The Hidden Power of Systems Thinking: Governance in a Climate Emergency

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INTRODUCTION

Crafting a viable future?

1.1 Our human-created ‘problematique’

Contemporary lived experience is of a deteriorating human–environment relationship. Expressions of this relational breakdown are far from new. Explorer and scholar Alexander von Humboldt was aware from at least 1799 of the ‘destruction of forests and of humankind’s long term changes to the environment’, including ‘ruthless irrigation and the great mass of steam and gases produced in industrial centres’. The so-called ‘greenhouse effect’ in which temperatures inside the Earth’s atmosphere rise because of the properties of gases such as carbon dioxide and methane, had been postulated in 1824 and demonstrated from experimental observations by John Tyndall in 1859. Numerous scholars and insightful thinkers have been open to the predicament of humankind, but few have framed their concerns in terms that begin with thinking about our own thinking and thus what we humans do when we do what we do.2,3

Human existential angst came into its own following the development of the atomic bomb, captured in phrases like ‘mutually assured destruction’. So far, the global governance response to this possibility has worked. But it requires constant vigilance. The hole in the ozone shield was the first time modern societies realised that environmental deterioration was potentially dangerous. Widespread death from skin cancer awaited. For the first time too, many acknowledged that collective human behaviour had caused this dire situation and could cure it.4 ‘Ozone hole deniers’ did not feature.5

Despite this warning, the human world charged ahead, treating the planet as an infinite resource and an infinite dumping ground. In the meantime, and in the background, scientists were studying how and why the climate behaved as it did in order to improve weather forecasting for global food production, shipping, water provision, and holiday making. They also noticed worrying trends. The mean global temperature had risen. Today it is just over 1°C above the
pre-industrial period and it rises by 0.17°C each decade. This might not seem like a lot, but it is. If the world continues on this trend, our world—our habitat—would degenerate severely.

These signals of alarm have surfaced in different ways in public consciousness. Those preferring to do nothing sought to deny these long-term trends. Having lost this argument, they then sought to deny that they were human-induced. This argument has been lost too. As the science developed, so the thesis expanded. Humankind was not just igniting the climate but stomping all over the biosphere—the part of the earth’s crust, waters and atmosphere that support life of all forms. Thus was born the term the ‘Anthropocene’ (see Box 1.1).

**BOX 1.1 THE ANTHROPOCENE**

The Anthropocene is a term formulated in 2000 by earth scientists Paul Crutzen and Eugene Stoermer to designate a new geological era in which human influences are so great that they are affecting ‘whole Earth dynamics’ through a range of biophysical and social processes.

The International Working Group on the Anthropocene notes that human impacts on the Earth include:

- Erosion and sediment transport associated with a variety of anthropogenic processes, including colonisation, agriculture, urbanisation and global warming.
- Changes in the chemical composition of the atmosphere, oceans and soils, with significant anthropogenic perturbations of the cycles of elements such as carbon, nitrogen, phosphorus and various metals.
- Environmental conditions generated by these perturbations [including] global warming, ocean acidifi and spreading oceanic ‘dead zones’.
- Degradation of the biosphere both on land and in the sea, as a result of habitat loss, predation, species invasions and the physical and chemical changes noted above.

*Homo sapiens* has now become a major agent in shaping the circumstances of its own existence. Acceptance of the explanations that make the case for the Anthropocene— including human-induced climate change—also means accepting that we are in a period new in human history. This is the issue of our time, perhaps of all times, and thus the greatest challenge to all human endeavour.

The human threat goes well beyond the climate to its air, water, land, fellow animals, flora, fauna and other resources. Imagine a bird spray-painting its nest and chicks. That’s effectively what we have done. Now we have to work out how to stop doing it and clean it off.
Many people, governments, companies and civil society organisations recognise this. China is looking more likely than most to do something significant. We shall see. But, as yet, the world is in the ‘Phoney War’ stage. There is much posturing and small actions painted into major achievements, but the fact is things continue to get worse.

