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Our Stone Age brain in Adam Smith's Great Society

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Contents

Preface

I sometimes feel mildly claustrophobic on the London Underground, especially when it is crowded. The discomfort is not bad enough to make me avoid using the underground, but after a longer journey on a busy train, I cannot say that I arrive in a great mood.

I am, of course, perfectly aware that public transport is a fabulously safe way to travel, and if somebody told me that they avoid using the underground due to e.g. a fear of terrorist attacks, I would be the first to respond with an uncalled-for lecture on relative risk statistics. But while the more rational part of me knows all that, that knowledge does not improve my mood when I am stuck on a crowded underground train.

The reason why many of us feel uncomfortable in confined and/or crowded spaces is, of course, a maladaptive evolutionary one. Our hunter-gatherer ancestors had good reason to fear confined and crowded spaces, and the environment in which they lived is the environment in which the human mind has evolved over hundreds of thousands of years. Underground transport has only been around for what is, in evolutionary terms, a split second, so unsurprisingly, our minds are not well adapted to it.

There are thousands of similar examples. We are, in lots of ways, maladapted to the modern world. In essence, we are cavemen who have stumbled across a series of civilisational marvels without truly understanding them.

Most of the time, this is not a huge problem. We experience some irrational phobias, discomforts and impulses, but we experience them as minor annoyances and inconveniences. We learn how to live with them and keep them in check, or at worst, avoid situations that will trigger them.

The one type of maladaptation that can cause huge problems, though, is *economic* maladaptation. Modern economies are incomparably different from the economic life of our ancestors, so it is not surprising that we have a poor intuitive grasp of how they work: after all, where would that intuition come from? But economic maladaptation is, in some ways, different from maladaptation in everyday life. For a start, it is not tied to specific situations, which we can avoid or learn how to deal with. It is more about our emotional reactions to economic phenomena and the moral impulses they trigger.

More importantly, unlike in everyday life, we are rarely aware of them. I am fully aware that the discomfort I experience on the London Underground lacks any rational basis. I know perfectly well that I am not in any kind of danger. Therefore, I do not try to justify that discomfort. I am not going to cook up a pseudo-rational explanation in order to make my irrational aversion look rational. I will certainly not let it cloud my judgement of, for example, local transport policy. In contrast, thousands of books have been written, and entire political ideologies have been created in order to justify our gut feelings about modern economics. In this paper, Dr Erik Lidström explores where our economic intuitions come from, how they made sense in the settings in which they developed, and how they stopped making sense with the advent of modern capitalism. Dr Lidström explains why intuitions are such a poor guide to economic life and how 'intuitive economics' leads us astray.

Almost in passing, Dr Lidström also walks the reader through a history of economic thought, exploring how thinkers from Adam Smith to F. A. Hayek (and others beyond) have grappled with these phenomena. In this way, he can draw on a rich, varied literature while addressing problems of evolutionary psychology that are still only very imperfectly understood. Dr Lidström's fusion of economics with evolutionary psychology will help the reader make more sense of aspects of economic discourse that will otherwise seem baffling – and perhaps help them to spot some of their own emotional biases along the way.

KRISTIAN NIEMIETZ

Editorial Director, Institute of Economic Affairs

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Introduction

The present essay contains some of the core economic elements of my book *Evolution and Social Order – How our Stone Age brain understands and misunderstands society* (Lidström 2025).

The title *Evolutionary Economics* is doubly appropriate. First of all, the account is based on how humans have evolved, explained by Darwin's theory of evolution through natural selection. Secondly, it is based on the fact that a free society, to a large degree, is a Complex Adaptive System (CAS), a complex system that, as a system, can learn, and a system that also evolves through evolution.

All over the world, we face many serious economic and social challenges. Apart from the immediate effects of cycles of boom and bust, we experience problems that are much more long-term and appear almost incurable. We are suffering from ballooning budget deficits, underfunded social security and pension schemes, ever-falling standards in schools, healthcare sectors in constant states of crisis and drug wars. Since the mid-1970s, much of Western Europe has experienced about 10% chronic unemployment and twice that for the young. If we look back, we see that the best and brightest in all political parties have been struggling in vain to fix these and similar problems for the best part of a century.

We are also adding regulation after regulation, ban after ban, environmental protection measure after environmental protection measure and safety measure after safety measure, much of the time with the best of intentions and commonly with

the approval of the general public. The overall result is that we become less and less capable. It took one year and 45 days to build the Empire State Building. Today, it takes 4.5 years just to carry out the required environmental impact report.[1] Are we better off because of all this caution and bureaucracy? Hardly.

In this essay, I argue that the reasons why the world refuses to bend to our wishes are the result of a fundamental mismatch. We have a Stone Age brain, the brain of a hunter-gatherer, in a society that is very different from the one in which it evolved.

The good news is that we can do something about our problems and this something is simple and time-tested. Within just a few years, we could reach full employment to such a degree that many would instead be worried about the lack of people to hire. We could also again be able to rapidly create spectacular buildings, other infrastructure, consumer products and high-tech and low-tech products, as well as make stupendous cultural achievements. All of these goals could be accomplished while treating the environment with more care than we do today.

Booms and busts would still exist; they are part and parcel of a large, free society, but they would become less pronounced and more short-lived. Most of the time, we would see rapid economic growth, increasing prosperity for everyone, in particular for the most vulnerable in society, exciting innovations and a dizzying sense of progress.

The bad news is that what we need to do will go against some of our most cherished and widely held beliefs. The bad news

1 A. Schwarzenegger (2022) *My Unreasonable Birthday Goals*. Accessed 16 July 2024 (https://www.schwarzenegger.com/newsletter/post/my-unreasonable-birthday-goals).

is also that we need to keep doing a number of simple things indefinitely and that future generations will find them as intuitively unappealing as most people do today. The really bad news is that unless we take appropriate action, to a large extent *appropriate inaction,* things will eventually get much worse, in spite of our best efforts, and in fact, mostly because of our best efforts. We are gradually moving in a direction that threatens to destroy our society. This might all sound overly dramatic, but it is a well-balanced assessment of the facts and arguments presented in this essay. One of the central aims is to demonstrate the seriousness of the issues we are facing, their nature and why we, at the same time, barely notice them.

Maybe I should point out at this juncture that this is not an essay on ethics or morals. In writing this essay, I have silently assumed that the aim of the reader is a society that promotes the pursuit of happiness, peace and prosperity for all, or at least virtually all (Barnett 1998: 17). If so, as far as I can ascertain, then approximately what I suggest in this essay follows. Now, if the reader holds different values, then, of course, other policies should be pursued.

To understand how humans with a hunter-gatherer brain function in large societies, we need to study the human mind, and to understand it properly, we must investigate it as it is, not as we wish it to be. The discipline that does this best today is called evolutionary psychology, that is, psychology integrating Darwin's theory of evolution and findings from anthropology. We also need to study society as it is and not as we might wish it to be. Unfortunately, such studies are often very difficult, as the hunter-gatherer mindset generates a dense fog of misunderstandings that need to be penetrated.

The hunter-gatherer brain is designed for much smaller societies than those we live in today; it is designed for tribes, that is, for countries with only about 500 inhabitants. One of the key problems is that large and small societies have different laws of causality, of cause and effect. When we as humans do what our hunter-gatherer instincts tell us, in large societies, the effects are often the opposite of what we intend. Many of the largest problems that we struggle with, as well as a number of very serious ones that few are aware of, are the result of this collision of the hunter-gatherer mindset with the way large societies actually work.

Thus, we face grave dangers, but we also have enormous possibilities to improve our lot – much larger possibilities than we tend to realise. In exploring what they are, the present essay will again set out elements of an evolutionary worldview based on two distinct but related processes. Firstly, the process through which human beings evolved through natural selection. Secondly, how human societies develop through what are also, for the most part, evolutionary processes.

The evolution of people we cannot do much about, although human cultures do vary greatly. However, as for the evolution of society, we can influence and speed it up by changing the contents and nature of the laws and rules we follow. Unfortunately, it turns out, we are just as easily able to bring the evolution of society to a dead stop and bring a human civilisation to its knees.

Society as a system, the extended order

A large society such as ours is a complex system of many interacting parts. Society as a system has two important characteristics: First of all, it is largely self-organised and

adaptive; that is, the members of society, us, follow a number of rules, laws and cultural habits that might seem complex at times but that, on the scale of things, compared to the result, are very simple. We do not know the origin of most of these rules, even though we may think otherwise. By following rules and very occasionally modifying them, we adjust to the local environment, and so does everyone else. In so doing, we create a large-scale *self-organised* order, just like a flock of birds flies as a unit using only a few simple rules.

Society *spontaneously* develops what F. A. Hayek called an *extended order* (Hayek 1988). This order is all around us, although we cannot see, taste, or smell it. The market economy is just one aspect of this extended order. Through selection, through the gradual weeding out of what does not work, Western society evolved a set of cultural habits and laws that brought about the scientific and industrial revolutions and our current state of prosperity. Today, we more or less live in what Adam Smith called a Great Society[2], a term that I will use as a small contribution to reclaiming it.

This talk about spontaneous order and self-organisation might sound cryptic and unconvincing. And, *intuitively*, self-organisation is not something our brains really understand. Therefore, to illustrate how simple rules can create something very complex, I will use the example of an anthill. No ant designed the anthill; there are no ant architects, CEOs, general managers, project managers or accountants. Instead, the anthill is the result of thousands of ants doing 'ant things'. The anthill is another example of what modern science calls a CAS, a complex system that can learn. An anthill, *as a system*, thus learns something that is achieved *not by someone directing it* but by *individual*

2 Not to be confused with the policies of Lyndon B. Johnson.

half-blind (most species) ants making decisions depending on what goes on an inch or so around them, on vibrations and smells[3]. The *system of ants* that learns is not guided by a 'hive mind' or by the queen, and neither do individual ants learn as such. Some or most of them just start doing slightly different things as a response to what befalls the anthill. The result might be that *the system of ants* repairs the anthill, builds around a tree, starts foraging elsewhere, moves the anthill, or splits off a daughter colony.

Something very similar goes on in our human world. David Hume concluded that in a large, free society, three fundamental conditions always hold: firstly, *the stability of possession,* that property rights are protected and that we can be certain that no one will steal or confiscate what is ours. Secondly, its transference by consent, that we can freely buy and sell goods and services. Thirdly, *the performance of promises*, that we can freely enter into contracts and be certain that such contracts will be honoured. The last rule also implies that we have to compensate others for any harm we may cause them (Hume 1740: Book 3, Part 2, Section 6; Hayek 1976: 40).

It is difficult to see how any other conditions could apply in a large, free society since these are the conditions that allow people who do not know each other to interact peacefully and voluntarily. The precise details of these conditions may, of course,

3 Ants generally have a very poor sense of vision and get most of their information about the world through their sense of smell, located in their antennae. They tend to make decisions based on what they are doing themselves, on what other ants they meet are doing and on how frequently (ants per minute) they meet other ants carrying out each particular task (patrolling, harvesting, cleaning the nest etc). Two books by Deborah Gordon discuss how ant societies function and adapt: *Ants at Work* (Gordon 1999) and *Ant Encounters* (Gordon 2010).

vary, and they can also be expressed differently through laws, rules and cultural values.

The fossil record, as well as a multitude of other observations and experiments, tells us that man is an animal like millions of others. We were designed by evolution; the first mammals appeared on Earth around 200 million years ago, hunter-gatherers who were almost like us appeared about two million years ago, and modern *Homo sapiens,* who essentially were *just like us*, appeared around 150,000 years ago. Large societies only appeared a few thousand years ago. But a few thousand years of large civilisations, one or two centuries of living in prosperous market economies, or about 80 years of contact with the outside world in the case of the Stone Age tribes of Papua New Guinea is much too recent and short a time to have made an impression of any consequence in our genes[4].

Man is a hunter-gatherer, and *everything* in our approach to the study of man must take this into account. The hunter-gatherer perspective must *never* be forgotten in any study of, or reflection on, our behaviour; it must always be at the back of our minds. This also means that if something new is discovered in neurology or anthropology regarding either how our brain is wired or what the environment in which our ancestors evolved really looked like – the Environment of Evolutionary Adaptedness (EEA), that is, our state of nature on the savannah, as well as in earlier and other habitats – this new knowledge must be fed back into

4 As it is a common view, I might need to state that I emphatically reject the idea of a '10,000-year explosion' (about 10,000 years ago) of human culture due to some genetic changes, or that any of the more recent changes of human cultures and civilisations are due to genetic changes, including changes to the average IQ of various groups. While some changes to the human genome may have caused some behavioural changes in certain populations, this will be dwarfed by *systemic effects* due to culture and accumulated *systemic learning*. A proposed 10,000-year explosion due to genetic changes is neither a necessary explanation nor a sufficient one.

any science that studies human behaviour. To put it bluntly, a 'social science' that fails to accommodate such information is just nonsense.

The plan of the essay

In the next chapter, some key aspects of hunter-gatherer societies relevant to economic thinking will be discussed. In Chapter 3, we will treat the extended order and how it clashes with attitudes we developed as hunter-gatherers. We will continue this treatment in Chapter 4, where we will also discuss networks, how we depend on networks for our prosperity, but how, instead, our hunter-gatherer instincts single out networks for targeted destruction.

Aspects of hunter-gatherer society

Our ancestors lived their lives as members of a tribe. Each tribe was a 'country' of not just its members but of 'the people' and consisted of, on average, 500 individuals (varying from 175 to 1,400), who, in addition, were almost all genetically related to one another. The tribe, or in the words of Azar Gat and many other researchers, the Dialect Tribe (Gat 2006: 13), was also the people who spoke 'correctly' while people from other tribes spoke 'crooked' (Gat 2006: 51). Within the tribes, in their daily lives, our forefathers formed small bands of around 25 (varying from 20–70). There was also an intermediate layer, the clan, which we will get back to shortly.

The entire world of our ancestors resembled the situation in Figure 2.1. We lived like this for at least almost two million years, or at least since *Homo erectus* arrived on the scene[5]. As a consequence, this is the world we have mental machinery for.

5 Or, according to some researchers, such as Ian Tattersall, *Homo ergaster*, an ancestor of *Homo erectus*. Whether *Homo ergaster* is a species separate from *Homo erectus* is an ongoing dispute in palaeoanthropology.

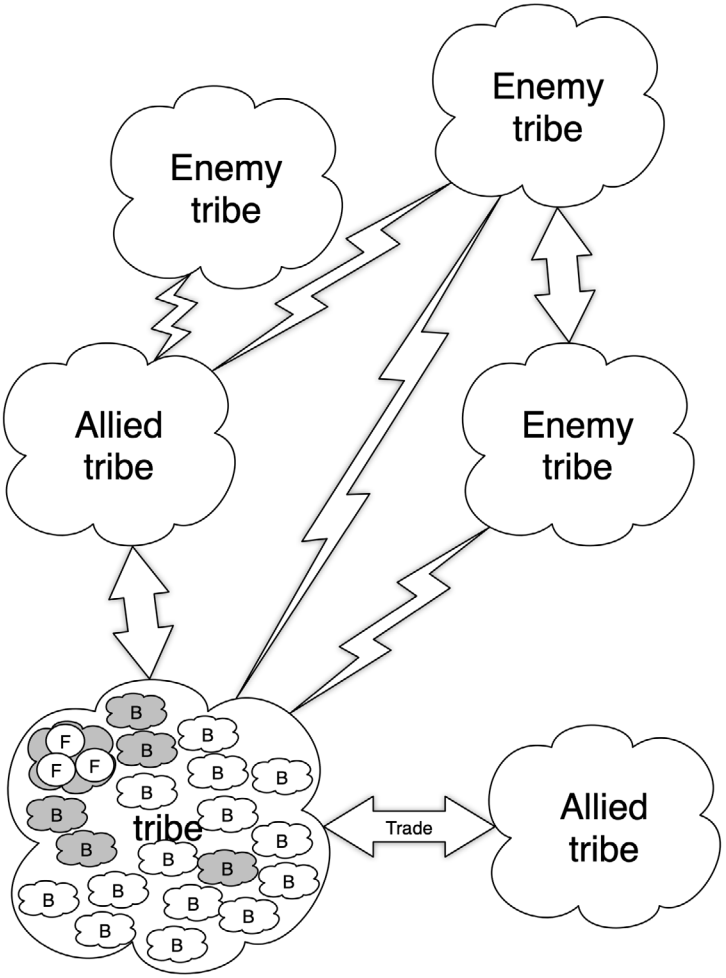


Figure 2.1. The hunter-gatherer world our mind is designed for.

Note: *F stands for family, and B for band. The greyed-out groups represent the 150 or so people in the clan. Some authors call the tribe a Dialect Tribe. As this name indicates, each Dialect Tribe spoke its own dialect or separate language. Outside our 'country' of 500, there existed other tribes, allied or enemy.*

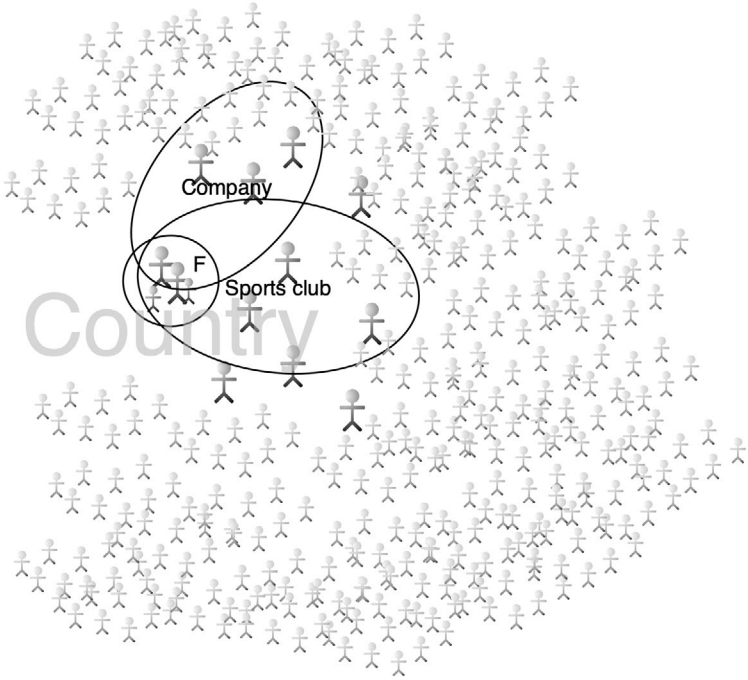


Figure 2.2. Schematic illustration of the world we live in, the extended order.

Note: *We know about the same number of people as there were members of the hunter-gatherer clan, that is, around 150 people (illustrated as larger figures). We are members of a number of virtual tribes, such as a company or a sports club, and we are citizens of a country. Countless strangers, illustrated as smaller figures, surround us.*

We now live in societies, as illustrated in Figure 2.2, with families and virtual tribes inside the *extended order*. The extended order, named so by F. A. Hayek (1988), is the almost entirely self-organised society that *spontaneously* appears when the number of people becomes large. As already briefly discussed in Chapter 1, such a society is a CAS. As we shall see in the next chapter, a CAS has laws for cause and effect that are often quite different from those of our state of nature.

For now, it is sufficient to state that our brains simply cannot be adapted to function particularly well within this order and that we cannot possibly have any mental modules for it. Having lived within such an order for 10,000 years (the Fertile Crescent), 5,000 years (Scandinavia), or 100 years (Aborigines in Australia) or not at all, as for some existing hunter-gatherer tribes, is too short a time, or no time at all, compared to two million years for any changes to have taken place. We note that there exists no discernible difference between how well the brains of Swedes and Iraqis operate within the market economy[6].

Trade

However, we are well adapted to a key aspect of the extended order, trade. As Adam Smith wrote in 1776, trading comes naturally to humans, to such a degree that we do not give it much thought:

> THIS division of labour, from which so many advantages are derived, is not originally the effect of any human wisdom, which foresees and intends that general opulence to which it gives occasion. It is the necessary, though very slow and gradual

6 Richerson and Boyd (2005: Chapter 5) discuss common phenomena that appear to be cultural maladaptations, cultural habits that reduce our inclusive fitness, that is, the number of transmitted copies of our genes. Examples are joining a monastery or women routinely putting off childbirth until after a career has been made, by which time it might be too late. The reason such maladaptations exist is due to the way we acquire culture. For us to be able to easily assimilate beneficial cultural habits, a trade-off has to be made. We (or rather, our genes) cannot always know beforehand what cultural habits are beneficial for our inclusive fitness. At the same time, we are designed to learn quickly since time is scarce, and sometimes we get it wrong. What I am arguing here is that the mismatches that I discuss with respect to the extended order are not such simple maladaptations. Our current situation is, in effect, unprecedented on an evolutionary time scale, and we are largely out of our depth.

