natural resources. It was thought that when non-payers could not readily be excluded from using a resource, and consumption of it would reduce the amount available for others, the resource would inevitably be over-exploited and destroyed unless coercively managed by government. Such misuse was considered to be a fundamental example of market failure and unavoidable.

This idea was conclusively disproved by Elinor Ostrom, who received the 2009 Nobel Memorial Prize in Economic Science for her work. She showed that complex adaptive

systems can and do emerge that allow common-pool resources to be cared for and used sustainably. Moreover, those emergent systems conserve the resources better than state regulation does. Empirical evidence from locations worldwide detailed such systems, and related not only to pastures, fishing waters and forests, but also to groundwater basins and even public safety services provided by metropolitan police forces. Polycentric governance proved better at providing public goods and services than centralised government.

Extended examples 2: Serialised novels

Where else might one find spontaneous order? Literature initially seems an unlikely source: literary works are intimately associated with and identified by their authors. 'Literary works' here includes all written fiction or non-fiction presented in print or other media; they need not be 'literary' in the sense of high culture or artistic achievement.

Nevertheless, literary critic Paul Cantor (2009: 53-4) has argued at length that '...the serialization of novels as it developed in the nineteenth century offers a good example of spontaneous order – of a self-regulating or self-correcting mechanism'. He acknowledged that

> ...conscious human minds are involved at every stage of the evolution of a novel... Authors consciously write their novels installment by installment, readers consciously make decisions as to which parts of the novels they like, the authors in turn consciously decide how to respond to the feedback they get from their audience, and so on. But this process can still be regarded as a form of spontaneous order because no single mind controls it from start to finish. (Cantor 2009: 63-4)

This is an intriguing claim, but ultimately a misleading one. First, being produced by multiple minds is no obstacle to a literary work's being obviously constructed. Examples abound. Some are deliberately co-authored: the novels of Ellery Queen and philosophy texts by Rasmussen and Den Uyl. Others result from committee agreements (the US Constitution) or intentionally assembled writers' rooms (scripts of TV series, e.g., *Friends*). Though more than one author is involved, all were deliberately involved in crafting a literary work. Care is needed properly to identify the nature and value of the various contributions, but in every case, they were coordinated by some person(s) to form the outcome. Consequently, those outcomes the literary works – are not spontaneous.

The second part of Cantor's combined criterion also fails to identify spontaneous order. Total end-to-end planning ('pure central planning'; Cantor 2009: 66) is often absent even from the carefully constructed works of a single author. Trial-and-error, sequential revision in response to criticism, and even serendipity can all play a part without the resultant product lacking a unifying organiser. So long as someone has designated an authoritative version, a constructing mind is evident.

The other criterion for spontaneous order that Cantor initially cites – 'being a self-regulating or self-correcting mechanism' (2009: 54) – also does not suffice. A thermostat-

controlled heating/air conditioning system is self-correcting but is the product of deliberate human design; so is a self-regulating (self-policing) trade association. Moreover, serialised novels were in fact neither self-regulating nor self-correcting. At each stage of every work, some mind (even if not always that of the nominal author) decided how to coordinate the various inputs provided by the publisher, printer, sales outlets, etc.

The feature of the serialised novel that most plausibly supports Cantor's claim is the reaction of the reading public. Readers with their own individual reasons for reading incidentally provided valuable information about the acceptability of instalments' contents. The information was provided independently, without any coordination, and typically without any intention of directly shaping the literary work. The feedback was indeed spontaneous. But that does not mean that the resulting literary work was. Readers' responses were only efficacious if they were taken into account by whoever was responsible for composing subsequent chapters and for integrating the total work. Serialised novels were constructed, albeit in a complicated way.

Extended examples 3: Genres, professions, academic disciplines

There are, however, aspects of art and literature that do seem to qualify as spontaneous order: the overall practices that they constitute. 'Practice' here is used broadly, to include loosely organised but identifiable activities and institutions with norms that are often rule-governed. Games are practices. So, arguably, are artistic genres, the professions and academic subjects.

Consider the novel as a literary genre. There is no reason to believe that the authors ordinarily recognised as contributing to its development were intending to establish a new literary form for use by other writers. If they consciously experimented with new techniques, it was in an attempt to express themselves better and reach audiences more effectively. Nor is there any authority that could or can definitively determine what counts as a novel: the genre has just developed over time. The same might be said of poetry, drama, the symphony and sculpture. All have evolved from the actions of individual artists creating their own works, without any coordinator imposing order on their attempts or achievements.