So much so that the risk of ‘Hothouse Earth’ is drawing closer. This term is used to describe a scenario in which human activity causes a higher global temperature than at any time during the past 1.2 million years, due to a breakdown in the feedback loops that regulate the planet’s temperature. Systemic feedback processes operate at all levels, from the planetary to the interpersonal. Losing safeguards that come from feedback processes would mean the planet has passed a tipping point beyond which its own natural processes trigger uncontrollable warming, no matter how much we subsequently reduce our greenhouse gas emissions.

The breakdown of these feedback loops include permafrost thaw; the loss of methane hydrates from the ocean floor; weaker land and ocean carbon sinks; the loss of Arctic summer sea ice; the reduction of Antarctic sea ice and polar ice sheets; the dieback of Amazon and Northern conifer forests; and increased bacterial respiration in the oceans. Forests, oceans and permafrost currently do us a great service by storing carbon. As rising temperatures cause these carbon sinks to weaken, some will start to emit more gases into the atmosphere.

The result would be sea levels as much as 60m higher – imagine any coastal city under those conditions. Much of the world would be uninhabitable, and food production would be a fraction of current output, such that the ‘carrying capacity’ of a Hothouse Earth would drop to 1 billion people. Whether you or we would be amongst the lucky or unlucky survivors is, of course, unknown.

Professor Schellnhuber said some of these changes could be reversible, but others would be irreversible on time frames that matter to contemporary societies. What we do not know yet is whether the climate system can be safely parked near 2°C above pre-industrial levels, as the Paris Agreement envisages. Or if it will, once pushed so far, slip down the slope towards a hothouse planet.

The IPCC Report of October 2018 gave humanity 12 years to act to avoid climate-induced catastrophe and set the maximum safe rise in mean temperature as 1.5°C.

In making the arguments of this book, it is important not to be lulled into the false sense of security that comes with official conversations about climate change (and other areas of public discourse). Many of these conversations are couched in terms of rises in global mean temperatures of 1.5, 2 or 3°C. This language can be misleading because for a shift of this magnitude to occur, it means that there is to be unparalleled variation and surprise. If you understand how a normal distribution works, then Figure 1.1 explains what will happen.
FIGURE 1.1 How climate change will operate through shifts in the ‘shape’ of the normal distribution of temperatures.16

The normal distribution for temperature is moving to the right and the tails of the distribution (i.e. variation in both hot and cold temperatures) will increase, though not perhaps as much for the cold. The other language trap is that mean temperatures rarely ever occur. Under climate change, it will be extreme temperatures and their duration that will have the most impact. These effects have already been seen in the buckling of steel railway lines in Melbourne in 2009, an extreme heatwave period, when more people died from high temperature or heat island effects (the failure of night-time temperatures to be low enough to relieve heat stress) than the major bushfire that claimed 177 lives. There have been many other examples since, including higher impact rainfall events associated with the increases in energy due to the warming of oceans and currents.

Climate change will demand more flood and storm defences and means to help populations cope with increased heat stress, especially the elderly and sick. It will also demand significant investment in re-engineering specifications used for roads, buildings, railways and sewage treatment and for managing our rivers and water supplies. The systemic effects will be huge. For example, in 2014 the Thames barrage was subjected to floods and tidal surges that almost exceeded its design capabilities. If it were to fail, London would experience major flooding. The Thames has been subjected regularly to sewage contamination in recent years because freeboards on sewage ponds, designed for less intense rainfall, have frequently overtopped due to more high-intensity rainfall. Climate change will affect all aspects of our lives, yet our news and public narratives are inadequate and our governance systems ill-prepared.
Have you ever experienced a gas leak at home? When do you call a fitter? At the first sniff? Hope it goes away by itself? Wait, because it does not smell much? Or only once there’s an explosion? The world has a major gas leak. The consequence of an explosion is so great that calling the fitter today is, surely, the only safe option. This demands an expansion in the practice of the precautionary principle, the essence of which is captured in a number of aphorisms such as “an ounce of prevention is worth a pound of cure”, “better safe than sorry”, and “look before you leap”.20

Another common aphorism is the ancient medical principle of ‘first, do no harm’. This needs to be applied to institutions and institutional decision-making processes rather than just individuals.21 In other words, the precautionary principle has to be enacted and feature prominently in our institutions. The gas analogy raises one other important point. If we know something is taking us in the wrong direction, we do not need to wait for scientific certainty to act. Experience tells us what happens when gas explodes. Experience is already telling us about the impact of human-induced climate change.