> consequence of a certain propensity in human nature which has in view no such extensive utility; the propensity to truck, barter, and exchange one thing for another (Smith 1776a: I.ii).

No species apart from humans engages in trade[7]; Adam Smith pointed out that 'Nobody ever saw a dog make a fair and deliberate exchange of one bone for another with another dog' (Smith 1776a: I.ii).

Where did trade originate? Matt Ridley, in his book *The Rational Optimist* (Ridley 2010), points out that a hunter-gatherer lifestyle, where men hunt and women gather, cook and tend to small children, is dependent on barter, at the very least between the sexes. This might have been an important part of the beginning of our propensity to trade.

As Smith and Ridley write, to barter with others is so obvious to us that we do not realise how unique it is to humans. But bartering was still carried out in small batches, face-to-face between trusted trading partners (Ridley 2010: 90–91), with goods carried on somebody's back.

With the advent of large countries and economies, we have moved from a *face-to-face society* to what Popper calls an *abstract society*, a society in which we interact with people unknown to us, most of the time without ever actually meeting them (Hayek 1979: 162; Popper 1945a: 187).

7 Except as symbiosis between two species, such as lichen, composed of algae and fungi. Another example is the bacteria in our gut. Instances of 'you scratch my back, and I will scratch yours at some later date' might seem related but are something quite different (Ridley 2010: Chapter 2).

Bands, clans, tribes and foreigners

Robin Dunbar (2010: 21–34) has studied the relationship between the number of individuals that primates interact with and the size of the neocortex, which is the outer layer of the brain that is responsible for conscious thinking. Primates, like us, are exceptional in the animal kingdom because of the complexity of their social interactions. Based on the size of the human neocortex, we should be able to handle relationships of a certain quality and keep tabs on about 150 individuals.

In fact, we know that apart from the divisions into bands and tribes described above, there is also an intermediate layer, often called the clan, based on real or perceived kinship. The clan can be the unit that comes together for periodic coming-of-age ceremonies or can be based on the common ownership of a hunting ground or a set of waterholes (Dunbar 2010: 25). Averaging over a bit more than twenty tribal societies gives an average clan size of 153 (Dunbar 2010: 25). In today's society, this is the number of people we (or at least the British) send Christmas cards to (including all family members), the size below which a company can be run without a management structure, the size of villages during the Middle Ages and the size of the smallest *independent* fighting unit in armies for millennia, now called the company (Dunbar 2010: 27).

There are further divisions in our social group sizes, and they seem to come in multiples of approximately three. People typically have 3–5 close friends (Dunbar 2010: 32). We also have a larger group of friends that, together with the first one, is 12–15 strong (Dunbar 2010: 33). This is what social psychologists call the 'sympathy group', as Dunbar writes, 'all those whose death tomorrow would leave you distraught'.

The typical night camp in a hunter-gatherer society is 30–50 strong, and above this, we have the clan of 150, as already discussed, the number of people with whom we have high-quality direct relations. Dunbar states that the typical size of a hunter-gatherer tribe is 1,500, while Gat (2006) gives the number of 500. Given Gat's care in distinguishing true hunter-gatherers from hunter-horticulturalists, we will use the smaller figure (but the exact number is not important for this argument). Dunbar suggests that we continue multiplying by three. The next level up would then be about 1,500, or three tribes.

The fact that human hunter-gatherer tribes all accept the existence, as part of their tribe, of about 350 people whom they know only vaguely or not at all, on top of the 150 people they know well, must be a fundamental reason why humans can live in large societies. We are able to extend our sense of 'us', our patriotic feelings, to people whom we do not know. One could well imagine an alternative humanity that was at war (lingering or hot) with all those who were outside of their clan and that was physically incapable of accepting strange males as part of their tribe[8]. This is the way chimpanzee society works[9]. Human social capabilities are even more sophisticated than this. Not only are we able to accept unknown people as members of our tribe, but we are also able to incorporate foreign tribes into our mental map of the world. Hunter-gatherer tribes, just like us, conduct foreign policy; they are allied with some neighbouring tribes and

8 This is not the case for females, who, just as is the case for all known human societies in our state of nature, often leave their home tribe and move to another one to find a mate (a practice called female exogamy). Both chimpanzee and traditional human societies are male-bonded, patrilineal societies where males live and die in the same tribe (Wrangham and Peterson 1996: 24–25).

9 In *Demonic Males*, Wrangham and Peterson (1996) discuss the similarities and differences between human and chimpanzee societies.

at war with others. That we have this mental capacity must also be a fundamental aspect of the human mind.

But nowhere in the prehistory of man or known hunter-gatherer societies is there any evidence of large tribes of 50,000 or more living peacefully together in densely populated areas so that the members exchange goods or services with unknown tribal members on a daily basis. For reasons that will be further explored in the next chapter, there simply cannot exist an area of the neocortex that is dedicated to the extended order, that is, to the organisation of large societies. Capitalist societies have brought about massive expansions of human wealth and resources through the development of science, technology, double-entry bookkeeping, long-distance trading and millions of other things. But the ensuing expansion of the population has not gone on for long enough for us to have had time to develop a mental 'statistics' or 'commodities markets' module, similar to our face recognition and cheater detection modules[10].

For these reasons, it must be that the way we consider the world is shoehorned into the only mental categories we have at our disposal: family, close friends, people we know directly, members of our tribe, members of other tribes, friendly or hostile.

Similarly, it must be that our innate models for interactions in the world between people involve *direct interactions* between people, family, friends, people who are known to us, fellow tribal members and foreigners. We certainly have mental machinery for complex interactions of this kind, including the possibility of deceit and coalition building. But we do not have the mental

10 Steven Pinker (2002: Chapter 13) discusses our intuitive economics sense, which is used for direct exchange, but that does not contain a Markets brain module.

machinery for the dynamics of the extended order, of which the market economy is a part.

The Stone Age brain vs the extended order

Examples of how misunderstandings of the extended order have led to misdirected actions fill the annals of human history and economics textbooks. Thomas Sowell (2007: 73) relates the story of the Roman emperor Diocletian, who introduced price controls in AD 301. The contemporary account states, 'People brought provisions no more to markets.' The many well-intentioned attempts to provide affordable housing through rent controls have never worked. A Swedish left-wing economist is quoted by Sowell (2007: 71) as stating that rent control 'appears to be the most efficient technique presently known to destroy a city – except for bombing.'

The deceptively simple law of supply and demand to determine prices catches us out for several reasons, since we tend to think in terms of a direct exchange with another party and of a static reality. The law of supply and demand is applicable in a dynamic system where the particular demand for goods is only valid at a certain price. If the price increases, customers may move to substitutes. They might buy cheese instead of milk or meat and baseball gloves made out of cowhide. The cost of producing goods will vary over time, and the value of goods has little relationship to the cost of production. A man dying from thirst in a desert may be prepared to pay more for a gallon of water than people normally pay for a swimming pool.

But to our meagre cognitive faculties, there are worse laws than that of supply and demand. The economist Samuelson (quoted in Ridley 1996: 207) has stated that David Ricardo's Law of

Comparative Advantages is the only law in the whole of social science that is both true and non-trivial. Given our difficulty with the law of supply and demand, it is not certain that he is correct, but it is nevertheless an illustrative example.

The law of comparative advantages is highly confusing to the human mind, even though it is perfectly valid in a static situation with only two parties involved. The law states that if two countries, A and B, both make goods, chairs and tables, for example, and A is better than B at making both chairs and tables, and B is very poor at making chairs and better at making tables, but still worse than A, it is advantageous for A to concentrate on making chairs and B on making tables and for the two countries to trade with one another.

The human instinctive reaction is that A will make both chairs and tables, and B will be unable to make or sell anything. Politicians in B will howl, 'Close the border. Otherwise, all our jobs will go to A' (for example, Mexico, China, or Japan). What these politicians forget (or their electorate forgets) is that resources are scarce everywhere. In particular, time is limited. If we do one thing, this prevents us from doing another. If A wants to make tables as well as chairs, it would have to make fewer chairs. A, therefore, has a comparative advantage in chair making, and B has a comparative advantage in table making, in spite of the fact that B is worse at making both products.

The way we struggle with the law of comparative advantages serves as a quite interesting illustration of how we get lost in the extended order. Evolution has already discovered this law because it is, for example, what takes place in symbiosis, as when an alga and a fungus pair up to form a lichen (Ridley 2010: 75). It is also something that comes naturally to humans as we trade. If I have to give you five hides in exchange for a stone axe,

I will immediately work out whether or not I should give up my attempts at making stone axes and concentrate on hides, that is, whether hunting for hides or actually making stone axes is the easiest way for me to get a stone axe.

So, step by step, we easily validate Ricardo's law and arrive at a division of labour system. But as soon as the discussion moves from concrete examples to abstract entities such as the two countries discussed above, we are almost completely lost.

Since we all, in general, benefit from free trade, we appear to suffer from an irrational *protectionism bias or anti-foreign bias,* as Robert Caplan calls it in *The Myth of the Rational Voter* (Caplan 2007: 36–39). I would argue that protectionism bias is better because it is a more precise term, since humans, as a group-living species, are always prone to anti-foreign bias, not only in matters of trade between nations.

Again, we understand the value of trade when we exchange goods with someone in person, and yet, often a majority of voters are more or less opposed to free trade with foreign nations. But in the case of interpersonal exchange, we have an intuitive understanding of the benefits of trade, while when nations are involved, we do not.

The lack of understanding that the value of goods is unrelated to the cost of goods is called the 'physical fallacy'. For example, goods have different values to customers depending on where they are and how they are packaged. You are prepared to pay more for a gallon of water when you are desperately thirsty than when you are sitting by a cold spring. The time value of money is part of this physical fallacy. Money is worth more here and now than in the future. If you have money now, you can take the holiday you dream of. The same amount of money next year is

worth less to you, and it is worthless if you are only to receive it a hundred years from now, when you are dead. For this reason, we pay interest to people who defer their consumption to give us money so that we can consume today.

Another part of the physical fallacy is the misunderstanding of middlemen. A merchant buys in bulk at a low price and sells you smaller amounts but at a higher price. It is commonly believed that if only we got rid of all the middlemen, 'the profiteers', who do not produce anything, the real workers would be paid more, and we would get our goods cheaper. But the middlemen do provide a service, even if one might not always realise which one it is; otherwise, you would have to buy a silo's worth of flour instead of convenient packages.

The economist Richard Radford (1945) observed firsthand how a market economy developed when he was held in a German prisoner-of-war camp, and he published the account in a fascinating paper. Cigarettes rapidly evolved into a currency. Items from the Red Cross packages and other sources would be traded, often through middlemen. He also observed the gut feeling of resentment against those who mediated this exchange, attempts at price fixing, and notions about what constituted 'just' prices.

The struggle for an equal share of resources

In a hunter-gatherer group, our ancestors cooperated with their neighbours, but they also competed for resources with one another, creating inherent tensions and potential conflicts. The division of work between the sexes was strict. The men hunted, and the women gathered (although they also sometimes

hunted small game). Hunting was very important, as Richard Wrangham relates:

> Hundreds of different hunter-gatherer cultures have been described, and all obtained a substantial proportion of their diet from meat, often half their calories or more (Wrangham 2009: 6).

Hunting by the men demanded cooperation to work, and therefore, the resulting resources had to be shared. One day, you may be lucky, but the next day, it is your neighbour's turn. Assuming equal levels of skill, the roll of the dice will be different each day, but even if skills are not equal, with Stone Age technology, big-game hunting is only viable if it is pursued as a group activity. You and your family cannot starve two days out of three, so the sharing of meat is mandatory, and it is imposed by the group. It should be mentioned that research shows that big-game hunting, as opposed to hunting for smaller and commonly more dependable game or the men gathering instead of hunting, definitely is not for show; it is an effective way to provide food, as measured by the number of calories obtained per hour of effort (Gurven and Hill 2009).

Each tribe has its own, often very rigid rules for how this sharing is to take place, but on average, each hunter gets approximately the same amount, regardless of skill and particular contribution. The successful big-game hunter might get a particular cut, or he might actually get less (Wrangham 2009: 163–164). However, he commonly reaps some other benefits from his skills, as he can often steer larger shares of meat towards kin, neighbours and cooperative partners (Gurven and Hill 2009).

Thus, each man gets meat according to these rules, meat that, if he is married, he then gives to his wife so that she can cook it. It

should be noted that there exists a built-in conflict between the successful hunter and the less competent ones. The successful hunter's obligation to share his kill is enforced by group pressure and by the preaching of the high-minded morals to which we are so addicted. If he does not follow the rules of the group and share with those who are less skilled or industrious, he risks ostracism. The area is a web of conflicting interests and trade-offs (Gurven 2004).

Gathered resources are not subject to chance. The harder a woman works, the more she gathers. The rules in a hunter-gatherer society are very strict in this area as well. Everything a woman gathers is her private property, and no one, except certain kin, has the right to any of her food (although she may give some surplus away if she so desires, and women regularly overproduce to share with others (Gurven 2004)). A woman cooks for herself, her children and her husband (Wrangham 2009: 164–167). The variability in the success of small-game hunting is much smaller than that of big-game hunting, and small game is preferentially shared within the family or with 'people close to the hunter' (Gurven 2004).

Thus, the group enforced strict rules about sharing roughly equally meat from big-game hunting and private ownership, without sharing what women gathered and meat from small-game hunting. All known past and present hunter-gatherer groups studied apply these rules.

It is not too difficult to discern similar considerations in modern society, and *it must be that we are, to a not inconsiderable extent, programmed to feel that such rules are right and proper.* The roughly equal division of *high-variability external resources* to promote group cohesion and ensure survival among the hunters is such a fundamental part of how hunter-gatherer society works

that it must have become part of the instincts ('the constitution') of the human mind. It *could not have been left to learning, as it is the very basis of what makes hunters work as a group.* It must be an important example of a built-in rule for what we consider fair.

This statement might sound broad and sweeping, but it is firmly based on the logic of big-game hunting. Big-game hunting is not viable due to the high variability of the results without the group sharing approximately equally. The rule for equal sharing *must be innate to a very large degree* and must have been strongly selected for. If it were purely or mostly cultural, a group might suspend the rule on a whim during a time of great abundance or because of dissent. When the group's luck runs out, or if the suspension of the rule was due to dissent, less successful hunters, or commonly just the unlucky ones, together with their families, will one by one begin to starve and die off unless they do something. A more likely scenario is that, in what would amount to a small-scale civil war, they instead band together and forcibly take the meat from the more skilful or merely lucky hunters. Such a weakened and internally feuding tribe would not only be in danger from within. Neighbouring, more cohesive tribes would, in short order, move in and militarily defeat them.

To put this rule in more technical terms, the moral rule (or complex of rules) that high-variability external resources (the meat from big-game hunting) should be shared equally must be an adaptation to the selection pressure from the demands of big-game hunting. It is an innate moral rule that evolved for groups of up to a dozen or so hunters. As such, *it is also only designed for this particular area.*

Big-game envy in the extended order

High variability in supply in general has been observed to trigger the rule of sharing equally amongst hunter-gatherers (Buss 2009: 417–418). We still possess the same hunter-gatherer brain, and the rule that external resources should be shared equally is expressed in the media daily as the denunciation of 'greed', 'windfall profits', 'fat-cat bankers', 'excessive salaries', demands that the 'rich' be taxed harder, and the like. As in hunter-gatherer societies, in large societies, the strongest trigger of moral outrage about 'greed' concerns resources that come in large bundles and that are subject to real or perceived elements of chance, or where others are able to convince themselves that chance is involved, like in the old farming communities. In these communities, hard-working farmers were forced to share with lazy, no-good neighbours.

Some degree of effort must also be involved because pure chance, such as someone winning millions of dollars in a lottery, does not cause indignation and efforts to tax away all of the 'excess' winnings. We only need to compare the campaigns to tax away bonuses, high salaries and inheritance with the cheerful reporting of the lucky winners of a state lottery.

Thus, politicians, academics, activists and journalists who are upset about high salaries, windfall profits, 'the rich' and so on, are acting out a rule designed for a dozen hunters. An innate hunter-gatherer moral rule might, of course, also be applicable in a large society. In this case, it is not. Not that greed does not exist, but, first of all, as Adam Smith already pointed out, large societies are coordinated by prices and self-interest, enlightened or not. Implementing this particular rule fully would kill our civilisation.

Secondly, this hunter-gatherer rule is also a threat to human prosperity, as it turns out that many resources acquired in the extended order, and most of the larger ones, fall into the category of high variability. As a rule, in a market economy, there is little relationship between 'merit' (defined according to some standard) and reward. And even if there exists such a link, outsiders are usually unable to observe it or agree on what it is. You might work extremely hard and make it big, or you might work equally hard and fail, at least economically speaking. Working hard increases your chances of success, but it is by no means a guarantee.

To an individual, the market economy does not behave like a game of chess, that is, in a deterministic way. Neither does it behave like a game of pure luck. Instead, it is more like poker, where both skills and luck play their part, exactly as is the case for Stone Age big-game hunting.

Big-game hunting vs bourgeois values

That innate predispositions exist for what is considered fair does not necessarily mean that these sentiments cannot be modified or at least moderated by culture. Depending on the issue, some changes are clearly possible with more or less ease. In this particular instance, there is always a built-in conflict between considering it fair to be able to keep the fruits of one's labour and the obligation to share with the group. This conflict already exists among hunter-gatherers.

For a large, free, and prosperous society to be possible, a sufficient number of people must be allowed to exercise 'bourgeois' or capitalist cultural values, such as thrift, the idea that people should be allowed to keep a large fraction of their fortunes for

themselves and their families, and that they should be free to use their resources as they see fit.

From history, it also appears that bourgeois cultural values can be maintained when a sufficiently large fraction of the population is self-employed and has day-to-day experience of private enterprise. Importantly, also, the majority does not need to share bourgeois values of fairness for society to remain free and prosperous; it is sufficient that a significant number of people, of capitalists, are allowed to exercise them, possibly in a sea of disapproving fellow citizens. Complicating the matter, few people (actually no one) need to understand how society works for it to be free and prosperous, as long as the rules of a well-functioning market economy are maintained.

Richerson and Boyd (2005: 71–76) state that, for biological reasons, some cultural rules may be easier to learn than others, and from what we see in the world around us, the hunter-gatherer rule of the equal sharing of high-variability external resources, imposed through coercion[11] by the majority on any disagreeing minorities, appears to be much more straightforward to adopt than bourgeois values. It is, after all, a rule of fairness that has been enforced in all hunter-gatherer societies for hundreds of thousands of years.

A metaphor from physics is to consider fairness as the 'equal sharing of high-variability external resources', which is the cultural ground state. Energy, in the form of acquired insight or positive practical experience, is required for the concept of fairness to move to bourgeois values. If energy is no longer applied, person-by-person, or group of people by group of people,

11 Lest the reader forget, the tax code of a country is always enforced by the implicit or explicit threat of force, that is, by the police and the legal system.

the idea of fairness will move back to the ground state, to the hunter-gatherer ideal. Here, we might see one reason why 'angry young men' set out to fight 'greed' as they have not yet acquired any practical experience. Similarly, through their professions, intellectuals and academics are usually insulated from hands-on participation in the workings of the world.

Tribal warfare against 'the rich'

The tribes in our state of nature were allied with some tribes and enemies with others, either at war or in an uneasy state of peace. The entire 'people' consisted of approximately 500 members of the tribe. This was 'we'. All others were 'they'. There existed no other mental categories, and for this reason, there can exist no other *intuitive* mental categories in modern society either. We simply cannot have evolved to have a new brain module over the last few millennia. The general rule must, therefore, largely have been, 'share equally within the tribe and take what you can from enemy tribes.' If we assume this mindset, we can understand certain modern economic behaviours that are not wholly rational.

We have no gut feeling that tells us that if we take all the money possessed by the particular foreign tribe called 'the rich', the modern economy will grind to a halt, and soon there will be no 'rich' left to tax. Instead, the reasoning is commonly that we take what they have and share it among ourselves. There is no point in holding back against the enemy. Next year, we can raid another of the 'rich' tribes. On top of this, defeating a foreign tribe is good in itself, even if we cannot benefit from their resources, as their disappearance means that there will be more game for us and safer gathering.