The reasoning that qualifies artistic genres as instances of spontaneous order seems to apply equally to the professions. In the uncoordinated course of addressing particular problems as they arose, individual practitioners independently exercised their personal judgements and (experimentally) sought solutions. Arising within an existing context, those solutions often took into account previous ones and influenced others. Over time, some solutions came to be recognised as a part of what it was to practise medicine or law, to be an accountant or an architect. Unfortunately, the emerging spontaneous orders have often been constrained, by official codification and ossification of standards and the imposition of licensing barriers to entry.

A similar process has operated with respect to academic disciplines. What it is to be an academic philosopher, physicist or historian has changed over time. Researchers' reasons for choosing which puzzles to investigate may be various and personal, but their approaches to them typically are cumulative and inform subsequent research. Even in the contested social sciences and liberal arts, an emerging trend can shape

the academic subject via the criteria applied for admission, promotion and funding.

Extended examples 4: Miscellaneous

Such spontaneous orders are among the many pervasive kinds noted by Michael Polanyi (1941: 438):

> The social legacies of language, writing, literature and of the various arts, pictorial and musical; of practical crafts, including medicine, agriculture, manufacture and the technique of communications; of sets of conventional units and measures, and of customs of intercourse; of religious, social and political thought; all these are systems of dynamic order which were developed by the method of direct individual adjustment....

To illustrate just how common but unrecognised spontaneous order is, consider a few other short examples.

The first concerns 'street furniture'. Spontaneous order is often illustrated by the fact that people on a crowded street seldom collide, because each makes the necessary adjustments to avoid the others. It was hoped that the removal of physical traffic barriers on a major London thoroughfare would promote a comparable order for vehicles. All road users would be encouraged – indeed required – to exercise personal care. And so it proved. No accidents were observed during the subsequent survey (MVA 2012: 2), even though car speeds increased 21% (WSP 2018: 6.2.4).

The second example is equally mundane. How do people learn to cook a poisonous plant safely? The answer is the cultural transmission of knowledge. Despite containing cyanide, cassava (aka yuca, the source of tapioca) is a staple source of carbohydrates for much of the developing world. When ways of preparing cassava that preserved life and nutrition were accidentally discovered, groups whose traditions favoured those methods were more likely to survive and thrive, and transfer their knowledge to others (Harford 2019).

The third example, in contrast, involves the most sophisticated artificial general intelligence, in the form of a programme produced by DeepMind. Instead of invoking 'thousands of rules and heuristics handcrafted by strong human players that try to account for every eventuality in a game', AlphaZero started

> with a deep neural network and general purpose algorithms that know nothing about the game beyond the basic rules. To learn each game, an untrained neural network plays millions of games against itself via a process of trial and error called reinforcement learning[3].

In this way, without instruction, becoming 'the strongest player in history' for each game took DeepMind only 'approximately 9 hours for chess, 12 hours for shogi, and 13 days for Go'[4].

[3] Silver, D., T. Hubert, J. Schrittwieser, D. Hassabis (2018) *AlphaZero: Shedding new light on chess, shogi, and Go*. Accessed: 24 October 2025 (https://deepmind.com/blog/article/alphazero-shedding-new-light-grand-games-chess-shogi-and-go)
[4] Ibid.

Left on its own, spontaneous deep learning has been used effectively for generating medical breakthroughs, as well as for fraud and spam detection, handwriting and speech recognition, image search, street view detection and translation.

What is significant about these examples is that none was recognised as an example of spontaneous order, even though all the orders emerged without a coordinating agent.

Implications for public policy

It is important to identify spontaneous orders accurately, because doing so can help inform public policy. The power and pervasiveness of spontaneous order should discourage the often automatic assumption that government regulation is either necessary or beneficial.

Contrasts with spontaneous order illuminate why government projects so often fail. Unlike private schemes, government projects are always constructed; based on stifling command and control, they cannot benefit from experience or quickly adapt and adjust. They are even more constrained than private constructions, because the rule of law requires government action to be non-arbitrary and stable. Combined with the difficulty of passing legislation and the characteristic inertia of bureaucracy, the nature of regulatory norms means that government projects are typically prevented from self-correcting. Nevertheless, UK governments – of all parties – have repeatedly rejected spontaneous order in favour of a 'single controlling mind': their own (UK Government 2023: 7).

The possibility of spontaneous order should highlight large arenas where government action is unnecessary and may well be actively counterproductive. Significantly, these are areas – like climate change, public health and welfare, and economic growth – where government is most likely to claim that extreme complexity requires coercive regulation. Recognising the potential and advantages of spontaneous order should encourage scepticism about, and opposition to, such popular public proposals.

It should also prompt recognition that, as Hayek indicated when commenting on the spontaneous order of the price system:

> ...if it were the result of deliberate human design, and if the people guided by the price changes understood that their decisions have significance far beyond their immediate aim, this mechanism would have been acclaimed as one of the greatest triumphs of the human mind. (Hayek 1945: 527)

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