Yes, but no one knows what will happen. No one knows either that the rolling apocalypse will not happen or that we will escape with a near miss. The issue before us is one of risk. Given that the worst case is so appalling, do we want to risk that happening by taking what transpires to be inadequate action? You may hope or believe that the planet’s future is safe for us. But the planet takes no account of, or interest in, our beliefs – nor of politics. The choice is hard-edged: really take hold of human impact on the planet, or not.

If we stand back, we are collectively showing a remarkable lack of appreciation of just how lucky we are to find ourselves on this planet at this time. The physical conditions necessary to coincide for us to live in a place of such extraordinary beauty and natural diversity, so rich in resources, so benign in climate, with animal

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**BOX 1.2 TOWARDS COLLAPSE … OR NOT?**

Jared Diamond has outlined how and why past human civilisations have collapsed.17 Climate change was implicated in the demise of North African societies. In this same area, the price of bread, and thus food production, is said by several sources to have triggered the Arab Spring.18 In his analyses of societal collapse, Joseph Tainter points to systemic factors set off by increasing institutional complexity and a declining capacity to act in response to environmental change in its broadest sense.19 In the face of climate change and the systemic breakdown in the main natural cycles on which contemporary human society depends (i.e. water, carbon, nitrogen, phosphorus, and oxygen), we sit at the most profound fulcrum, or tipping point, in human history. The key question is whether we will collectively be able to make the innovations that pull us out of our current trajectory and move us towards one that offers a safer, more viable future in our ongoing co-evolution with the biosphere.
and floral companions of such wonder, are rare if not unique in the entire universe. Certainly, we know of none other. Why put all that at risk? For what?

1.2 Systems out of control

At this point, you may well be fired up to grasp the nettle, but then look around at all the obstacles and your motivation wanes.

- The world has become dominated by one ‘monotheistic’ economic system, seemingly unstoppable in its single-minded pursuit of profit, largely for top management, big shareholders, and financiers. In its design, this huge engine owes no responsibility to the biosphere. The biosphere – along with its other ‘stakeholders’ of staff, consumers and communities – receives bits and pieces of protection through after-the-event regulation of the detrimental acts of companies and state enterprises. But the duty to, and for, the planet – and for us – is not part of a company’s inbuilt remit, written into its business model or constitution, the means by which a social license to operate is issued. The biosphere is an afterthought for business, not a forethought. In a planet at so much risk, this is patently absurd.

- Equally, in most national constitutions, governments have no inbuilt requirements to protect and preserve the planet. Again, such as they are, they are ‘bolt-ons’. The systems of governing under which governments operate are hopelessly out of date. Some work better than others – for cultural as much as constitutional reasons – but none are adequate for the systemic reformation we need to execute. China, for example, has a quite extraordinary capacity to put its five-year plans into practice but is as likely to do the wrong thing as the right one. It is experimenting with local democracy but remains highly centralised – a killer for the innovation and citizen-initiated participation needed to respond to planetary destruction.

- Democratic systems are based on competing political parties locked into antiquated and linear decision and action processes – often dominated by the preferential lobbying of large companies (Chapter 3) and others leading to state capture. These systems don’t work more often than they do, and are wholly unfit for the reformation needed. A political class has emerged that is separate from the people they are meant to represent. This class now includes the news media and think tanks, once sources of independent thought. Powerful leaders take every opportunity to subvert constitutional controls, often outdated, in order to do what they want and to stay in office in perpetuity, usually alongside financial corruption. Ancient religions, bent on retaining power and privilege, still control some governments, seeking to impose a set of behavioural rules as a means to gain personal power and without reference to the sanctity of our planetary home. Christianity, at least until recently, went further and declared man’s dominion over all of nature. It’s here for our use – and abuse.
Economic, political, governmental and technological systems have escaped our control – and have transcended our capacity to act responsibly in our relationship with the biosphere. Ironically, delusions about control and how it operates also abound. The rise of the technosphere, the realm of human activity that has created the technologically modified environment in which we all exist, has exacerbated this relational collapse (see Chapter 4).