In real life, taxing the rich commonly has the effect of making everyone poorer. And there are not that many 'rich' to tax. All the profits of the 'rich' health insurance companies could only run the US healthcare system for 48 hours.[12] But regardless of the illusory benefits, animosity towards 'the rich' has often had the upper hand. In the 1970s, the top marginal tax rates in Sweden and Britain stood at around 90%. 'Tax the rich until the pips squeak,' was the British saying. In Sweden, Astrid Lindgren, the children's book author, was famously required to pay 102% of her income in tax in 1976. The US has had similarly high top marginal tax rates of 70 to 94% for much of the time between the First World War and the arrival of Reagan in power in 1981 (Skousen 2008: 490–491).

If the 'rich', instead of being part of another tribe, are considered by our minds to be one of our own, and if we do not consider them to be leaders of our community, then the 'cheater detection system' kicks into gear. They might be rich at our expense, and if so, their ill-gotten gains should be confiscated. We do, however, seem to have a built-in acceptance of leaders, of 'Big Men', as they are generally called, of chiefs earning more (Diamond 1997: Chapter 14), and we also readily accept that some who have made *recognisable* contributions to society are richer than others. But again, our hunter-gatherer brain is very poor at recognising who makes an important contribution in the extended order. In fact, in the extended order, it is usually impossible to know who made an important contribution, as the relevant information cannot be gathered, much less analysed.

12 G. Will 'George Will vs Robert Reich – So easy a caveman can do it', *Radiovice Online*, 3 August 2010 (http://radioviceonline.com/george-will-vs-robert-reich-so-easy-a-caveman-can-do-it/).

Stone Age moral primitivism

Another area of morality that this discussion of equality from the perspective of hunter-gatherer society can help us understand is attempts at reconciling *equal treatment and equal outcomes.* Here, two moral principles collide. We cannot both have equal treatment and equal outcomes, and yet people mentally try to either square this circle or brush it off. We expect equality under the law. If I commit a crime, I will have to pay a fine or go to prison. We expect the poor, the rich and the famous to be treated equally by the law. With regard to financial resources, though, we create a logical muddle, trying to get the same outcome from the same treatment.

With increasing marginal tax, we try to achieve equal outcomes. With progressive taxation, we tax 'the rich' at a higher rate than 'the poor', even if they render the same service. Depending on how the progressive taxation works, one painter working in your home might receive 10% in their pocket of what you have to earn to pay them, while another one might receive 40%. The large disparities come from two sets of progressive taxation and social charges, followed by VAT or sales tax.

From the perspective of a hunter-gatherer society, there is not that much of a conflict between equal treatment and equal outcomes, and neither does it seem to be in the eyes of many people in modern societies. No 'squaring of the circle' appears to operate. Instead of considering the two goals as potentially being in conflict, *they are treated sequentially.* In other words, while many authors treat 'fairness' as a single idea, for example, Rawls (1971) with his concept of 'justice as fairness'[13], the claim in the present essay is that humans use two (or at least two)

13 Rawls considers equal outcomes, or at least beginnings, as fairness.

distinct concepts. Furthermore, in our minds, these concepts do not exist on a sliding scale where one could be made to gradually turn into the other. Quite the contrary. These ideas of fairness are separate, and they are incompatible. This incompatibility is rarely noticed, however, as they are not applied at the same time.

First, everyone is treated equally with regard to the hunt, in modern parlance, with regard to working. Labour legislation is commonly both strict and detailed to ensure 'fairness' in the workplace. It appears clear that we have an innate mental heuristic for dealing with this particular situation.

Then, after the kill, today, after the working day, the rule of equal treatment is set aside, and we *instead* use the rule of equal outcomes. Thus, we apply another rule for this new situation. But either we lack a rule for reconciling these two situations, or, as the potential conflict between them also exists for hunter-gatherers, the rule for reconciling them is given much less priority than the rule for equal sharing. Instead, high-variability externally obtained resources are simply to be shared so that everyone receives the same amount. If that means taxing the 'rich' at 95%, so be it.

But as we no longer live in a group of 25, the implementation of the rule of equal outcomes is making us all a lot poorer by stifling innovation, reducing incentives and having a range of other effects, as we shall discuss in Chapters 3 and 4. In a large society, the two rules need to be applied simultaneously. A trade-off between equal treatment and equal outcomes must be found. If we want the highest possible prosperity for all, we should aim for equal treatment. If we do this, experience tells us that we will get a fair degree of similarity in outcomes in the bargain. But that is not the intuitive understanding of the hunter-gatherer mind.

Hunter-gatherers in the Great Society

In this chapter, we will examine the extended order in more detail and explore some of the consequences of the collision between the hunter-gatherer mindset and Adam Smith's Great Society. We will look at what we can deduce about planning vs self-organisation from the point of view of evolutionary thinking, economics, mathematics and the physical constraints of the world we live in.

Self-organisation – the extended order

It is fascinating to see a flock of hundreds of birds fly and manoeuvre as one, or a school of thousands of fish move as a single unit. How can so many creatures synchronise their movements to such a degree? We now know that these are examples of self-organised systems, systems where small, simple rules create order on a large scale. For the flock of birds, there are only three rules: short-range repulsion (avoid crowding neighbours); steer towards the average heading of neighbours (this maintains alignment); and steer towards the average position of neighbours (maintains cohesion).[14]

In a similar but much more complex way, in human society, each individual applies a number of simple and not-so-simple rules

14 C. Reynolds (1986) 'Boids'. Accessed 16 September 2020 (http://www.red3d.com/cwr/boids/).

as we go about our lives. It is these rules, observed by each one of us, that create the order around us, an order that we neither have planned nor understand. This is the 'Great Society' of Adam Smith or the 'Open Society' in the words of Popper (Popper 1945a; Popper 1945b) or, as Hayek calls it, the 'Extended Order' (Hayek 1988).

We need to understand as little the overall outcome of following these rules as an individual ant needs to know how to build an anthill. And yet, the result of all ants following appropriate rules is an amazingly complex feat of engineering. If humans follow certain rules, the result will be a prosperous and free society. If they follow other rules, if they have other laws and cultural values, the overall outcome will be an impoverished totalitarian state. The key point of this chapter, and really the whole essay, is that the use of a few of the rules that were appropriate for the self-organisation of a tribe of 500 will lead to serfdom and misery in large societies.

David Hume (Hume 1740: Book 3, Part 2, Section 6; Hayek 1976: 40) again concluded that three basic conditions are necessary for us to be able to peacefully collaborate with thousands or millions of people who are unknown to us. Again, they are:

1 – *The stability of possession*, that property rights are protected.
2 – *The transference of possessions by consent*, that we can freely buy and sell goods and services.
3a – *The performance of promises*, that we can freely enter into contracts and that we can be certain that such contracts will be honoured.
3b – *The duty to compensate others for any harm we may cause them.*

It is important to note that, in the form these rules take in a large society, where they apply equally to all and crucially to people who are strangers, these three conditions are *added* to the rules of the hunter-gatherer, and they sometimes supplant them. For hunter-gatherers, what appear to be similar rules are different in their essential qualities and almost only apply to people who are well known or recognised by sight[15]. Hume's three conditions cause problems in the modern world as well, since they cannot be applied to our intimate relationships. But the rules of the hunter-gatherers cannot be applied in many areas of the Great Society either. As Hayek put it:

> If we were to apply the unmodified, uncurbed, rules of the micro-cosmos (i.e., of the small band or troop, or of, say, our families) to the macro-cosmos (our wider civilization), as our instincts and sentimental yearnings often make us wish to do, *we would destroy it.* Yet if we were always to apply the rules of the extended order to our more intimate groupings, *we would crush them.* So we must learn to live in two sorts of world at once (Hayek 1988: 18).

On the one hand, as we will discuss at length in this chapter, the rules for interacting with friends and family *do not scale* to large societies of thousands or millions of people. On the other hand, we cannot use the rules of the macro-cosmos for our personal relationships. We do not write contracts with family members, and we do not buy and sell affection.

The domains of the micro-cosmos and the macro-cosmos are illustrated in Table 3.1, both for the hunter-gatherer world and

15 The farming communities of Medieval Europe were culturally not that different from hunter-gatherer societies in many respects. As the cities developed in Europe, they adopted separate legal systems. Those of the surrounding countryside did not allow for much commerce, as they, for example, might not protect traders against violence.

for large societies. The hunter-gatherer brain will commonly want to 'do something' about perceived problems both in the micro-cosmos (in ways that are commonly appropriate) and in the macro-cosmos (in ways that are commonly misguided). For some areas, though, such as cars, computers, socks, dishwashers, footballs and thousands of other items, we are quite able to allow self-organisation to take place through the market.

In other areas, we instead feel a virtually unstoppable urge, commonly fuelled by strong moral sentiments, to discard the self-organisation of the market as immoral and unthinkable. Instead, we attempt to apply the rules of the micro-cosmos to the macro-cosmos. This does not work, as will be made clear in this chapter, since the complexities of the problems do not magically become smaller when we deal with healthcare compared with, for example, lawnmowers.

The motives for attempting to apply the rules of the micro-cosmos to the macro-cosmos will vary from one area to the next, depending on what particular hunter-gatherer instincts happen to be triggered.

Hunter-gatherers	Size	Great Society	Size
–	–	Society at large	8 billion
Tribe/ Dialect Group	500 (175-1400)	Company/sports club/Nation/...	Hundreds to millions
Clan	About 150	People we know well	About 150
Band	25 (20-70)	Friends/close colleagues	Dozen(s)
Family	A few people	Family	A few people

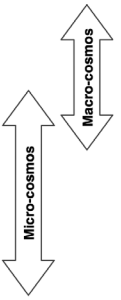


Table 3.1. The micro-cosmos and the macro-cosmos.

Note: *The macro-cosmos hardly exists in the world of the hunter-gatherer, and to the extent it does, the precise rules governing it will still be somewhat different from what they are in the Great Society.*

All in all, we follow thousands of rules, some of which are genetically programmed into us; others are customs and laws specific to our country or our culture. Most laws that exist, including those of the macro-cosmos, have evolved through the ages and are not newly invented, in spite of the fact that they might have been written down in their current state by a legislative assembly. There also exists a veneer of consciously planned rules and regulations.

Human law is much older than legislation (Hayek 1973: 73). From an evolutionary perspective, it cannot be otherwise since our ancestors lived in society for millions of years, and the law gradually developed as humanity and societies evolved. Human societies are largely self-organised structures that are part of a completely self-organised universe. More specifically, as we have already mentioned, they are examples of self-organisation called CASs, systems that can adapt. Some such systems, such as a human society, can also learn.

Only four physical forces govern the solar system and the rest of the universe: gravity, the electromagnetic force, the strong force and the weak force. The latter two are only of importance on a sub-atomic scale, for example, in the nucleus of an atom. In an absolute sense, provided our physical understanding is correct, unless there is a God, or unless there exists a mind separate from matter, these same four forces might also completely govern human society. But we need to use abstractions, as we are not able to treat society as a collection of elementary particles. Nature has already made almost all of these abstractions for us. Without them, the world as we know it and society would not exist.

We owe our existence to the self-organisation of nature into successively larger structures: sub-atomic particles, atoms, molecules, organelles, cells, living beings and societies (Holland 1995: 36). Each higher level is a self-organisation constituted by a collection of self-organised, more basic parts. Humans form families, organisations, companies and countries. Most of these structures in human society are examples of evolved self-organisation, not of planning. New York City is the result of 400 years of complex adaptations (Holland 1995: 91).

We often find it difficult to comprehend and even accept that complicated structures and processes can be the result of simple rules. As Sowell (2007: 11–12) writes,

> [t]he last President of the Soviet Union, Mikhail Gorbachev, is said to have asked British Prime Minister Margaret Thatcher: How do you see to it that people get food? The answer was that she didn't. Prices did that. Moreover, the British people were better fed than those in the Soviet Union, even though the British have not produced enough food to feed themselves in more than a century.

Instead of accepting the self-organisation of society and what it brings us, we often make conscious attempts to change it in certain directions. That is, instead of just working with what we know and can control to some extent around us, we make grand plans for all of society. We tend to believe that these plans are of great importance, and some actually might be, but mostly because they throw a spanner in the works of self-organisation.

Adding deliberate organisation

But, say many, 'We know so much more now' and 'We need to plan' certain aspects of our society, such as healthcare, schools, care for the elderly, and give directions to industry that 'only looks at the short term'. Thus, instead of just letting most things take their course while improving laws slowly and with care, we should plan society as we wish it to be. But in reality, we know very little, and we are unable to plan much in society. We underestimate what the necessarily unknown benefits of a free economy are, simply because they are unknown.

On top of this understandable reaction to uncertain benefits, we also, for evolutionary reasons, lack the mental 'modules' needed to *intuitively* understand how our large society really works. All we can do is perform some painstaking modelling of possible results of our actions, something that we are not very good at, and, to make things even worse, we will then underestimate and mistrust any benefits detected by our models when compared to what our gut feeling tells us. But as we have already mentioned, we actually do not need any intuitive understanding of the extended order, just good laws and the right cultural values. Ants do not know, and do not need to know, how the anthill functions.

That our hunter-gatherer gut feeling tells us to plan for society as a whole is unfortunate because, if we want a free and prosperous society, we should plan very little, either for society as a whole or for any major parts of it. Only if we accept turning society into a totalitarian dictatorship can we hope to steer it to any important degree. And if we do, we destroy all innovation and prosperity. These might sound like harsh conclusions, but there is ample historical evidence for this point of view.

The alternative to 'rational', centralised planning is not no planning at all; quite the contrary, it is competition and cooperation where millions of people and organisations all plan for themselves using their particular local knowledge (Hayek 1945).

To see why society is so complex and exceeds our understanding, we can use a rather pedestrian example to demonstrate how what might appear to be simple changes to a self-organised system make the problem balloon in size. Suppose that we are the lead birds of a flock of 100 birds as described above, and we are unhappy with the way stragglers fail to keep up, how some birds fly off on their own and the general untidiness of how the flock behaves. Instead of treating these defects as acceptable trade-offs, we decide to organise the flock using scientific means. We magically install remote controls in the lower-ranking members' brains. We, therefore, need a central intelligence that controls 100 birds. This means that we need to control 100 heights, 100 directions on the horizontal plane and 100 individual speeds.

We also need to control 100 x 99/2 = 4,950 distances (see below in the section on the scaling fallacy) between all of the birds so that

they are in the correct place and do not collide[16]. If there is an obstacle affecting one or several of the birds, we need to detect this object at the 'bird level' and then adjust the movements of all of the birds. The appropriate action must be taken quickly if a bird of prey is detected. Thus, the monitoring must be constant, and the course corrections must be made within a few hundredths of a second, as we are flying at high speed and as a peregrine falcon might arrive from above at 3–400 km/h.

When a falcon arrives, we must also decide if we are to let little Stevie be eaten or risk flying the whole flock into a building. Thus, for the dubious advantage of being able to control the flock, we have moved from a situation where the order grows from the ground (or rather bird) level up and continuously adjusts itself by following three simple rules to a problem that is probably thousands of times larger. The example might seem ridiculous, but it is meant to give a sense of what a change from spontaneous order to planned organisation involves. Self-organisation with simple rules that allow for local adjustment based on locally held information is a much more economical solution[17].

16 I am not claiming that this is the only way to solve such a control problem. However, the pedestrian approach I outline is in the spirit of how political central control is commonly exercised.

17 Using high-speed cameras and computer tracker software, a group of researchers has recently, for the first time, worked out the details of how flocks of birds manage to twist and turn and still maintain the cohesion of the flock. It appears that the birds copy not the direction but how sharply their neighbours turn. A handful of birds in a group of starlings begin turning, and this information then propagates through the flock at a near-constant speed of 20–40 m/s. It takes just over half a second for a flock of 400 birds to change direction (Attanasi et al. 2014; Woo 2014).

The complexity of the local coordination problem

Even if a society is almost exclusively based on Hume's three rules, as individuals or as members or leaders of organisations, we are not able to understand our surroundings in those terms. And even if we had a small inkling of an understanding, *that understanding is not actionable*. We cannot change some general rules for society as a whole to achieve precisely what we desire at each given moment. Instead, we seek to understand and act as agents within the Great Society; each of us is just one of those agents that create this very society. We are all immersed in this society that, with our limited cognitive faculties, we do not and cannot comprehend as a whole. To first imperfectly understand and then act and attempt to fashion our little world, we must apply some measures of local deliberate planning and local deliberate coordination with other individuals and organisations.

These competing and collaborating planning efforts are made by and for a multitude of what we may call *decision units*. The decision units of a human society (Sowell 1980) are, as discussed, not only individuals; they are also families, companies, voluntary organisations, many of them mass movements, charitable foundations, churches, sports clubs, etc. Each of these decision units has its own agenda, plans and resources, as well as its internal bureaucratic or intuitive rules to help organise them. None of their plans is likely to hold up apart from during brief moments, after which they will need to be adjusted time and time again based on the local and more or less timely knowledge of the 'man on the spot', as Hayek (1945) put it.

The scaling fallacy

The computer consultant Gerald Weinberg formulated the 'scaling fallacy'. This is the belief that 'Large systems are like small systems, just bigger' (Weinberg 1992: 77).

Suppose that someone, Steve, can perfectly control a system (for example, a group of people, a programming problem, or the running of machinery) of a certain maximum size. Suppose that Sarah, who graduated from MIT and is twice as smart, is given a system that is twice as large. The scaling fallacy is to believe that a system that is twice as large can be controlled using twice the computational (mental) resources. This is not the case, and Sarah will fail miserably at attempting to manage it. The effort to control a system does not grow linearly with size. Instead, it grows *at least as fast as the square of the size*. As an example, in a system consisting of a group of N people, where everyone needs to interact with everyone else, there are N(N-1)/2 (which grows as N^2 when N is large) relationships between those involved.

In a market economy, a company might have 300 potential suppliers, 15 competitors and 2,000 clients. But with regard to the prices the company can charge, the manager sometimes does not have to contact anyone at all; she can just observe the market price. Most of the time, she will set a price and then adjust it to optimise revenue over some time scale. This might not be an easy thing to do, and it involves a lot of trial and error. She can never be certain that she has found the optimum price, and she will need to steer demand through price increases or discounts, but most of the time, her efforts will be good enough to manage inventory and revenue.

Similarly, she can sometimes find out the market price for her raw materials or ask several suppliers to submit bids and

choose the lowest one (or the lowest bid from a reliable firm). As customers, we shop around for the best price/quality trade-off within our budget and our area. We let the shops compete for our services; we do not need to know how they do that.

Instead of allowing self-organisation to determine prices, we may want to ensure that 'just' prices and remunerations are practised. In an extreme case, such as in the Soviet planned economy, all prices are set centrally. With our example, the manager would need to handle approximately $(300 + 15 + 2{,}000)^2/2 = 2.7$ million relationships. This is, of course, impossible for a small company, but this problem is still a much-simplified one compared to the real problems of attempting to centrally steer a society. In the Soviet Union, with some 300 million inhabitants, there were some 45 *million billion* mutual relationships to coordinate.

Through various means, the Soviets reduced the number of prices they needed to set centrally to 24 million (Sowell 2007: 17) and achieved uniform, unappealing, poor-quality products and horrific shortages. As a comparison, in New York alone, there exist the order of *ten billion* different 'stock keeping units', items for sale for which the price may vary from shop to shop and from one day to the next (Beinhocker 2006: 9). But these prices are not centrally set; instead, they are decided locally by 'the man on the spot' who continuously fine-tunes them.

Since the Berlin Wall fell, we have forgotten much of what it was like, but I remember vividly hearing on the radio once that the Soviet Union had run out of toothpaste. Three hundred million people were unable to buy toothpaste. Abortion was used as birth control on a massive scale, as the superpower frequently ran out of condoms.

Setting supposedly correct prices just once is not enough. Even if they had set their 24 million prices 'correctly' in the evening, the following morning when the Gosplan bureaucrats got back to work, an unexpectedly large grain harvest, a fire in a large tractor factory, frost killing off apple blooms, the report of a new invention, and millions of other possible events would have meant they really should set them all again. To do this correctly, they would have had to mutually adjust most of the 24 million prices through trial and error, a process that, if done properly, would take longer than the remaining life of the universe. But they would have needed to do it every day.

In the above, an attempt was made to make the argument against central planning as simple to understand as possible. The interested reader might want to consult, for example, *Socialism* by Ludwig von Mises (1936: 95–130). Mises demonstrated already in 1920 that without freely set prices, central planning is impossible because no one can actually know anything about how resources should be allocated. This is true because, without market prices, one cannot perform economic calculations. This is, of course, a logical contradiction because if prices are set freely, there is no central planning.

An accessible treatment of the coordination of an economy and economic knowledge in general can be found in Hayek's little gem of a book, *Individualism and Economic Order* (Hayek 1948, in particular Chapters 7–9). That prices in a socialist economy should be adjusted through trial and error was one of the proposals put forward by the socialist economists Oscar Lange, Fred M. Taylor and H. D. Dickinson to counter von Mises' objections, but it was comprehensively refuted by Hayek (1948: Chapter 9) in a vein similar to the arguments in this section and the two subsequent ones.

If part of a domestic economy is free, it is possible to use the prices that evolve in the free part and use them as a guide for the planned part. The Soviets and Nazi Germany could similarly limp along and use pricing levels set abroad as approximate values for their socialised economies[18].

Another simplification that was made, which in reality is completely unwarranted, is the assumption that prices are 'well behaved', that we are dealing with 'mediocristan' and not 'extremistan' in the words of Taleb in *The Black Swan* (Taleb 2007). In reality, any change in a price might cause non-linear or discontinuous changes in other prices or trigger 'black swans', changes to the economy that lie far outside predictions (for example, a market crash). Therefore, once the Soviets changed a price, it would have been impossible for them to return society to the way it was before by changing it back. Humpty Dumpty cannot be put together again.

In fact, the variables in a CAS will oscillate (Holland 1995: 15–23). A simple example is prey–predator dynamics. So, even if the prices do not vary, consumer demand will still change over time. It was actually impossible for the Soviet planners to provide the right amount of goods for the comrades, even if 24 million 'perfect' prices had been found for a particular time, as long as a single person could still decide what to buy and what not to buy and then change their mind.

18 In the German or 'Hindenburg' pattern of socialism, the owners of companies were left nominally in charge while having to conform to detailed regulations about what to produce, who to buy from and who to sell to, and follow orders in general from what was called the *Reichswirtschaftsministerium* in Nazi Germany (von Mises 1949: 717–719).

The impossible task of steering society

When we want to steer parts of society centrally, the first thing to do is to establish a list of priorities; we must create a centrally held hierarchy of values. Without such a common hierarchy, as is the case in a free society, each person just has his list of priorities. For example, some want to spend a lot of money on health insurance, while others will want to spend less so that they are instead able to use their resources to start a company, buy a new car, live in a better house, or eat out more often. Some will not want to spend any money at all on health insurance.

Many of those who spend little money on health insurance will instead spend their money on what others believe are 'frivolous' or 'wasteful' things, according to the particular hierarchies of values of these third-party observers. Because of the itch to impose social conformity[19] on their fellow humans 'for their own good', they, therefore, strive to impose their own private hierarchy of values on the rest of society through the coercive powers of the legal system. For example, they commonly want to impose a one-size-fits-all health insurance coverage for all that everyone is obliged to pay for through various taxes.

Even if we have much smaller ambitions than to steer the whole society, something this essay has hopefully convinced the reader is impossible, there are at least five aspects of human society that make the problem of steering it unmanageable, even on a moderate scale. First of all, the rules for coordinating actions are complex. Economic information is only a small fraction. There are also rules for language, non-verbal communication, polite

19 The drive to impose social conformity on others is strong and pervasive among human beings, and it is rooted in our evolutionary history, as Darwin already pointed out. I develop the subject further in *Evolution and Social Order* (Lidström 2025).

(and impolite) behaviour towards one another, moral rules for what is right and wrong, the law, fashion trends and much more.

As with language, we absorb our culture when we grow up. But to try to steer culture through social engineering is exceedingly difficult and, for the most part, impossible. The people we would want to steer will also have quite different motivations when they are told what to do compared to when they work for themselves. A briefer version of this point is to say that what we really would want to get at if we try to coordinate people goes on in a place we cannot reach: inside people's heads.

Secondly, the information in the system, in society, is held locally, and there exists no possible mechanism to gather more than a minute fraction of it in a central point. A person might not even be aware that he possesses certain knowledge before he uses it. Or, as the information is unconsciously formulated, they may not know that he possesses the knowledge at all, even when he uses it. Acting according to one's unspoken cultural values is an example.

Thirdly, in a self-organised system, decisions are often taken in real time. The information might be faulty or incomplete, but waiting too long to perfect it is often worse than making an imperfect choice. Spending time on collecting information is costly on the local level, and delivering it to a central point costs even more. By the time the Soviet Union planning committee had set the national price for toothpaste to a different level, changed the production levels, or both, the country might have gone without it for months. As we have seen above, it was impossible for them to know what the correct price and production levels were without pricing signals, even with trial and error on a massive scale. The new level would, therefore, almost certainly be too high or still too low. Even worse, if it were too high or

too low, it would have depended on a fraction of the other 24 million prices.

Fourth, related to the two previous points, each decision in a self-organised system is commonly made or is best made by a particular person, the person on the spot, who happens to know particular things about what to do and what the effects of each of various possible decisions may be that no one else knows, knowledge that they might not even be able to articulate as they make a decision.

Fifth, things in the human extended order change frequently, and the information changes as well. Anywhere in the system, there can appear new Beatles, Michelangelo, Edison, Lady Gaga, Elon Musk or Shakespeare. Nobody can tell where and when new ideas will appear. Also, outstanding creative wizards can commonly only be recognised after the fact, after their particular ideas have been judged better than millions of other attempts. And just because we recognise the exceptional achievements of a few hundred individuals, this does not mean that they are more important than the combined results of millions of anonymous contributors, of whom we know nothing.

As soon as an innovation is made anywhere in a CAS, such as human society, shock waves of changes will propagate, something we know from, for example, the history of technology (think of the car, aeroplanes, telephones, music genres and the internet). Even though we should not need further proof of this, we can now create highly simplified computer simulations that illustrate what happens when a novelty is introduced (Holland 1995: Chapter 2).

Constant change is thus an integral part of a free society. A planned society will instead prevent almost all change, no

matter how trivial, whether it is a new pen design or something larger like inventing the internet, Facebook, or the Google search engine. On the one hand, there are the unknown benefits of a change. On the other hand, there are, first of all, the impossibly large investigations that must be put in place to evaluate these benefits and the likelihood that they will nevertheless be incorrect, as with all product launches we see around us.

Secondly, if a change is to be implemented, say a new pen, it will mean the direct reallocation of hundreds of products, each of which will, in turn, mean the reallocation of countless other products. In essence, all of society must change to a smaller or larger degree; everything will need to be re-planned, and all entrenched interests will have to change their ways to some extent. It is hard to see how any change can take place at all.

Some might object that the Soviet sphere did evolve during its 72-year existence. This is true. But first of all, not everything was planned; there remained small pockets of private initiative. For example, during the period after the Second World War, close to one-third of the foodstuffs came from 33 million private plots of land, constituting a mere 1.5% of the cultivated area (Pipes 1999: 215). Secondly, a substantial fraction of the new technology that was adopted was pre-screened in the West. The Soviet leaders could, therefore, see, or believed they saw, what worked and what did not and then copied Western ideas or bought whole factories from the West.

Finally, the part of the economy that was officially centrally planned was, in fact, ham-fistedly coordinated from the bottom up. In *Why Perestroika Failed,* Peter J. Boettke (1993: 30-31) writes:

> The capital market under conditions of public ownership was simply replaced by another decentralized system, one that

> was more clumsy and less efficient. The 'plan' was built up from the competing requests of the various enterprises and ministries. The political competition among rival pressure groups characterized the 'supreme' economic decisions. The primary function of the planning bureaucracy was to serve as a supply agent and avoid the practice of free price formation and monetary rationing. Capital resources, however, are scarce and, therefore, must be rationed. ... In the Soviet context, both in the consumer and producer sectors, bribing officials, illicit market transactions and special privilege to political elites, emerged as predominant rationing devices. ... If we include the unofficial use of the market by planners, then the image of a central, unified and rational plan becomes even more questionable. First, Soviet planners carefully study world markets to aid them in their planning decisions.

Gross simplifications are necessary for attempts at planning

A free society is thus a complex system that is so large that it cannot be planned to more than a superficial extent. If we nevertheless want to introduce planning in a society, whether it is planning on a small or global scale, like in the old Soviet Union, a number of simplifications must be made. First of all, since the rules for interactions are complex in a free society, their number must be reduced through means such as the introduction of standardised diplomas for access 'based on merit' to government jobs, standardised promotion criteria or standardised hospital treatments where each patient is treated the same way.

Secondly, in the planned system, most information must be discarded, as it is impossible to gather and centralise all of the local information held by a free society. Instead, groups of experts will be formed to produce and collect information.

Thirdly, time delays must be introduced, that is, queuing, as a centrally planned society cannot act as quickly as a self-organised one and must build up buffers. For example, in a system of socialised healthcare such as the British National Health Service (NHS), in 2007, it was reported that

> [i]n England the current target is that patients should not wait more than 6 months from GP [General Practitioner, the local doctor] referral to treatment (that includes the first outpatient appointment and diagnostic tests). The English improvement plan sets out the ambitious aim that, by 2008, no one should wait more than 18 weeks from GP referral to hospital treatment (Thompsons Solicitors 2007).[20]

In a free system, where government does not involve itself with healthcare, the GP, the hospital and the specialist actually work for the patient. Competition will ensure that any hospital that waits six months or 18 weeks instead of days or hours before accepting referred patients will go out of business.

Fourth, the planning and organisation of the system will need to include education and innovation. Only the very best will commonly be accepted to the prestigious art colleges or schools of administration (but if they were selected at random, this would not fundamentally change the outcome). For the arts, after carefully selecting those youngsters who will receive specialised training, innovation is expected to flow from people who have excelled in academic tests between the ages of 7 and 25.

20 Thompsons Solicitors 'NHS Waiting lists: targets and England & Wales comparison', April 2007. Accessed 2 May 2015 (https://web.archive.org/web/20160303165135/http://www.thompsons.law.co.uk/clinical-negligence/nhs-waiting-lists-targets.htm).

Thus, not only has some 99.9% of the population been prevented from contributing in each area, but on top of that, innovation is expected from people who have reached their position through perfect test scores without any reward for creativity. Creativity is, *by definition*, banned in a planned system, as creativity takes place outside of planning. Schemes such as these have been tried and failed miserably on empire-wide scales.

But gathering information and deciding what to do is only part of the work. In a planned society, an administration must be created to issue orders. Then, it must be verified that these orders have been carried out as intended by the planners. This sparks a whole new range of information-gathering problems of the same magnitude as the initial one.

The practical need for freedom

Freedom of action, the freedom to try out new things, is essential in a complex society since no one can know what will work and what will not without trying it first, and anyone, anywhere in society, may have ideas in very many areas. Freedom is the right to try, but it is not the right to succeed. In fact, failure is as important as success. Just as the subset of the extended order called the capitalist economy is a profit and *loss* system*, all of society must be a success and failure system.*

Loss-making companies of any size must be allowed to go bankrupt and possibly disappear, and the possibility of failure in all areas must be an accepted fact of life. If we only accept success in business and society, we remove the possibility of an evolutionary selection pressure to weed out failures and select winners. Thus, if we want society to evolve rapidly, '[o]ur whole

problem is to make the mistakes as fast as possible,' as J.A. Wheeler put it (quoted in Hayek 1960: 81).

The extended order and deliberate organisation

Even though a prosperous society, for the most part, is a self-organised extended order, inside this order, many organisations are deliberately created to achieve certain goals. Companies, sports clubs, the military and the government are such organisations. Large organisations are usually divided into many smaller entities. For many purposes, deliberate, coordinated action is necessary to achieve desired outcomes. In some instances, such coordination is highly successful, as in many (but not all) companies, sports teams or armies. In other instances, such deliberate coordination is necessary, although it is at the same time very costly.

When digging trenches, adding more people speeds up the work in proportion to the number of people added. In many other instances, though, such as computer programming, the effect of adding workforce is limited or even negative. The main difference between digging trenches and creating computer programs lies in the degree of 'connectedness' of the problem.

Trench diggers work independently of one another, while computer programmers working on a problem together need to coordinate their activities. An experiment by Boehm, Gray and Seewaldt (quoted in McConnell 1993: 523) found that the productivity for small software teams was 39% higher than for large teams. There were two people in the small teams and

three in the 'large' ones[21]. The art of software management is to organise projects in a way that caters to this issue and somehow works around it. A large proportion of software projects that fail do so because managers treat them as if they are house or road construction projects, instead of the coordination of efforts by knowledge workers.

The hunter-gatherer brain meets the extended order

Although, as discussed in the previous chapter, trade must have been important to our hunter-gatherer ancestors, humans are designed for a world where each individual either knew and mastered almost everything that there was to know in their society or knew others who possessed almost all the knowledge that remained. We had to know hunting, gathering, cooking meat, turning poisonous plants into edible ones, tracking animals, recognising signs for where water could be found, toolmaking, lighting a fire and thousands of other things. In the hunter-gatherer society, as in today's society, our ancestors were not aware of the origins and the details of much of what they knew because, as humans, we pick up our language, our culture and our knowledge as we grow up, often without much thought. In today's world, with training courses and university degrees for almost everything, we tend to forget how much we learn by doing and by imitating, consciously or not.

21 Moving from two to three developers has thus changed the total output per time unit from 2.78 to 3 in some arbitrary unit. Moving to four or five developers will likely reduce productivity to such an extent that the total output actually goes down. Instead, if the task is to progress faster, a way must be found to divide it up into sub-tasks that are as independent as possible. Often, this will not be possible, and the manager has to accept that there is a limit to how fast progress can be made.

Thus, in a hunter-gatherer society, like in a modern society, most of our social interactions are performed unconsciously, like the rules for eye contact, personal space and nodding or shaking one's head to mean 'yes'. When we learn something new, we often struggle through a time of conscious thought, like when we learn how to drive a car, but we then store away this skill as an automatic process so that we can actually see and anticipate the traffic while driving. In so doing, we forget almost all of the conscious actions we had to perform while learning. In many circumstances, like when we learn our native tongue or how to ride a bicycle, the processes for learning are almost completely outside the realm of our conscious mind.

Our ancestors moved from living in small hunter-gatherer societies to large ones, and in so doing, the *economy of mind,* the fact that *we only use our conscious thoughts on special occasions,* stayed with us[22]. But while the conscious and unconscious knowledge our ancestors possessed as hunter-gatherers, together with the skills of other people whom they knew personally, almost constituted the sum total of all human knowledge that existed in their world, this is no longer the case in a large society. In fact, we can say (Hayek 1960: Chapter 2) that the more civilisation progresses, the less we need to know. In Alfred North Whitehead's words in 1911:

> It is a profoundly erroneous truism, repeated by all copy-books and by eminent people when they are making speeches, that we should cultivate the habit of thinking of what we are doing. The precise opposite is the case. Civilization advances by extending the number of important operations which we can perform without thinking about them. Operations of thought are like

22 Just how hard our brain needs to work when we try to think consciously is the subject of Kahneman's *Thinking, Fast and Slow*, in particular Chapters 2 and 3 (Kahneman 2011).

> cavalry charges in a battle – they are strictly limited in number, they require fresh horses, and must only be made at decisive moments (Whitehead 1911: 61).

The differences between small and large societies can be divided into several categories. First of all, there are skills, such as how to use a hammer, mix cement, milk a cow, play the clarinet, solve math problems or operate a computer. In a large society, no human can master more than an insignificant fraction of these skills, but we could learn many if only we spent some (considerable) time. In this sense, the large society is just an extension of the small one.

A second category of differences is that our large society, with its extended order, contains many more social interactions, and these interactions are mostly between people who do not know one another. What constitutes appropriate behaviour towards strangers differs to a large extent from appropriate behaviour towards those we know well. It is not generally useful to form close, reciprocal relationships with those who work for some online retailer. Instead, most of the time, we simply shop around for the best price. However, we also form networks of trust, and we are sometimes prepared to pay a little bit more to a retailer that we trust by reputation or personal experience.

Probably the most important and confusing difference is that the *laws of causality* are no longer the ones that we are designed for through evolution. In our state of nature, the rules for cause and effect in social interactions were largely known and, most of the time, *direct* (if I do A, then B will happen). However, the rules for action and reaction in the extended order often no longer work in this way, and new rules have appeared.

Thus, instead of those simple cause-and-effect relationships that our minds are designed for, in the extended order, every time we implement a change, there will also be second, third, fourth etc order effects. By a second-order effect, we mean side effects from the intended first-order intervention. There may be many such second-order effects. Each, in turn, might cause other third-order effects. What exactly constitutes a second- or third-order effect may not be easy to determine either.

If, during the Stone Age, Steve and Sarah got married and did not have affordable housing, their friends could help them build a hut (see Figure 3.1). Applying the same logic to inner cities commonly means restricting the rents to keep them affordable. Again, that the result is the most effective way of destroying a city, second to bombing, is not *intuitively* understood.

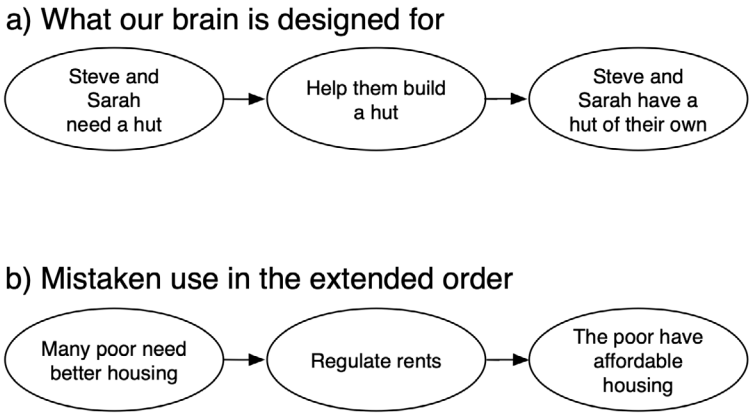


Figure 3.1. The kind of causal relationships our brain was designed for.

Note: *If Steve and Sarah got married and needed a new hut, we would help them. The relationship in b) is false. Regulating rents will (rarely) give the poor affordable housing, but most definitely cause a lot of misery.*

Instead of the intended outcome, in the extended order, an imposed maximum price for rent, a rent restriction to make housing affordable for the less fortunate, will lead to less construction, poorer quality of what is constructed and more demand for housing as the cost is held artificially low (compared to some market price). The second-order effects of less construction will lead to higher unemployment, which in turn will lead to more poor people, which will lead to a higher demand for low-cost housing. Some possible effects of rent restrictions are illustrated in a diagram of effects in Figure 3.2.

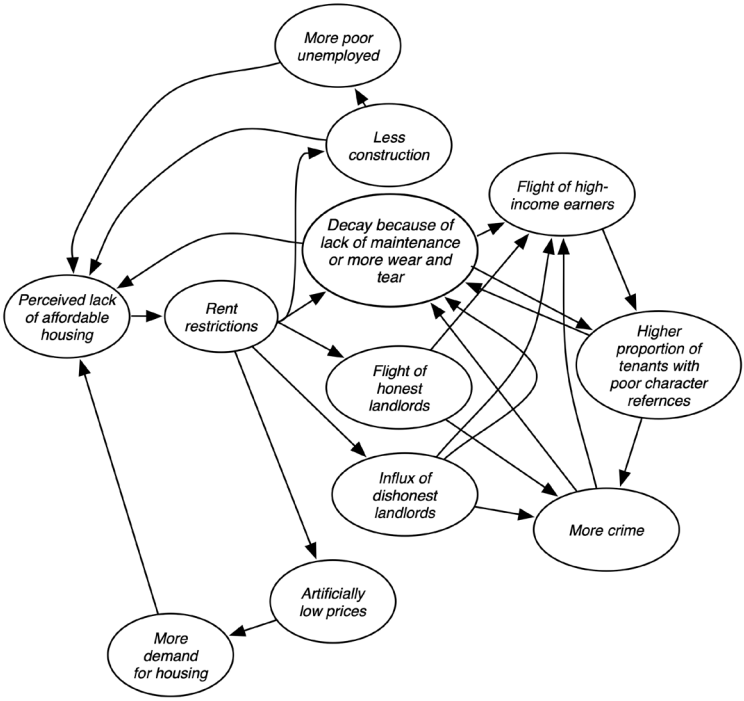


Figure 3.2. Schematic diagram of effects of some of the results of rent restrictions.

Note*: The diagram is by no means complete; it actually cannot be made complete, even if the categorisation of effects and relationships can be agreed upon. At some stage, one simply has to decide to stop including further repercussions. Two things must be observed. If the arrows are followed around, one notices that there are many feedback loops in the diagram. This contributes to the fact that the effects are highly non-linear (a small change can give a very large and very surprising effect). Secondly, the diagram neither indicates the strength of these feedback loops nor the time delays before all changes have made themselves known. For the general case, the system will oscillate and only reach a stable state when all effects are so small that they can no longer be detected.*

Our minds are not adapted to these higher-order effects. Hunter-gatherer societies did not have any such effects, as they occur only in large societies. To make matters worse, these systemic interactions take time to show their effects: days,

weeks, months or years. It can even take decades before rent restrictions turn a prosperous middle-class neighbourhood into a burnt-out ghetto[23].

Because of the systemic nature of society, any government intervention in the economy or the legal system will create a number of side effects. If the government pauses, a new self-organisation of society will arise based on the changed legislation. But whether the government waits or not, some negative effects on society are almost always bound to be detectable. Those politicians who are the most likely to intervene to cure perceived problems are logically the ones who are the most likely to fix the negative side effects of the original intervention by yet more interventions.

We may, therefore, safely assume that the new problems will not be attributed to the original change. As a result, this initial change will remain in place. Also, in a complex system, many changes cannot be undone or can only be undone with great difficulty. If each intervention causes, on average, two negative side effects, we will successively have 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, and 1,024 problems that need solving. 'Solving' such issues cannot go on forever, and eventually the government will run out of resources.

We can see the effects of this from data for tax pressures and government expenditure as a fraction of GDP. The averages of government expenditure as a proportion of GDP in major industrialised countries were 10.7% around 1870, 12.7% in 1913,

23 Two classic and accessible discussions of the side effects of actions in large societies are, first of all, Frédéric Bastiat's essay (1848) 'What Is Seen and What Is Not Seen'. Accessed 28 December 2011 (http://www.econlib.org/library/Bastiat/basEss1.html) and, secondly, Henry Hazlitt's *Economics in One Lesson* (1946).

18.7% in 1920, 22.8% in 1937, 27.9% in 1960, 43.1% in 1980 and 45.6% in 1996 (Tanzi and Schuknecht 2000: 6–7).

In the 19th century, 10.7% of government expenditure was even considered high. Tanzi and Schuknecht (2000: 5) write:

> A leading French economist of the time, Paul Leroy-Beaulieu (1888), addressing the question of the proper share of taxes in the economy, suggested that a share of 5–6 percent was moderate while a share beyond 12 percent had to be considered 'exorbitant' and would damage the growth prospects of an economy.

Around 5–6%, or about 10%, is the level where government expenditure started in the 19th century. Then, as the figures just cited indicate, the level of government expenditure rose, in some countries, exponentially. However, depending on the country, since about 1970 to 1990, government expenditure has approximately stayed constant. Not because our societies have run out of problems, we have plenty of those, but because experience shows us that economic progress in Western economies grinds to a halt around a tax pressure of 45–55% of GDP.

To repeat the point, our minds are designed for a society with around 25 people in a group and 500 in the whole of society. Around this society, there will have been other similar societies, some friendly and some outright hostile, but that was the end of the social complexities our ancestors had to deal with. In this society, there will have been direct interactions between individuals that both collaborated with and tried to outwit one another, some politics inside the tribe, some jockeying for status, a little bit of foreign policy with regard to other tribes, and some trade with other tribes.

The hunter-gatherer society is what we have 'mental organs' for, since our ancestors lived in such a society for 150,000 years at least, and maybe even for most of two million years, as *Homo erectus* had societies with similar organisation. For this kind of tribal society, we are able to handle most interactions intuitively.

We have only lived in large societies for 50 to 10,000 years, depending on which human population we consider. Some populations still live in our state of nature, or very close to it, such as the Yanomamö hunter-horticulturalists in the Amazon jungle ('the fierce people' as they call themselves (Chagnon 2013)) or the !Kung (San) Kalahari Bushmen and the Stone Age tribes of Papua New Guinea. The latter were only discovered just before World War II. Similarly, the Australian Aborigines only came into sustained contact with European civilisation in the 18th century. Nothing indicates that these people are much different from the Chinese or the British of today.

In the Fertile Crescent, agriculture began before 8000 BC; in today's Sweden, around 3000 BC (Diamond 1997: 180–181). There is no evidence that the Iraqis are naturally better at organising their large society than the Swedes are. By far the most creative large-scale societies – in fact, *the only creative large-scale societies ever*, with regard to culture, science and technology – have been competitive free-market economies, whether in China, ancient Greece, Medieval Italy or Western Europe, and these have existed for such short time spans that no genetic adaptation can have been possible.

To spell it out, what would have been necessary for humans to adapt genetically to the extended order is a few hundred generations during which, for each generation, those who are the best at understanding how a market economy operates (or more accurately, those who operate the best within it, without

necessarily understanding it, as will be discussed below) have more children than others. This has not happened; in fact, it is difficult to understand how it could happen. We are all stuck with a hunter-gatherer brain in a foreign culture, in the extended order, or, as Adam Smith called it, in the Great Society.

However, understanding the extended order, either analytically or intuitively, is unnecessary and not a real solution. As we have said, an ant does not know how an anthill works, and it does not need to. It just needs to obey the appropriate rules for interacting with other ants and with the environment. Similarly, humans do not need to understand how the extended order works as long as we obey the appropriate rules for interacting with our neighbours and with the environment.

To illustrate and summarise some of the discussion, our hunter-gatherer mental heuristics for cause and effect are approximately those illustrated in Figure 3.3.

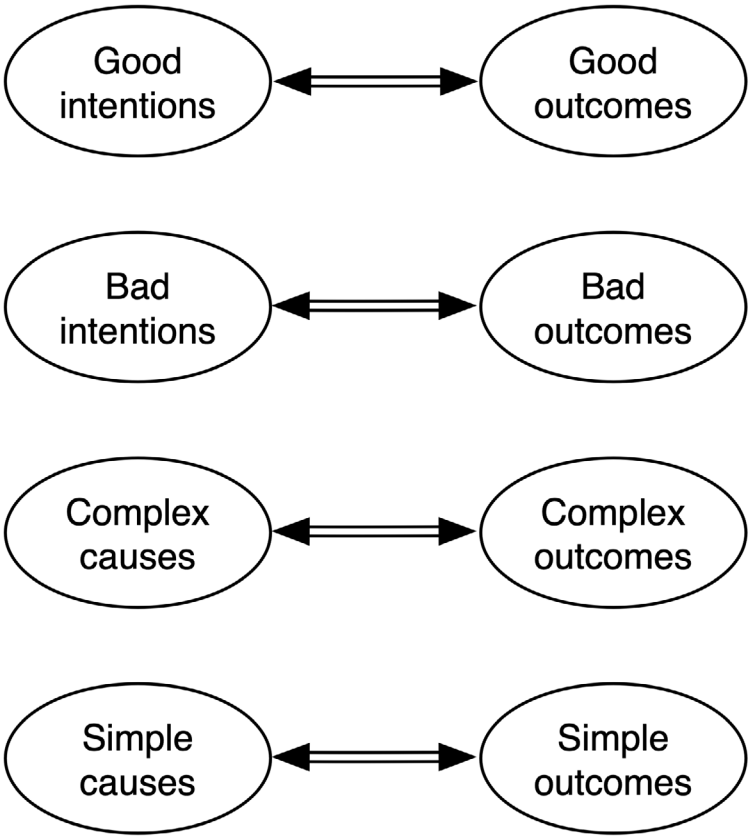


Figure 3.3. Some hunter-gatherer heuristics that we use on a daily basis.

Note: *The arrows go both ways. A variation of the last two heuristics can be seen in operation in the conspiracy theories regarding the 11 September 2001 terrorist attacks or when presidents are assassinated. If something momentous happens, we tend to reason that it must surely be due to some equally important and complex reason.*

Instead, in the extended order, the rules are quite different, as illustrated in Figure 3.4.

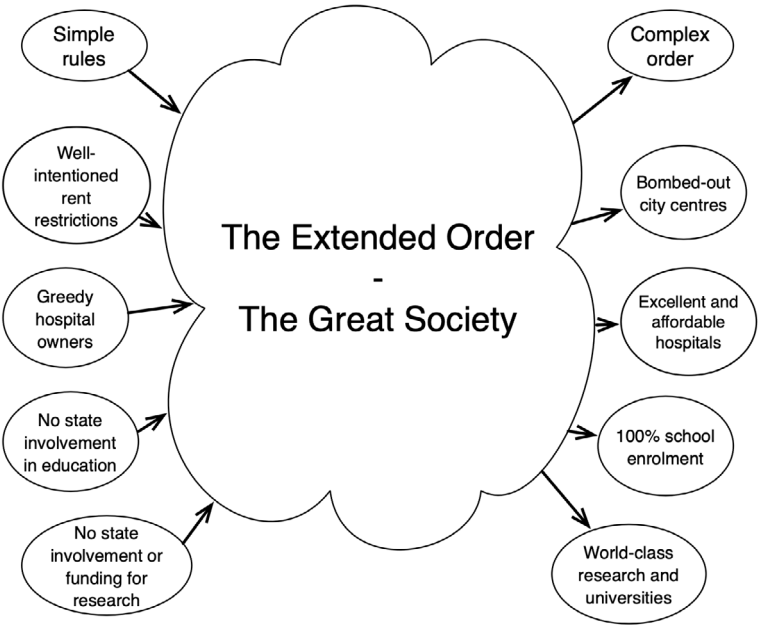


Figure 3.4. The rules for cause and effect are very different in the extended order.

Note: *In particular, as Adam Smith emphasises, the goodness of the intentions of the various participants often has little to do with the goodness of the outcomes. Greed, in particular, usually leads to resource optimisation and attempts at pleasing the customer. 'It is not from the benevolence of the butcher, the brewer, or the baker, that we expect our dinner, but from their regard to their own interest' (Smith 1776a: 26–27).*

With regard to Figure 3.4, it might be worth emphasising that, although the providers of schools, care for the elderly or healthcare might have selfish motives, such feelings will rarely dominate in a truly private system where the customers pay directly for services. To be good at something, one needs to have a passion for it. Bach, The Beatles and Beethoven were all commercial artists (Cowen 1998), but without a love for music,

they could not have succeeded. Similarly, without a love for teaching, you cannot be a truly great teacher.

In general, the motives of those who provide services are not important. All providers of private healthcare might want to run their businesses as non-profit operations. This is fine; in such a situation, the markets in the Great Society will work as well as if some had profit motives. The key is that the patients, the customers, must be free to choose.

What would moral values appropriate for the extended order look like? We can have some basic ideas. For the extended order to function at all, information must flow. Freedom of opinion and freedom of speech would be sacred. Prices convey information. Without the freedom to set prices, the participants in the markets are blind. Regulating prices or putting taxes on financial transactions would be looked upon with instinctive revulsion. Similarly, the thought of subsidies for certain goods or certain activities, or taxes on other goods or activities, would fill people with horror; they distort our view of the world and make us do things that we would otherwise not do (Friedman 1996: 36–39).

Secure property rights for all are essential for the market to work and would seem as an intrinsic good for all. Similarly, for the right to freely buy and sell goods and services. The sense of fairness would be much more focused on being able to keep the fruits of one's labour. Forcibly taking from one party, 'the rich', to give to someone else would be considered immoral.

Rule of law would be the lodestar of the legal system. It

> means that government in all its actions is bound by rules fixed and announced beforehand – rules which make it possible to

> foresee with fair certainty how the authority will use its coercive powers in given circumstances, and to plan one's individual affairs on the basis of this knowledge (Hayek 1944: 112).

The keeping of contractual agreements would be held to be sacred as long as they have been entered into by sane people who are not under duress. Morality would be based on *duty-bound moral restraint*[24]. This means a morality where it is felt that it is one's duty not to commit actions that one has promised not to commit, virtually no matter how necessary such rule-breaking might appear.

When people's morals are guided by duty-bound moral restraint, their behaviour becomes predictable. One could say that duty-bound moral restraint extends the rule of law into the realm of morality. As a result, we can trust almost everyone not to deceive us or deviate from agreements. This kind of morality, if shared by all parties, extends trust to strangers, and it is the most apt to generate prosperity for all.

Just as there are sociopaths among us today who can deceive without feeling guilt, the same would apply to hypothetical humans adapted to the Great Society. For the stability of their interactions, they would also have a keenly evolved cheater detection system and trustworthiness signalling system that would also work between strangers. Such a system might be based on vetting and group memberships, as is often the case today, or it might be based on some completely different, yet-to-be-discovered mechanism.

24 This is the subject of David C. Rose's book *The Moral Foundation of Economic Behavior* (2011), where the concept is derived and discussed at length.

Even though people would not feel the *duty* to help others, for the cohesion of society and the benefit of us all, people would nevertheless need to feel the same desire as we do now to help those in need but do it with their own resources, instead of having the urge to take them from a third party. Society would also be looked upon as a game, where what is considered just is to be playing by the rules, and where the outcomes are partly due to skill but also, to a large part, due to luck (Hayek 1976: 70–73; Hayek 1979: 65–70).

This brings us back to one of the most fundamental and serious mismatches between the hunter-gatherer brain and the extended order. On the one hand, in a CAS, it is, as a rule, impossible to determine the relationship between 'merit' (according to some particular standard) and reward. On the other hand, the hunter-gatherer demands equal sharing of resources that are partly due to luck and partly due to work, and the punishment of 'greed' will make us clamour for the confiscation of certain wealth that appears unearned but that in reality, we do not, and cannot, understand the origin of. It should go without saying that such hunter-gatherer mental dispositions would not exist if humans were adapted to the extended order.

As we have described above, centralised planning, to any larger extent, is impossible in a self-organised system, and humans genetically adapted to such a system would not even consider it. As part of this, the idea of planning and running the lives of others through 'social engineering' would be unheard of. When legislating, such humans would ask themselves if the laws are easy to follow, economical to implement and as few as possible. They would search far and wide for the possibility of society evolving rules spontaneously and look upon legislation as a last resort, to be avoided if at all possible. Such imaginary humans would be patient and expect that 'doing nothing', allowing the

market and volunteers to solve problems, will almost always yield better outcomes than government intervention.

To some extent, we have been able to evolve these values through bourgeois culture, but not for all people and not at all times. Maybe it would be better to teach such rules to our children than the more complex theory of, for example, how the market works. That is, to teach the rules to follow to play the game instead of trying to understand the intractable complexity that evolves from these rules as a result of self-organisation.

The complexity of the modern world

It should be clear that the argument that we need more government intervention today than during the 19th century (when tax pressures were below or well below 10% in Britain, Sweden, America and many other Western countries) because, as is commonly stated, modern society is 'so much more complex' is absurd.

There is always a need for *better* laws and institutions, but more intervention is rarely a cure for the ills of society and is most definitely not called for because of a supposed increase in its complexity. If we are 1,000 times more capable today at intervening because of better training, more bureaucrats and the existence of computers, this does not matter one iota when faced with a problem of society where there are countless billions of relationships to steer. On the contrary, the main difference between today and the 19th century is not one of increased complexity or that we are better trained; rather, it is that the delusion that we can actually steer society in any beneficial way has become much more widespread.

The mental playing field is not level

Even in the minds of those who have experience with the workings of the world, the mental playing field will not be level when comparing the direct effects, as well as their side effects, of 'doing something' with the results of 'doing nothing'. We will always lack an intuitive understanding of the extended order. Therefore, not only are the benefits of freedom and self-organisation largely unknown and unknowable, but on top of that, we will tend to underestimate the values of what we nevertheless might predict will result from non-intervention. As a result, because of our mental heuristics, we will always be itching to fix urgent social problems, to 'do something', even when we should know that standing back and waiting for the market and volunteers to solve them will be more effective[25].

We will also be driven by the fear of the unknown inherent in 'doing nothing' since, again, the benefits of freedom are unknown. We, therefore, cling to the perceived certainties of 'rational planning' (something we will discuss shortly) like a drowning man to a plank. Similarly, we will cling to the certainties of already implemented social programmes when faced with the uncertainties of replacing them with 'doing nothing' market-based solutions.

To make matters even worse, many ways in which the market economy works are considered immoral by the hunter-gatherer mind. This is true in particular for areas that involve helping the hungry, the poor, the injured or those who are ill. It is easy to understand why these areas are those that trigger the strongest

25 In addition to the reasons already mentioned, 'doing something' also provides us with a feeling of control, whether it is justified or not, over situations that are emotionally uncomfortable to us.

moral obligations to help in the mind of a hunter-gatherer[26]. Avoiding 'your responsibility' in these areas would be highly detrimental to the overall survival of the group and the tribe. These are also situations where we all should seek to satisfy ourselves that others will not shirk their responsibilities in the event that we need help; in these areas especially, we should be designed to be on the lookout for any signs of selfish behaviour and ruthlessly suppress any manifestation of it (this is also discussed in Rubin 2002: 65–70).

Therefore, in Hayek's words, these are areas where we are particularly prone to try to apply the rules of the micro-cosmos to where they, *in and of themselves*, are not applicable to the macro-cosmos of the Great Society. This is so even though, for example, to be a good doctor and to be able to charge money to see patients, you virtually have to also care deeply about them.

Because of these effects, performing agricultural research, like that done by Monsanto, becomes one of the most evil acts in the world if the grain is then sold for profit. One should simply not be able to make money off the poor, it is believed, even if the poor are, in fact, much better off for it. The same goes for pharmaceutical companies, without which there would be no new medicines. As each new drug can cost billions of dollars to develop, and as many initially promising products fail, drug companies need to make large profits on the few successful ones they produce. The hunter-gatherer brains of most activists simply do not understand or accept that it is better for the medical care of all of us that 'greed' is allowed in this sector.

26 We also feel an urge to provide children with an education, and to some degree, this urge will be triggered by our social obligation to help those who are vulnerable. But as I argue in my book on education, *Education Unchained* (Lidström 2015), the demand for 'universal, "free" and compulsory' schooling is, in the main, fuelled by a different desire, that of imposing social conformity.

We can, therefore, formulate 'The Great Society's Law of Misery out of Good Intentions':

> In a society, and in particular, in a democracy, the more vulnerable people are, the more deserving they are of help, the worse they will be treated compared to what is possible.

The reason for this law is that the more vulnerable people are, or the more they need help, the more the innate moral obligation to help them will be triggered. On the one hand, this means that people will want to pitch in and assist. But on the other hand, because helping is a social obligation, 'greed' and hoarding will be abhorred. Therefore, the more likely the area is to be socialised or regulated, and the more it is socialised or regulated, the worse the performance. Most likely, together with education, the worst-performing sectors in Western societies, compared to what we are capable of, are healthcare, care for the elderly, social services, health insurance, pensions and the like, which are almost all socialised, and all of which are heavily regulated even if in name they remain private.

David Henderson (2002) recounts a typical, tragicomical example of socialised medicine, of what happens when we try to apply the rules of the micro-cosmos to the macro-cosmos. In Toronto in 1991, you could get a CT scan *for your dog* for $300 within 24 hours. If you wanted a CT scan for yourself *in the same* CT *scanner*, you had to wait for up to three months (Henderson 2002: 269). As Henderson writes, you can get this scan so quickly because 'the government doesn't care about dogs.'

Our urge to rationally plan

Why do we have the urge to rationally plan so much in society? Why do companies spend so much time on 'strategic planning', often with so little to show for it? Why do (at least some) enjoy planning so much? And why do so many believe that 'rational planning' by 'experts' of all of society or companies, or large parts of them, is necessary and beneficial?

All species engage in 'gap analysis' (although rarely on a conscious level), the analysis of the present state compared with a desired state. They then take action or abstain from taking action based on the assessment of the gap, combined with an idea of what they can do, if anything, to reduce it.

The decision whether to act is fuelled by *the motivation to control,* as David C. Geary (2005: Chapters 3 and 7) calls it. Locke, Leibniz and von Mises called it the desire to remove *uneasiness* (von Mises 1949: 13). What is unique to humans is that we can do this consciously and that we engage in *mental time travel* (Geary 2005: Chapters 3 and 7). We play out ideal scenarios in our minds and also perform mental simulations (if I do this, the following should happen; if I do that, the result will be…).

This time-travel skill must be one of the 'mental organs' that we possess. We can see direct, physical evidence of this; brain injury to some parts of the brain removes the possibility of projecting oneself into the future; the people affected also lose their self-identity (Geary 2005: 217–219). The injured person simply cannot think of the future or function in society. Our time travel involves the creation of a:

> perfect world [that] is one in which the individual is able to organise and control social (for example, mating dynamics),

> biological (for example, access to food), and physical (for example, shelter) resources in ways that would have enhanced the survival or reproductive options of the individual and kin *during human evolution* (Geary 2005: 234; my emphasis).

In the words of von Mises, the gap between this perfect world and the existing world creates the uneasiness that powers *Human Action.*

We must again remember that our mental modules were designed for our state of nature, not for the Great Society. Human hunting and gathering involve long-term planning, for example, the manufacturing or procurement of weapons, other tools, clothes and baskets well in advance. Hunter-gatherers must have planned their hunting trips to the best of their abilities. To a certain extent, the better they were prepared, the better the outcome is likely to have been. But the limits to the planning effort will have been very obvious because, at some stage, you need to set off for the hunt; you need to get your dinner. And soon after you set off, the plan will need to be adjusted to the particular circumstances you encounter.

People will also have been conspiring and scheming, and marriage alliances will have been forged. Leaders of the tribe will have been planning raids and defensive measures, making marriage alliances with other tribes and forming treaties openly or secretly with one or several tribes to try to outwit or outflank a dangerous enemy. The planning will have been fairly concrete and limited in scope, with constant feedback from the social environment. A war plan, or even a marriage plan, does not fully survive the first contact with the enemy and will immediately need to be adjusted. These planning efforts will all have been carried out within the context of the hunting party, the group of

25, the clan of 150 and the tribe of 500, surrounded by territory belonging to other similar tribes.

The rule for planning must approximately have been 'do as much as you possibly can.' We feel satisfaction from our planning efforts, which is another indication that we are designed to want to plan. We feel even more satisfaction when our plans work. We also find security in having a plan and often stick to a plan even though it no longer corresponds to reality. This must be due to a real prehistoric reproductive advantage to often try to stubbornly cling to plans and to only abandon them after being convincingly proved wrong[27]. But our ancestors were proved wrong very quickly.

The uneasiness an individual feels and tries to remove is always the difference between the ideal world of that *specific individual* and the perception that *this individual* has of reality. At no time in our prehistory have our ancestors performed neutral assessments of the uneasiness that *others* feel, of the gap that other people see between their ideal worlds and the world as these individuals perceive it, or the objective, true state of the world (which only a God-like creature could know).

In large societies, we today have people who are assigned full-time to plan and who are charged with assessing the uneasiness of others. They plan for the benefit of others, not for themselves. The uneasiness that they seek to remove is only relevant to their particular situation as planners and only incidentally to the people they plan for.

27 Trivers, as quoted by Taleb (2007: 147), suggests that we should be designed to persist with a plan in a battle, in spite of the odds turning out to be worse than anticipated, to avoid wavering and to have a greater chance of success.

When planners receive feedback about the effects on those they planned for, it is not necessarily relevant to their role as planners. It is incomplete because it is impossible to transfer all knowledge. It often comes late because of the necessary time delays. In the extended order, it is also difficult to correlate the feedback to the planning action that was taken.

The planning and organisational drives are therefore exercised in a context that is not the one they were designed for. On top of that, we all have different preferences in life, and those who most enjoy planning (possibly as opposed to doing) or who seek power will choose to enter bureaucracies, become politicians or become academic experts in the field of planning for others.

So, we have vast bureaucracies dedicated to planning but that suffer no consequences from implementing their efforts, apart from blame or appreciation from their superiors. The most tangible feedback they receive is that they will only keep their employment if they keep planning and organising. As we have seen above, the more they organise and implement their plans, the more issues they will create that need solving, and that will be perceived as requiring new organisational measures.

Combined with the urge to 'do something', which in and of itself makes people feel better, regardless of whether they know that their actions will bring improvements, politicians and bureaucrats plan and take action for the rest of us. Industries have armies of bright MBAs that work on strategic planning *without any measurable positive effects* (Mintzberg 1994: Chapter 3). Rather, the opposite, but the infatuation with planning keeps the movement going. In particular, in the 1960s and 1970s, companies had large planning departments that created five-year plans inspired by the Harvard Business School and by Igor

Ansoff, using planning methodologies of incredible complexity (Mintzberg 1994: Chapter 2).

Despite such large-scale planning efforts, captains of industry then often proceed to make decisions about mergers on the golf course. Similarly, politicians make major decisions surrounded by only a small cabinet, which often, particularly for autocratic rulers, consists of people who agree with them or who at least will not contradict them.

To make decisions affecting tens of thousands of employees or millions of citizens and to base them on the advice of only a few trusted advisers might often seem like folly, but this level of preparation for a decision will be of the same magnitude as that of our ancestors' tribal leaders. For them, there was no more information to be had and no factors pertinent to large societies to consider. It appears that in our large societies, we are content with the same amount of decision-making effort because we are designed to feel satisfied after an effort appropriate for a society of 500.

But the folly does not lie in this small amount of preparation in a society where the rules of the extended order apply. Because, in the extended order, as soon as a leader or a bureaucratic organisation tries to make decisions of a complex nature, as the size of the problem grows, almost immediately, the necessary information grows so large that no one actually can foresee the consequences. The real folly is, therefore, to attempt to plan for complexities that are, for practical purposes, infinitely larger than those our brains are designed to comprehend[28].

28 How extraordinarily bad humans are at understanding the difficulty of predicting events is the subject of part 2 of *The Black Swan* (Taleb 2007).

Another lesson is that we should avoid, as far as possible, separating planning, decision-making and those who are affected by the planning and decisions. People should plan for themselves or for organisations that they own personally or in which they have a large financial or emotional stake. We are simply not designed for a separation of roles. Not even the leader of a tribe could make such a separation because he could never leave his tribe, except feet first.

Creationism bias

The human body and the cells within it are examples of CASs. The whole of nature consists of system after system interacting with one another. Evolution in nature, by means of natural selection, proceeds through small changes called mutations, which in turn change what happens within and between these systems. Whichever resulting change leads to the largest reproductive success for the individual (or rather its genes) is then selected; the origin of this change (genetic, behavioural or a combination of the two) will spread in a population.

Still, all of this is difficult to absorb. Deborah Gordon, who has studied ant societies for some thirty years, still finds it impossible to grasp how they work on an intuitive level:

> The patterns of regularities in ant colony behavior are produced by networks of interaction among ants. The networks of interactions are complicated, irregular, noisy, and dynamic. The network is not a hidden program or set of instructions. There is no program – that's what is mind-boggling, and perhaps it is why, at the beginning of the twenty-first century, there is so much we do not understand about biology. It is very difficult to imagine how an orchestra could play a symphony without

> a score. It takes an effort to avoid slipping into thinking that there is an invisible score hidden somewhere (Gordon 2010: 47).

In the same vein, as discussed in this essay, our individual actions give rise to an extended order to the Great Society.

Thus, as humans, we all find it exceedingly difficult to understand that complex phenomena, the manifestations of which to us look as if they are the result of deliberate design, can be the result of undirected, complex phenomena. Similarly, when we see what appears to be a problem or is a real problem, for example, healthcare, education, care for the elderly or protecting the environment, the first thing that springs to mind is taking deliberate, reasoned, rationally planned action.

We all suffer from such *creationism bias*, which seems to be an appropriate term[29]. If we did not, when we see a social ill that concerns society at large, our reaction would instead be to investigate what simple rules and laws we could change to make things better, if any. Laissez-faire economics would be our first, second and third choice. The world is simply too large and too complex to be organised through deliberate planning and regulations that attempt to determine outcomes.

29 'Creationism bias', I believe, captures nicely the mental pattern-matching process, where when we see order, we believe in an act of creation, and when we perceive the need for order, we believe that an act of deliberate creation is called for. Creationism is also the term used for this phenomenon with regard to Darwin's theory of evolution through natural selection. Thomas Sowell uses the possibly broader and largely overlapping term 'the animistic fallacy' (Sowell 1980: 97–100), which focuses on the presumed actor behind the order, commonly a deity or some humans. The animistic fallacy also applies to the events around us, such as believing that a spirit is moving the leaves of a tree or treating 'society' as an animate entity that can act.

If we did not suffer from creationism bias, our reaction would be that *the more complex the problem, the less we should look to deliberate action.* Sending a man to the moon or sending an army are simple problems, in spite of the large financial implications, provided that the necessary constituent parts already exist or are handled by entities that possess the necessary expertise.

Regulating Wall Street, reforming healthcare or improving education are much larger problems because of their inherent complexity; on a human scale, they are infinitely large and, therefore, impossible for a national leader or a bureaucracy to handle successfully.

Our brains jumping to conclusions

As Herbert Simon (1945: 118–120) pointed out, humans are *satisficing*; that is, we stop making a cognitive effort once we have found a solution to our problems that is *good enough*. Seeking perfection in our decision-making is simply too costly, so we make a trade-off.

As discussed by Daniel Kahneman in the book *Thinking, Fast and Slow* (2011), our mind functions in a sense as if it consists of two parts: one intuitive system, which Kahneman, following Keith Stanovich and Richard West, labels System 1, and a system for the deliberate use of reason, System 2. In Kahneman's words (2011: 20–21):

- System 1 operates automatically and quickly, with little or no effort and no sense of voluntary control.
- System 2 allocates attention to the effortful mental activities that demand it, including complex computations.

> The operations of System 2 are often associated with the subjective experience of agency, choice, and concentration.

Even when we are fully convinced that we are using 'reason', our System 2 is, for the most part, fed its information from our System 1, our intuitions. As we cannot examine all options with our slow, cumbersome System 2, we sometimes go wrong, but we are rarely aware of it; '[o]ur comforting conviction that the world makes sense rests on a secure foundation: our almost unlimited ability to ignore our ignorance' (Kahneman 2011: 201).

An evolutionary understanding of society

In this chapter, we will continue our treatment of the collision of the hunter-gatherer mind with how large societies must be organised, or, better, be allowed to self-organise, if they are to be prosperous.

The maximum degree of self-organisation that is possible is that of a minimal state that only handles a select few areas[30]. First and foremost among these are national defence, an efficient and low-cost legal system based on the rule of law, as well as likely the police, or some of the work conducted by the police[31]. If society is to be prosperous, the rules of David Hume must hold, as well as many beneficial refinements and additions. In addition, a government may handle public goods, provisions that voluntary forces and the market do not supply. What these are is a contentious issue that I will not explore.

30 Some libertarians, including anarcho-capitalists, such as David Friedman (Friedman 1970), would argue that no state is necessary. I do not agree and instead have the same opinion as F. A. Hayek:
I sympathize with those who are disappointed with my admission that I know of no way of preventing coercion altogether and that all we can hope to achieve is to minimize it or rather its harmful effects. The sad fact is that nobody has yet found a way in which the former can be achieved by deliberate action. ... But to prevent people from coercing each other is to coerce them. This means that coercion can only be reduced or made less harmful but not entirely eliminated (Hayek 1960: 13).

31 Government-run police forces are, for the most part, recent additions to Western society (Beito et al. 2002; Malcolm 1994).

I will argue that, with the proper laws, rules and culture, the maximum amount of self-organisation will also bring about the most prosperous and flourishing societies. Other alternative societies are, of course, possible. It is also possible for a government to run many areas of society beyond those of the minimal state, but, as we will see, such areas will, at best, be frozen in time and normally regress.

We will finish the chapter with a discussion of networks, an area where our micro-cosmos and macro-cosmos join up, and which, for the prosperity of us all, is of an importance that can hardly be exaggerated.

Modelling complex adaptive systems

On the one hand, we should rejoice that the study of CASs allows us to illustrate how simple rules and agents that adapt can evolve complex structures. For example, the brilliant little book by Holland, *Hidden Order* (1995), explains how to go about this. We can create simplified computer models of how our extended order works. But on the other hand, we know what happens when government officials and intellectuals get their hands on a new tool. In this case, they will most likely be putting the cart before the horse and trying to use research into CASs to be able to better plan society.

Thus, first, they will assume that society needs to be planned. Based on existing planning, they will then use CAS modelling to fine-tune their schemes. But we are as insufficiently intelligent to plan society using research into CAS as we are with static models. Any model is a gross simplification of society that, in addition, depends on initial assumptions and rules. In the real world, there are real people with real ideas, and no modeller can

create an accurate model for that. Any batting of a butterfly's wing or any example of human creativity will throw the models off course.

The real lesson from CAS research is that Adam Smith was correct when he stated:

> Little else is requisite to carry a state to the highest degree of opulence, from the lowest barbarism, but peace, easy taxes, and a tolerable administration of justice (Smith 1776b: 687).

To get the story right, we should go further and give credit where credit's due; research into self-organising systems is just the rediscovery of Adam Smith's insights, given a new, scientifically fashionable name (Hayek 1976: 178, fn 11).

Unfortunately, as demonstrated, for example, in a book by Eric Beinhocker (2006), the misconception that evolutionary thinking can and should be used as a tool to better plan society is also shared by workers in the field of what is called 'complexity economics'. Thus, these researchers attempt to address various issues in society by considering that they exist *inside* areas under government control. Among other things, they attempt to create a new approach to public policy and conditions within which issues such as healthcare reform, environmental policy, pensions, tax policy and education may evolve. Thus, it appears that they attempt to have their cake and eat it: they want to harness the power of evolutionary processes, but they are not prepared to give up control. We may illustrate this approach as in Figure 4.1.

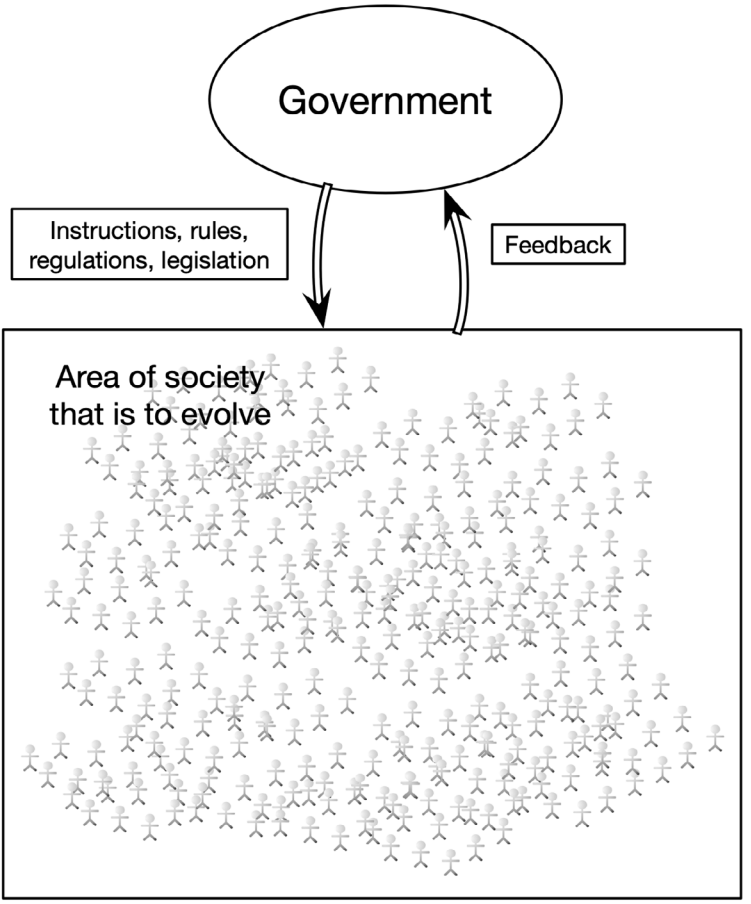


Figure 4.1. Complexity economics as it appears to be understood in the book *The Origin of Wealth (Beinhocker 2006).*

Note: *Under the auspices of government, an area of society is allowed to evolve spontaneously.*

However, this model constitutes a serious misunderstanding of how societies function and evolve. *Societies have the potential to*

evolve only in areas that are outside of deliberate control. Figure 4.2 illustrates what a proper version of complexity economics should address for a society under a laissez-faire government. In such a society, the government is really only concerned with enforcing and sometimes changing the general rules, which are equal for all.

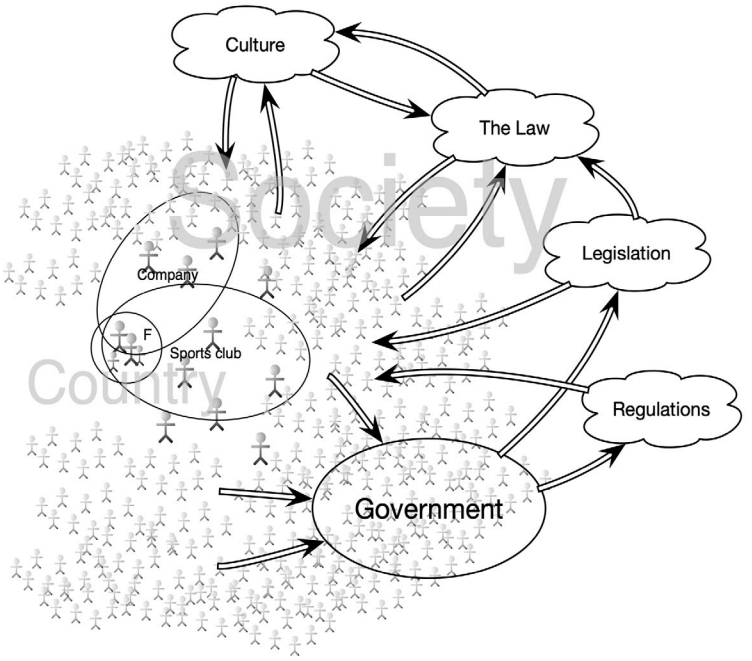
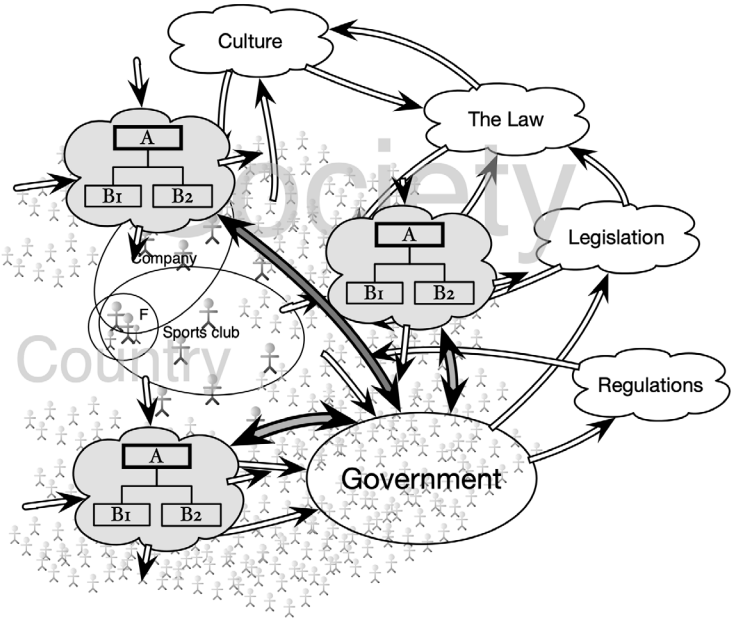


Figure 4.2. A more complete view of complexity where all parts of society are allowed to evolve.

The government must be recognised as part of society. Government enacts legislation. Legislation may or may not then

become the law[32], that is, the rules that are actually followed in society (Hayek 1973: Chapters 4–6).

In a society with a 'welfare state', the government commonly runs or regulates healthcare, pensions, the care of the elderly, schools, universities and much more. Such a mixed economy may be illustrated as shown in Figure 4.3.



32 Hayek (1973) makes the important distinction between 'law' and 'legislation'. Law is the rules that we actually follow. These rules may or may not coincide with rules that come from deliberate action or legislation. It is often the case that the law, in this sense, is not the subject of any legislation. 'First come, first served' is an example of such a 'law'. Usually, driving a few miles per hour above the speed limit is 'the law'; everybody does it, and the police will not stop you. The speed limit is 'legislation' (D. Boudreaux, 'Law Differs from Legislation', 16 February 2009. Accessed 10 September 2020 (http://cafehayek.com/2009/02/law-differs-from-legislation.html)).

Figure 4.3. An illustration of the mixed economy where government organisations take over many functions, such as healthcare, education and pensions.

Government organisations are bureaucratically organised, and they, at best, *freeze large swathes of society in time* as the evolutionary processes through trial and error are suppressed. It is actually worse than this. Commonly, a government takeover will sooner or later lead to a decline in those areas of society in which it is involved.

The meta-evolution of society

Virtually by definition, for society to evolve as quickly as possible, the fraction of society that may evolve must first of all be as large as possible. Secondly, there must, broadly speaking, also exist at least two different timescales for change: a short one for most things and a much longer one for the rules of interactions. The rules for interactions must change more slowly since otherwise, a CAS cannot come about, and we would have chaos. An illustration of the contrary is to imagine that the gravitational constant could vary; this would wreak havoc among the planetary orbits of the solar system. Similarly, if the definitions of property rights were to change from one month to the next, it would wreak havoc and destroy the Great Society.

A fitting term for the evolution of culture, law, as well as legislation, and possibly also some regulations is the *meta-evolution* (evolution of the evolution) of society. The rules for interactions provide the framework within which the evolution of the rest of society takes place. The meta-evolution must, therefore, proceed at a much more sedate pace. But since the pace of the meta-evolution is also selected for through an evolutionary process, provided that most rules may also spontaneously evolve, this meta-evolution largely takes care of itself. Our conservative

hunter-gatherer nature will contribute greatly in this area; we tend to want the law to remain what it 'always was', and we stick to traditions.

Adam Smith's invisible hand

We must also discuss the often-ridiculed concept of 'the invisible hand'. Smith writes:

> As every individual, therefore, endeavours as much as he can both to employ his capital in the support of domestic industry, and so to direct that industry that its produce may be of the greatest value; every individual necessarily labours to render the annual revenue of the society as great as he can. He generally, indeed, neither intends to promote the public interest, nor knows how much he is promoting it. By preferring the support of domestic to that of foreign industry, he intends only his own security; and by directing that industry in such a manner as its produce may be of the greatest value, he intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention. Nor is it always the worse for the society that it was no part of it. By pursuing his own interest, he frequently promotes that of the society more effectually than when he really intends to promote it (Smith 1776a: 456).

In light of what we have discussed, we may translate this into the following:

> In a society where the laws and culture allow people a degree of freedom and where they, their property and their contracts are protected by something akin to the Rule of Law, the result of people working in their self-interest (broadly defined; it does not need to mean that they are overly egotistical) will overall create increasing prosperity for all of society and almost all of

> its members, regardless of their intentions, giving the illusion that society is guided by an *invisible hand*.

Smith's term 'the invisible hand' thus presupposes the favourable conditions that allow the creation of the Great Society. We could very well imagine an alternative, Not So Great Society:

> In a society where little freedom is allowed by the laws and culture, where people, their property and their contracts are not protected by the law, where the law itself is arbitrary, and where people are not allowed to keep a major part of the fruits of their labour, society will stand still or regress as if it were squeezed in an *invisible vise grip*.

Networks, macroscopic effects of the micro-cosmos

So far in this chapter, we have discussed the micro-cosmos on the one hand and the macro-cosmos on the other. Furthermore, we have treated the macro-cosmos as a CAS. However, the separation between the two is not always clear-cut. In particular, as we will discuss in the present section, the micro-cosmos and the macro-cosmos also combine and overlap in the form of *networks*.

Networks come in many shapes and forms[33]. Voluntary associations are one kind, but there are others. We form business networks with people we know, and we follow people on social media, sometimes mutually, sometimes one-way, for example, some celebrities. We follow and learn from the work of prominent writers, scientists and entrepreneurs.

33 For much more about networks, please see Niall Ferguson's *The Square and the Tower* (2017) and Albert-László Barabási's *Linked* (2002).

We have discussed how it could be possible to simulate a CAS in a crude manner. The addition of networks to the extended order both makes simulations of aspects of society more complicated and reduces our mental understanding of what is going on in society even further. One unfortunate aspect of networks is that they sometimes lead to suspicions of secret cabals and conspiracies. Such suspicions are usually unfounded, even when there might be a will to conspire; members of some network or organisation can as little be certain of the success of their plans as anyone else.

Governments cannot steer society either, but they can greatly influence it, mainly in a negative manner, and in particular through their coercive powers. Our suspicions of collusion should mainly focus on areas where government is involved. If organisations, networks and cabals can elicit the support of government, like companies, trade associations and trade unions often manage to do, then so-called crony capitalism will be the result, to the detriment of the rest of society[34].

Mathematically speaking, networks consist of *hubs* and *connections* (in the literature called 'edges') between the hubs. The networks can be random; that is, there can be a random number of connections between the hubs, a number that will vary around some mean value. Examples of random networks are train lines and roads that connect cities with other population centres.

Networks can also contain *clusters*, where a number of hubs have many connections between them but where they share few connections with the hubs in other clusters. Some networks are

34 Please see Niall Ferguson's book *The Square and the Tower* for a discussion of suspected secret societies and other effects of personal networks.

scale-free; that is, no matter at what scale you look at them, they look the same. Examples of *scale-free* networks are cities with small cities, medium-sized cities, large cities and megacities and also airports with, as in the United States, local airports, regional hubs and national hubs.

Wealth sometimes forms approximately scale-free networks, from which we have Pareto's famous (but approximate) 80/20 rule. More accurately speaking, such networks follow *power laws*; that is, the number of connections grows exponentially between hubs. Eighty percent of the wealth is owned by approximately 20% of the population. Within the 20%, some 80% of the wealth is owned by some 20%, and likewise for those 20%. Inventors, musicians, actors and scientists also approximately form scale-free networks in terms of their popularity and prominence. For a scale-free network, there exists no average value around which the number of connections clusters.

Please note that in the real world, the power laws that some networks follow are only approximations, and there are endpoints. Even the most cited physicists are still only cited a finite number of times, although this number may be very high. The major airline hubs in the United States are places like Chicago, Dallas, Denver, Atlanta and New York, but that is the end of the exponential growth of the number of routes connecting airports. Figure 4.4 illustrates a scale-free network.

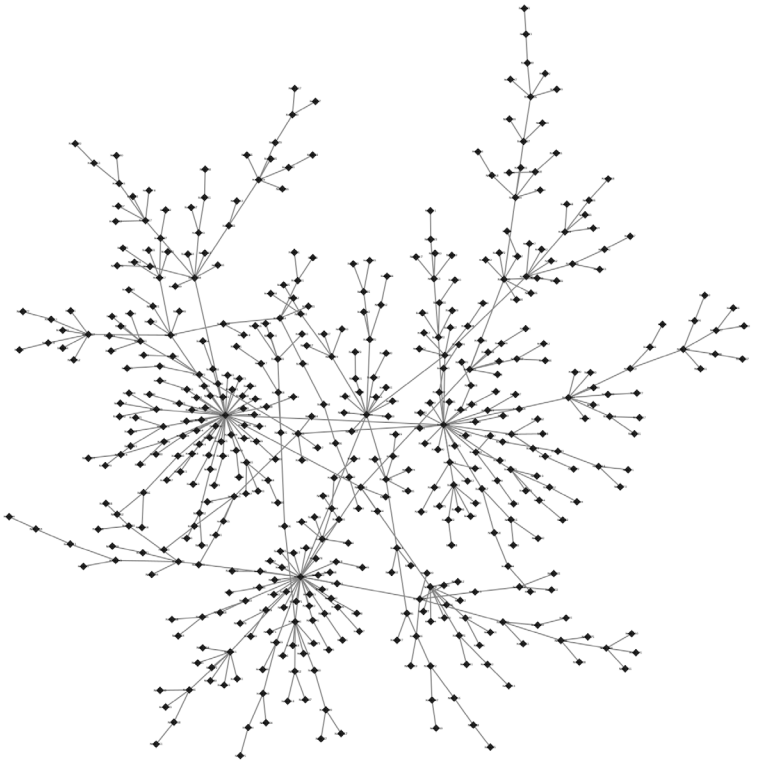


Figure 4.4. A sparse scale-free network with hubs and edges, that is, connections between the hubs. Created using Cytoscape 3.10.4 with the Network Randomizer plugin with n=500 and m=1.

Note: *As can be seen, there are isolated hubs with just one connection, many hubs with a few connections, a smaller number with more numerous ones and so on. Not explicitly shown but easily added, there may also be clusters with many connections between members but only a few with other clusters.*

Ideas producing offspring

Some people in society will create larger and more profitable companies than others do and invent more or better things (in the eyes of the consumer or the eyes of the public) than others do. Some of these people will create large and high-performing companies, others will create companies that will be smaller but still innovative. People who accomplish such feats will provide inspiration, work and training for others, some of whom will eventually go on to create their own companies and innovations. Similarly, outstanding scientists flock to the best universities. From a networking perspective, innovative companies, creative individuals and top universities and other research facilities are important hubs.

At these hubs, creative individuals meet, connect and exchange ideas and information. The larger the hubs, the more frequent such meetings will be, and the larger the chances of exchanges of ideas and information. It is, therefore, at the larger hubs that people's ideas will have the most 'sex', as Matt Ridley (2010) puts it. By ideas 'having sex', Ridley means that ideas are combined and produce offspring that may be many times as important as the mere sum of the individual ideas. Several novel ideas that individually may be somewhat promising often become, when assembled, the basis for stupendous achievements.

Hub-creating effects of hard work and the importance of low taxes for all

Success is never guaranteed within the extended order, but hard work increases the chances greatly. We know what it takes to go from being someone who shows talent or interest to achieving real greatness: usually around 60 hours of work per week for

at least ten years (Ericsson et al. 1993). Out of this time, for an adult, about 25 hours per week is spent on deliberate practice and concentrated efforts to improve, which are, in general, not pleasurable experiences in themselves[35]. It is the carrying out of these mentally or physically demanding activities that makes a person achieve excellence in any area, both intellectual and practical. The rest of the time is spent on associated, less focused activities.

Top violinists will have spent 50–60 hours per week on their craft for a decade. To become a scientist on an international level, the common requirement appears to be to work for 80 hours per week for an extended time, although here also, due to the limits of our mental endurance, only about 25 hours can be spent on deliberate practice (Ericsson et al. 1993). Some, such as Mozart, reveal such a talent and passion at seven years of age; Gauss apparently did so already at the age of three, and others find their passion in life at fourteen. Both Mozart and Gauss then had to put in hard work for many years before they achieved true greatness.

How would you go about encouraging people, young and old, to make such efforts that they become true masters of their professions? That part is straightforward; you do nothing, and

35 According to Ericsson et al. (1993: 398), consistent with Carol Dweck's research (2006), what distinguishes experts from others is rarely or ever raw talent but their early motivation and enjoyment of some activity that makes them put in the often painful deliberate practice that is necessary to progress. Disagreeing with some aspects of Ericsson et al.'s work, research on musical ability by Mosing et al. (2014) demonstrates that there exists a strong genetic component to musical ability and that, which sounds eminently plausible, we may tend to seek out activities that we are good at.

In this view, possessing raw talent in an area is a likely reason why people engage in deliberate practice, and both possessing raw talent and putting in the hours are necessary to achieve excellence. A strong genetic component for expert reading skills has also been found (Plomin et al. 2014).

thereby, you allow them to reap the benefits of their efforts. There should be no, or hardly any, income tax, including payroll taxes, and most certainly no progressive taxation, whereby high-earners pay a larger fraction of their income as taxes. Also, no taxes on, or at least very low and non-progressive taxation, wealth, interest and capital gains.

Already working 45 hours instead of 40 hours per week (13% more) on average increases a person's salary by 44% (Farrell 2005: 78). This is unlikely to be in the same job; instead, it is probably in a better one, a job that one has obtained due to hard work. Not everyone working 50, 60, 80, or just 45 hours per week for ten years will earn more; some might just scrape by because what they do does not please paying customers. There is nothing wrong with this. Many efforts have an inner nobility or attraction that draws people in; there will always be struggling musicians, writers, actors and astrophysicists.

But many who make large efforts, because of what they will then be able to achieve, will make twice, three times, ten times or even ten thousand times as much as those working normal hours. In turn, they will often become centres of creativity since working hard is mainly what makes us creative. They will generate not only new and better products and services but also ideas, many more than other people. When such creative people then meet and form networks, including companies, great wealth is generated.

Again, not everyone working hard will make it big. Trial and error means just that: some people will fail, or at least many of their efforts will fail. Commonly, most attempts at improving something fail, as almost every new attempt is up against something old that already more or less works. However, as Taleb (2012) points out, the downsides of trial and error are limited, restricted to the time and effort put in. The upside, however,

of becoming the new Andrew Carnegie (steel), Henry Ford, Bill Gates or Elon Musk is unlimited. The benefits they, in turn, generate for all of society are without bounds as well.

Very few upsides will be this large, but a carpenter, a plumber, a computer programmer, an architect, a florist and a car mechanic who, through dedication and hard work, manage to create their own companies and employ two, ten, a hundred or a thousand other people also contribute greatly to the well-being of everyone.

Creative hotspots and runaway growth

In any large society, there will be divisions of labour and divisions of knowledge. There are also significant differences in cultures and traditions. Somehow, the Swiss have a knack for making watches, the Germans for constructing pianos wherever they go in the world (Sowell 1994: 2), Italians and the French for fashion, the French for gourmet cooking, Silicon Valley for making software and computers, and Hollywood and Bollywood for making movies. All of this means that we should never expect society to develop uniformly all over the world. In particular, in a laissez-faire society, there will arise centres of spectacular excellence (large hubs, according to the terminology of this chapter) in particular domains in various places in the world.

The nature of a CAS, where everyone is potentially connected to everyone else, means that, without changing the rules of interactions, at low densities of creative people interacting, economic growth might seem slow or almost nonexistent. Innovation occurs, but it usually peters out because no one else picks up the ball. However, in a denser network of equally creative people, individuals can learn from each other, become inspired

by each other, and retain and provide skills and knowledge for each other.

Therefore, similarly to the way radioactive material in a bomb 'goes critical', as each neutron (innovator) generates more than one other neutron (inspires more than one additional innovator), there will 'suddenly' be explosive, exponential growth in innovation, culture and science – the network 'catches fire', as Eric Beinhocker (2006) puts it. Mathematically speaking, during events such as the Industrial Revolution and the creative explosion of classical Greece, societies go through a change similar to a phase transition in physics, like, for example, when a solid melts and becomes a liquid (Beinhocker 2006: 143–144).

The problem with statistics

Once we realise that Adam Smith's Great Society is a CAS and also the importance of networks, we should also realise that the use of statistics to understand society is highly problematic, to say the least. As Hayek put it in 1952, in *The Counter-Revolution of Science* (Hayek 1952: 108, his emphasis):

> Far from dealing with structures of relationships, statistics deliberately and systematically disregard the relationships between the individual elements. It is, to repeat, concerned with the properties of the *elements* of the 'collective', though not with the properties of particular elements, but with the frequency with which elements with certain properties occur among the total. And, what is more, it assumes that these properties are not systematically connected with the different ways in which the elements are related to each other.
>
> The consequence of this is that in the statistical study of social phenomena the structures with which the theoretical social sciences are concerned actually disappear.

For the economy, statistics averages out and makes vanish from the analysis:

- The intuitive interactions within our micro-cosmos
- The deliberate interactions within bureaucratic organisations
- The interactions in the macro-cosmos, that is, the market, which are mediated by prices, reputations, trust and so on
- The interactions within networks, which marry the micro-cosmos and macro-cosmos.

In his last book, *The Fatal Conceit*, Hayek (1988, 98–99) was of the same opinion when writing about marginal utility theory:

> Yet, during the last forty years, its contributions have been obscured by the rise of 'macro-economics', which seeks causal connections between hypothetically measurable entities or statistical aggregates. These may sometimes, I concede, indicate some *vague* probabilities, but they certainly do not explain the processes involved in generating them.
>
> But because of the delusion that macro-economics is both viable and useful (a delusion encouraged by its extensive use of mathematics, which must always impress politicians lacking any mathematical education, and which is really the nearest thing to the practice of magic that occurs among professional economists) many opinions ruling contemporary government and politics are still based on naive explanations of such economic phenomena as value and prices, explanations that vainly endeavour to account for them as 'objective' occurrences independent of human knowledge and aims.

When we nevertheless use statistics in the study of economic data, the situation becomes even more depressing. First of all, the economic data that we are commonly presented with is questionable. In his classic, *On the Accuracy of Economic Observation*, Oskar Morgenstern (1963: Chapter 1) discusses the fact that economic data, as opposed to, for example, data in the sciences, are misleadingly presented without error bars, even though the uncertainties are commonly enormous. When inflation is presented as '2.1%', compared to last year's figure of '2.5%', it gives a false sense of certainty. A better and more honest presentation of the data might be that the inflation rate has risen from between 1.2 and 3.0% to between 1.4 and 3.6% (with some statistical degree of confidence). A shift from 2.1 to 2.5% is so fraught with uncertainty that it is meaningless. To make matters worse and frankly quite absurd, economic statistics are then commonly analysed and corrected for several years after they have been gathered (Morgenstern 1963).

Secondly, statistics treat what has already occurred. Using them is similar to attempting to steer a car by looking at the road behind you in the rearview mirror through a steamed-up back window.

Thirdly, as I argue in this essay, hardly anyone can take beneficial action based on such data, only interfering in ways that, on average, cause harm. Economic statistics might be of interest to economic historians and, if gathered, should be published with a considerable delay. A more recent book, *GDP–A Brief but Affectionate History* (Coyle 2014), does not indicate that much improvement has been made since Morgenstern's work.

A large number of things that can be measured are included and added to create what is called the GDP. Things that cannot easily be measured are often excluded. Into the GDP go the

construction of houses, the sale of gym cards, steel production and manufacturing output. Things such as the invention of a new drug, say penicillin, that hardly costs anything but extends average life expectancy by several years, cannot be detected in the GDP measure.

Thus, what GDP means is unclear, and what economic growth means is equally so. And things often do not grow, at least not by much; they instead change, improve, appear and vanish. So why talk about economic growth at all? We do not go from one car to five cars per adult. Instead, we mainly get better cars, other things than cars etc. A better name for GDP growth might be *social and economic improvement*. But changing the name does not mean we solve the problem of what the measure means. If anything.

How to destroy networks and prosperity

We have discussed how networks contribute to shaping the extended order and how important they are to generating prosperity. Furthermore, as illustrated in Figure 4.4, the distribution of wealth, income, innovation, companies, the internet and fame all form more or less scale-free networks.

Research shows that, normally, networks are highly resilient to disturbances (Barabási 2002). As an example, for the internet, if edges (that is, connections) or hubs are removed at random, the network will continue to function even though a substantial fraction of the routes have been removed. However, if instead the major hubs, those with the most connections, are targeted and destroyed, the internet will rapidly break down (Barabási 2002: Chapter 9). The same would happen for air travel in the United States if the airports of Chicago, Dallas, Denver, Atlanta

and New York were closed down while the rest of the airports were unaffected.

Much of public policy, such as taxing the rich, taxing those who potentially would become rich if only they made an enormous effort, regulating successful companies, regulating successful or important industries and so on, targets precisely such hubs with the most connections and those people who otherwise would become major hubs.

Inheritance and capital gains taxes target hubs for partial destruction at each generational change or sale. Property taxes and taxes on wealth, year by year, reduce the importance of hubs, in particular, the large ones.

Taxes reduce the incentive to work and save for all. But it is worse than that; under the banner of 'making the rich pay their fair share', those who generate the most wealth, or otherwise would generate the most wealth, are singled out and specifically targeted by the tax system. Today's tax systems, in general, also have the effect of preventing new hubs from emerging.

Shouldn't the rich pay more? Well, first of all, they do, even if the tax rate is flat. Secondly, through what they achieve, they generate wealth for all of society. Finally, once people have made their fortunes and provided dozens, hundreds or tens of thousands of people with jobs and millions of consumers with products and services, they often give a large part of their wealth away voluntarily.

Given how much it grates on people when they see 'unearned' wealth, shouldn't we at least attempt to create a 'smart' tax system so that those who earn high incomes based on their 'merits' are taxed lightly while those who do not merit their

wealth pay higher taxes? However, this is impossible. As discussed in this essay, in a free society, the just deserts of anyone simply cannot be determined.

What could fairly be called the modern war on prosperity does not end with taxation. In addition, we have the catastrophic effects of labour legislation. In, for example, the European Union, working hours are regulated. Working the hours that those with a passion do, and that, for example, all successful entrepreneurs and scientists do, is, in fact, illegal in countries where the law regulates working hours. To do what it takes to become a world-class expert at something has been outlawed by many countries. When the law, or government-backed union rules, state that 40 hours is the maximum length of the working week, working 60 or 80 hours per week for ten years is only possible for those few who manage to fly under the radar. In particular, in Europe, no employee can become a world-class expert without breaking the law.

Not only the hubs but also the connections are under attack by the modern state. The welfare state discourages voluntary connections with other people. Labour legislation will mire companies in government-generated treacle that makes it much harder for them to grow, shrink, generate new connections and sever old ones. Most of the time, the freedom of contract can no longer be used. If a collaboration between people involves the exchange of money or some other form of compensation, there is income tax, payroll taxes, often value-added tax and so on.

Some taxes can be avoided or reduced through the formal creation of a business with owners, managers and employees. However, company creation and employment contracts are tremendously costly in themselves. The baseline that they should be compared with is the only necessary formalities in a free, high-trust society: a few words and a handshake.

Often, also when the freedom of contract exists, a company would indeed be formed, but often it might not be, or some other organisational form would emerge, different from what we know today or commonly make use of. All of these taxes, government requirements and paperwork on when and how people collaborate and organise themselves are grains of sand in the processes of self-organisation and network formation.

Finally, government departments and, to a lesser degree also government-owned and government-protected companies, will freeze large fractions of society in time. The effects of crony capitalism, when the government collaborates with large companies, will also freeze parts of the network in time, in particular the largest hubs, those centres that otherwise could contribute the most, either by themselves or through some competitor taking over their role or creating another, more suitable role. Such large, government-protected hubs are no longer subject to evolutionary processes, trial and error or creative destruction.

What targeted network hub destruction has wrought

Why does the United States create tech giants, such as, at the time of writing, Apple, Amazon, Tesla, SpaceX, Google, Facebook and so on, and countless smaller companies, but Europe does so to a much lesser degree? In Europe, the formation of hubs is targeted much more savagely, both at high incomes and also pre-emptively at low incomes. Struggling prospective entrepreneurs, inventors and whiz-kids have much more of their income and savings taxed away much earlier in their careers than in the United States. They are also banned from working long hours.

However, in the United States, too, the effects must be catastrophic. Without oppressive tax regimes, intrusive labour legislation and intrusive regulations, today's rich people would be even richer by virtue of how networks scale, but there would also be a very large number of other wealthy people and, at lower levels of individual wealth, likely dozens or hundreds of times as many prosperous and wealth-generating individuals as there are today. We cannot know by how much today's targeted network-destroying measures have reduced our prosperity, but it will be by some significant factor.

Complexity, statistics and affluent countries with high taxes

Throughout this essay, some readers have probably remained unconvinced. Is there any proof that these theories are correct? And, for example, what about all those affluent countries with high taxes?

It has been argued in this essay that *a large, prosperous society* must, to a large extent, be a CAS with rules akin to the three that David Hume proposed: the stability of possession, its transference by consent, and the performance of promises (Hume 1740: Book 3, Part 2, Section 6; Hayek 1976: 40). These are fundamental rules that allow individuals to freely interact with other people, both commercially and in many other respects. It is obvious that if any of their opposites held, if one could take whatever people own with impunity, if one could not sell what one owns to other people, or if one could lie about anything, civilised society, let alone a prosperous one, would be impossible.

It has further been argued, as pointed out by Hayek (1945), that knowledge is widely distributed in society and that most of it cannot even be collected, let alone centralised to one person

or organisation, or acted upon. What little can be collected centrally can only be so at great cost and after considerable time delays. Furthermore, innovation in a free society can originate with anyone among millions of inhabitants. A central authority can neither know who is likely to innovate nor what they might develop. Competition between potential innovators is essential; *competition is a discovery procedure* (Hayek 1979: 67–70). It generates new knowledge.

The question of free markets vs centralised expert planning might sound like a finely balanced problem, but that is not the case. As an example, if we take a small country with 10,000 schools that are all privately owned, that are all independent of government in every respect, and that all compete with neighbouring schools, education reform will take place at a rate that is *tens of thousands of times faster* than in a government system (Lidström 2015).

To see why, compare a modest hypothetical rate of one attempt at improvements per semester made by each school with the typical national government school reform, which only takes place, or at least can take place, every twenty to forty years. The intervals must be this long since it takes optimistically, 5, but usually 10–20 years to prepare a national school reform. Such reforms will involve hundreds if not thousands of people. The reforms themselves will change many things at the same time. It then takes a number of years for the school reform to settle and also 12–13 years for an age cohort to pass through the reformed school system.

With 10,000 private, competing schools, reforms are instead implemented locally. Each reform, or rather change, must aim to be some kind of improvement so that the children learn better, more quickly or in a fashion they like better. The change will be immediately, or almost immediately, evaluated by the

school owner, teachers, parents and students. Most of the tens of thousands of attempts will fail, something that is inherent in the process of innovation. As failure puts the survival of the school at risk, such attempts will either be quickly reversed or the school will disappear because it loses its pupils. Successful changes will be emulated and built upon by other schools.

The same applies in most areas of society. With laissez-faire, thousands or hundreds of thousands of people all compete and collaborate to improve things. With government in charge, enormous so-called reforms are instead implemented with intervals of years or decades. As government usually has no competitors, failure cannot even be easily detected, as there is little to compare with.

Unfortunately, as stated throughout this essay, allowing human society to reach its full potential means applying much of what most people instinctively would like to avoid, that is, the self-organisation of most of society, an integral part of which is laissez-faire economics.

I would recommend the reader try to put some numbers into such considerations before any rejection of laissez-faire approaches. I claim that we can absolutely know that laissez-faire will work and bring tremendous prosperity. However, we simply cannot know what the precise outcomes of applying laissez-faire will be, except that, as Hayek (1967) pointed out, we might be able to predict patterns.

That the detailed effects of a return to laissez-faire, that is, to what may properly be called *a full-blown evolutionary economic system*, cannot be predicted is problematic, as no concrete promises regarding the outcome can be made. The acceptance or non-acceptance of what has been put forward in this essay

must instead primarily come from an analysis of the proposed theories and their practical implications, beginning with how individual people interact. We may then build upon this base to attempt to understand society at large. Unfortunately, as with the anthill, one can only then, rather imprecisely, compare what our theories and models predict with the observed outcomes, although patterns are again easier to discern. Furthermore, both measuring outcomes and comparing with underlying theories are devilishly complex problems.

The economic, scientific, technological and cultural performance of a country will depend on many things: its history, its natural resources, its physical capital (factories, machinery, roads, railroads, power plants etc), its human capital (what people can do) and its social capital (also what people can do, combined with what they know and how they interact). Social and human capital will depend on the culture of the people. They will also depend on rules, regulations and laws. And as discussed, what matters as such is not the legislation but 'the law', the legal or extralegal rules that are actually followed.

It must also be understood that a high-tax pressure in itself may sometimes be much less damaging to prosperity than regulations. Again, it all depends on the details. A high-tax pressure might allow for some prosperity if the taxes are simple and more or less replace services that people would otherwise purchase themselves, such as pensions, health insurance, hospital care, schools (of the unreformed, 19th-century variety (Lidström 2015)) or universities (that have not been subject to too many government reforms either).

A country with a tax pressure of only 5% might still throttle its economy if it applies the regulations of the Old Regime. In that system, often no business transactions could be conducted

outside of the towns; all tradesmen had to be members of a guild, the guilds limited their membership, innovations within existing professions were often banned, and new services and professions were prohibited.

There is a range of further problems in analysing outcomes. A country might partly destroy its school system gradually, like the USA over the 20th century (Coulson 1999), or rather abruptly, like Sweden in 1968 (Hadenius 1990; Enkvist 2016; Lidström 2015), and still achieve a measure of prosperity as people obtain much of their training and education in parallel to school, and once they leave school and begin working. When actions such as destructive school reforms are taken, measuring the outcome will also be difficult due to time delays, as new, poorly educated, and wrongly educated teachers only gradually replace the old ones, and more poorly educated people only gradually replace those already in the workforce.

We are also subject to several versions of Bastiat's problem of *What Is Seen and What Is Not Seen* (1848).[36] We do not observe alternative Nordic countries practising laissez-faire, so we cannot compare the existing ones with hypothetical laissez-faire alternatives, for example, today's Sweden with a Sweden with a tax pressure of only 6% of GDP and the laissez-faire laws and regulations of 1886[37].

36 F. Bastiat (1848) 'What Is Seen and What Is Not Seen'. Accessed 28 December 2011 (http://www.econlib.org/library/Bastiat/basEss1.html).

37 Why 1886? In 1887, a bitter election struggle over whether to impose tariffs on food imports was won by the conservative proponents of the measure. They defeated the classical liberal proponents of laissez-faire. The latter never returned to power. It was the proponents of laissez-faire who, approximately between 1840 and 1870, called 'the liberal breakthrough', set Sweden on a path of strong growth between approximately 1870 and 1970.

In general, in a country where there exists tremendous creativity within one sector of society, other sectors may lack enough people to achieve a creative critical mass; Hollywood makes movies but not watches, while for Switzerland, it is largely the other way around. For the same reason, new pursuits are less likely to be invented in a creative hotbed unless they lie close, in one or several respects, to already existing activities.

Therefore, measuring the performance of a Great or Not So Great Society is problematic. Through GDP, a statistical average, one can only very crudely measure human achievement. And how does one measure scientific output in all but the most simplistic of senses? Rates of innovation? What is the importance of innovations? Artistic brilliance? Some efforts have, of course, been made, for example, in contemporary economic studies and within economic history. With a different approach, Charles Murray, in *Human Accomplishments* (2003), attempts to measure excellence in the arts and science from 800 BC until 1950. But much more remains to be done.

In particular, in my opinion, to properly connect theory and outcomes, each country and each era should be carefully examined and analysed along the lines discussed in the present chapter. And even if one subscribes to other theories for how prosperity is generated, to reach a proper understanding, one must always connect a model of the workings of the economy and the rest of society to whatever one is measuring.

References

Attanasi, A., Cavagna A., Del Castello L., Giardina I., Grigera T. S., Jelić A., Melillo S., Parisi L., Pohl O., Shen E. and Viale M. (2014) Information transfer and behavioural inertia in starling flocks. *Nature Physics 10: 691–96.*

Barabási, A.-L. (2002) *Linked – The New Science of Networks -– How Everything is Connected to Everything Else and What it Means for Science, Business and Everyday Life*. Perseus Publishing.

Barnett, R. E. (1998) *The Structure of Liberty – Justice & the Rule of Law*. 2nd 2014 ed. Oxford University Press.

Beinhocker, E. D. (2006) *The Origin of Wealth – Evolution, Complexity, and the Radical Remaking of Economics*. 2007 ed. Random House Business Books.

Beito, D. T., Gordon P., Tabarrok A., Johnson P., Davies S., Klein D., Arne R. C., Benson B. L., Green D. G., Tooley J., Foldvary F. E., Boudreaux D. J., Holcombe R. G., Nelson R. H. and MacCallum S. H. (2002) *The Voluntary City - Choice, Community and Civil Society*. The Independent Institute.

Boettke, P. J. (1993) *Why Perestroika Failed – The Politics and Economics of Socialist Transformation*. Routledge.

Buss, D. M. (2009) *Evolutionary Psychology – The New Science of the Mind*. 3rd ed. Pearson Education, Inc.

Caplan, B. (2007) *The Myth of the Rational Voter – Why Democracies Choose Bad Policies*. Paperback 2008 ed. Princeton University Press.

Chagnon, N. A. (2013) *Yanomamö*. Legacy Sixth ed. Wadsworth.

Coulson, A. J. (1999) *Market Education – The Unknown History*. Transaction Publishers.

Cowen, T. (1998) *In Praise of Commercial Culture*. Harvard University Press.

Coyle, D. (2014) *GDP – A Brief but Affectionate History*. Revised and expanded ed. Princeton University Press.

Diamond, J. (1997) *Guns, Germs, and Steel – A Short History of Everybody for the Last 13,000 Years*. Jonathan Cape, Random House.

Dunbar, R. (2010) *How Many Friends Does One Person Need? – Dunbar's Number and Other Evolutionary Quirks*. Faber and Faber Limited.

Dweck, C. S. (2006) *Mindset – The New Psychology of Success*. 2008 Ballantine Paperback ed. Random House.

Enkvist, I. (2016) *De svenska skolreformerna 1962-1985 och personerna bakom dem*. Gidlunds förlag.

Ericsson, K. A., Krampe R. Th. and Tesch-Römer C. (1993) The Role of Deliberate Practice in the Acquisition of Expert Performance. *Psychological Review* 100 no. 3: 363–406.

Farrell, W. (2005) *Why Men Earn More*. American Management Association.

Ferguson, N. (2017) *The Square and the Tower – Networks, Hierarchies and the Struggle for Global Power*. Penguin Books.

Friedman, D. (1970) *The Machinery of Freedom*. 3rd 2015 ed. CreateSpace Independent Publishing Platform.

Friedman, D. D. (1996) *Hidden Order – The Economics of Everyday Life*. 1997 paperback ed. Harper Business.

Gat, A. (2006) *War in Human Civilization*. Oxford University Press.

Geary, D. C. (2005) *The Origin of Mind – Evolution of Brain, Cognition, and General Intelligence*. American Psychological Association.

Gordon, D. M. (1999) *Ants at Work – How an Insect Society Is Organized*. The Free Press.

Gordon, D. M. (2010) *Ant Encounters – Interaction Networks and Colony Behavior*. Princeton University Press.

Gurven, M. (2004) To give and to give not: The behavioral ecology of human food transfers. *Behavioral and Brain Sciences* 27 (4): 543–83.

Gurven, M. and Hill, K. (2009) Why Do Men Hunt? – A Reevaluation of 'Man the Hunter' and the Sexual Division of Labor. *Current Anthropology* 50 (1): 51–74.

Hadenius, K. (1990) *Jämlikhet och frihet: Politiska mål för den svenska grundskolan*, *Acta Universitatis Upsaliensis* 110. Almqvist & Wiksell International.

Hayek, F. A. (1944) *The Road to Serfdom*, *The Collected Works of F. A. Hayek* II. The Definitive Edition The University of Chicago Press 2007 ed. Routledge.

Hayek, F. A. (1945) The use of knowledge in society. *American Economic Review* 35 (4): 519–30.

Hayek, F. A. (1948) *Individualism and Economic Order*. The University of Chicago Press.

Hayek, F. A. (1952) *The Counter-Revolution of Science – Studies on the Abuse of Reason*. Liberty Fund 1979 2nd ed. The Free Press.

Hayek, F. A. (1960) *The Constitution of Liberty*, *The Collected Works of F. A. Hayek* XVII. The Definitive 2011 ed. University of Chicago Press.

Hayek, F. A. (1967) *Studies in Philosophy, Politics and Economics*. Routledge.

Hayek, F. A. (1973) *Law, Legislation and Liberty* I. Combined 1982 ed. Routledge & Kegan Paul Ltd.

Hayek, F. A. (1976) *Law, Legislation and Liberty* II. Combined 1982 ed. Routledge & Kegan Paul Ltd.

Hayek, F. A. (1979) *Law, Legislation and Liberty* III. Combined 1982 ed. Routledge & Kegan Paul Ltd.

Hayek, F. A. (1988) *The Fatal Conceit – The Errors of Socialism*. Routledge.

Hazlitt, H. (1946) *Economics in One Lesson*. 1979 ed. Three Rivers Press.

Henderson, D. R. (2002) *The Joy of Freedom – An Economist's Odyssey*. Prentice Hall PTR.

Holland, J. H. (1995) *Hidden Order - How Adaptation Builds Complexity*. Perseus Books.

Hume, D. (1740) *A Treatise of Human Nature*, *Oxford Philosophical Texts*. 2000 ed. Oxford University Press.

Kahneman, D. (2011) *Thinking, Fast and Slow*. Penguin books 2012 ed. Penguin Group.

Lidström, E. (2015) *Education Unchained – What it Takes to Restore Schools and Learning*. 3rd 2024 ed. Amazon Kindle Direct Publishing.

Lidström, E. (2025) *Evolution and Social Order – How our Stone Age brain understands and misunderstands society*. Amazon Independently Published.

Malcolm, J. L. (1994) *To Keep and Bear Arms – The Origins of an Anglo-American Right*. Harvard University Press.

McConnell, S. (1993) *Code Complete*. Microsoft Press.

Mintzberg, H. (1994) *The Rise and Fall of Strategic Planning* Pearson Education Limited 2000 ed. Prentice Hall.

Morgenstern, O. (1963) *On the Accuracy of Economic Observations*. Completely revised 2 ed. Princeton University Press.

Mosing, M. A., Madison G., Pedersen N. L., Kuja-Halkola R. and Ullén F. (September 2014) Practice Does Not Make Perfect: No Causal Effect of Music Practice on Music Ability. *Psychological Science* 25 no. 9: 1795–803.

Murray, C. (2003) *Human Accomplishment – The Pursuit of Excellence in the Arts and Science, 800 B.C. to 1950*. HarperCollins Publishers.

Pinker, S. (2002) *The Blank Slate*. Allen Lane The Penguin Press.

Pipes, R. (1999) *Property and Freedom*. 2000 ed. Vintage Books.

Plomin, R., Shakeshaft N. G., McMillan A. and Trzaskowski M. (2014) Nature, nurture, and expertise. *Intelligence* 45 no. 100: 46–59.

Popper, K. (1945a) *The Open Society and Its Enemies* 1: The Spell of Plato. Routledge Classics 2003 ed. Routledge & Kegan Paul Ltd.

Popper, K. (1945b) *The Open Society and Its Enemies* 2: The High Tide of Prophecy: Hegel, Marx, and the Aftermath. Routledge & Kegan Paul Ltd.

Radford, R. A. (November 1945) The Economic Organisation of a P.O.W. Camp. *Economica* 12 (48): 189–201.

Rawls, J. (1971) *A Theory of Justice*. Harvard University Press.

Richerson, P. J. and Boyd R. (2005) *Not by Genes Alone*. Paperback 2006 ed. The University of Chicago Press.

Ridley, M. (1996) *The Origins of Virtue*. Penguin Books 1997 ed. Viking.

Ridley, M. (2010) *The Rational Optimist – How Prosperity Evolves*. 2011 ed. Forth Estate.

Rose, D. C. (2011) *The Moral Foundation of Economic Behavior*. 2014 paperback ed. Oxford University Press.

Rubin, P. H. (2002) *Darwinian Politics – The Evolutionary Origin of Freedom*. Rutgers University Press.

Simon, H. A. (1945) *Administrative Behavior – A Study of Decision-Making Processes in Administrative Organizations*. 1997 4th ed. The Free Press.

Skousen, M. (2008) *Economic Logic*. 3 ed. Capital Press.

Smith, A. (1776a) *An Inquiry into the Nature and Causes of the Wealth of Nations* I. Liberty Fund 1981 ed. Oxford University Press.

Smith, A. (1776b) *An Inquiry into the Nature and Causes of the Wealth of Nations* II. Liberty Fund 1981 ed. Oxford University Press.

Sowell, T. (1980) *Knowledge and Decisions*. Basic Books, Inc.

Sowell, T. (1994) *Race and Culture – A World View*. Basic Books.

Sowell, T. (2007) *Basic Economics – A Common Sense Guide to the Economy* 3rd ed. Basic Books.

Taleb, N. N. (2007) *The Black Swan – The Impact of the Highly Improbable*. Revised 2010 ed. Penguin Books Ltd.

Taleb, N. N. (2012) *Antifragile – Things that Gain from Disorder*. Penguin Books Ltd.

Tanzi, V. and Schuknecht L. (2000) *Public Spending in the 20th Century – A Global Perspective*. Cambridge University Press.

von Mises, L. (1936) *Socialism – An Economic and Sociological Analysis*. Jonathan Cape Ltd. 1969 ed. Liberty Fund.

von Mises, L. (1949) *Human Action: A Treaties on Economics*. Fourth revised 1996 ed. Fox & Wilkes.

Weinberg, G. M. (1992) *Systems Thinking, Quality Software Management* 1. Dorset House Publishing.

Whitehead, A. N. (1911) *An Introduction to Mathematics, A home university library of modern knowledge*. H. Holt and Company.

Woo, M. (2014) How bird flocks are like liquid helium. *Science* (https://www.science.org/content/article/how-bird-flocks-are-liquid-helium).

Wrangham, R. (2009) *Catching Fire – How Cooking Made Us Human*. Profile Books Ltd.

Wrangham, R. and Peterson D. (1996) *Demonic Males – Apes and the Origin of Human Violence*. Houghton Mifflin Company.

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