The problem is that few people see these ‘systems’ for what they are: just one of many ways of running things. Few people, too, see how powerful ‘systems’ themselves are, lured by the cult of leadership and the addiction of daily politicking to perceiving that answers to our problems lie in a new leader or change in government. Such changes sometimes make a small positive difference for a limited period. Very few are ever able to transcend the words of W. Edwards Deming:26 ‘a bad system will beat a good person, every time’. It is new, strong systems of governing we need, well before strong leaders. Today’s ‘systems’ are running beyond capacity, no matter how hard they are driven. Their engines are too small, their instrumentation lacking, and their on-board controls too flaky for the tasks required of them in the Anthropocene.

There is a crucial point here. These same ‘systems’ that are responsible for damaging the biosphere are also damaging us – in terms of wealth, power, well-being, products, and fear of government. The system changes necessary to restore democracy and to provide high standards of public services are the same as those needed to stabilise and maintain our relationship with the biosphere. People and nature are on the same side – only the elites are on the other. An orangutan, a spider and a poppy share our interests.

Few people, too, see where these ‘systems’ come from, or how to change them. The answer is, for as long as nation-states persist, that they are all articulated in a nation’s constitution (whether written or enacted through tradition). It is here we must go for their reconstruction or reconstituting. No extant constitution has been designed for today’s circumstances of the Anthropocene, nor for much else of modern government’s role, whether in spending 40% of a nation’s GDP or combating the might of global corporations (Chapter 2). Parliaments/assemblies/congresses and governments make company and other laws, international trade deals, and other treaties, which together produce (or allow) the economic system. Hence, it is termed the political economy.

Constitutions are also an act of collective self-control (Chapter 9). In various small and large ways, they impose on us rules for living together that, for the greater good, limit our individual behaviour. Constitutions are a form of institution: they are the product of human design and sense of purpose. But, like any rules-based system, the rules must achieve their desired purpose (i.e. they have to be enacted effectively). We must also have means of judging our collective acting through rigorous feedback processes (Chapter 10). If the rules are not working, then the commitment, resources, and practical skills to reconstitute the constitution are required. In this historical moment, collective discipline and capability are essential to change our own behaviours, such that we have all made a decision
to alter our lifestyles to preserve an ongoing viable relationship with the planet. I will if you will.27

1.3 Why not act?

Let’s start to think about our thinking by considering the immediate obstacles in our minds to personal change:

1. But nothing will change. This is the note of resignation often heard in relation to the many failures of government. We know a government service or decision is fundamentally flawed, we know there are better answers, but we know it will continue. Such forecast inertia is realistic. Governments lumber. If the people employed in them – and we all need a job – are content with the status quo, and the forces of renewal are insufficient to overcome their inertia, then little will change. History says it all.

As more and more power has shifted from individuals to large organisations – governments, companies, public sector agencies – and accountability of these organisations has become absent or marginal, people’s capacity to enact their citizenship, in contrast to their consumerism, has become diminished.28 This widespread sense of powerlessness encourages passivity. In this context, the likelihood of individuals rising up to take collective action is remote. Governments and the economic system have trained us to be passive. Only the actions of powerful others can create change becomes the spirit of the age or Zeitgeist.29

This sense that we cannot do anything is echoed in a survey of 1,000 people across Britain on what they valued in life.30 It looked at compassionate values like ‘helpfulness’, ‘equality’ and ‘protection of nature’, and selfish values like ‘wealth’, ‘public image’ and ‘success’. In the survey, 74% of respondents placed greater importance on compassionate than selfish values. But 77% believed that their fellow citizens held selfish values to be more important and compassionate values to be less important than is actually the case. ‘People who hold this inaccurate view about other people’s values feel significantly less positive about getting involved, they feel greater social alienation, less responsible for their communities, and less likely to fit with wider society’.31

In the context of climate action, this perception becomes ‘They are not doing it, so there’s no point in me doing it’. This ‘reciprocity’ inhibitor/motivator is found in other research. In Australia: ‘Whether or not a householder invests in an expensive energy efficiency measure has a great deal to do with whether their friends and associates have invested in that measure’ (and far less with its price). In Wales:

The process of behavioural change is fundamentally a social one: humans are influenced by the behaviour of others around them, often to a greater extent than is at first apparent. Change can only take place in the context of a cultural shift where other people are also trying to change.32
2. Another source of inaction is the perception that to act as part of the biosphere will require a diminution in lifestyles, freedoms and consumption. It is seen as an unpleasant, austere, backward-looking prospect. Contentment is derived relatively. We may be starting from a rice paddy or an inner-city loft, but if life this year is easier or less hard than last year, then contentment results. The thought of going backwards is disturbing.33

More specific motivations play loudly alongside this directional impulse. People may say ‘I like driving fast cars, flying to exotic places, eating oodles of meat, and have no wish to stop.’ Keep on partying: an (environmental) recession is around the corner. Consumer values are implicit in the way we ask questions, produce data, and compose policies and practices. This is understandable as all part of a massive consumer-induced disconnect between what people do and their ability to reflect about what they do. A twenty-first-century version of good-old alienation between people and place.34

At this point, it helps to note that we are already going backwards. The question is which backwards do you want? To the relative who said: ‘I don’t want a wind turbine near my garden,’ Ed replied, ‘Would you rather have a turbine, a desert or a refugee camp?’

3. A rather different rationale for personal inaction is ‘human ingenuity will sort it out’. Such ingenuity is not held by the non-actor. Someone else will do it. This is a high-risk strategy. Human ingenuity has sorted many things out and created many problems, not least our current state. But for those libertarian believers, it is a place to find some comfort, with some evidence.

Some entrepreneurs score high on ingenuity, leadership and vision. Some appear ethically and environmentally motivated. But few in business have the combination of wealth, education and intellect to pull off enough ingenious solutions. Exploitation of the planet comes in too many forms to be alleviated by the rise of ‘saviour capitalists’ and the ‘trickle-down economics’ that has produced greater inequality and the rise of migration. As Bruno Latour notes, migration exacerbated by climate change comes from without and within a nation. One group seeks a new country, whilst migrants from the inside ‘remain … in place [and] experience the drama of seeing themselves left behind in their own countries’.35

There are insidious forms of inaction and action. Action can become institutionalised and cultural in unhelpful ways. Some societies and scientific or economic communities extol the virtues of ‘progressive development’. Its aim is the exploitation of the natural world with new technologies that will make things better. Enthusiastic entrepreneurs have the power to distort innovation and investment that, if open to critical or systemic scrutiny, may not be pursued. At this time, do we really need driverless cars or missions to Mars?36

4. Let’s move somewhere else. This has been a strategy of the last few centuries. Persecuted for religious, ethnic, social and economic reasons, groups have sought to flee, emigrate, and seek opportunity elsewhere. Decisions to move
take courage, desperation, aspiration – the full gamut of human motivations. The migrations to the New World, the Americas, and Australasia are perhaps the most studied and vivid recent examples. Expanding to new territories and tribal defence of extant territories are characteristics of most apes. Today we readily engage in discourses about planetary journeys and wars, suggesting that a human yearning to conquer new territory dominates our capacity to be responsible for local place and culture.

5. The ultimate rationale for inaction is simply the belief that this is how species behave. If, by eliminating predators and other controls, one species becomes dominant, its population will expand beyond the capacity of its environs to sustain it. The population collapses and equilibrium is restored. In other words, mass extermination is going to happen; it is both inevitable and a law of nature, so let it happen. Depending on your view of humanity, this might appear either callous or realistic.

These are some of the vocalised rationalisations for inaction, which may be stimulating your own thinking. Scholars have sought deeper explanations of what underlies these positions and thus how our thinking could be altered. Here is a selection.

1.4 What underlies our propensity to inaction?

1. The pace of change *Homo sapiens* is used to is extremely slow. Examining huge shifts in lifestyles in the past shows that people did not stop being hunter/gatherers and start being farmers all of a sudden. ‘The change proceeded in stages, each of which involved just a small alteration in daily life’, Yuval Noah Harari concludes. That is the pace of change we are accustomed to.

The early stages of climate change and environmental degradation are already being felt in weather chaos, pollution and rubbish. But these are merely the early stages. To put these forces into retreat must, it may be thought, take effort, cooperation, resources, and human ingenuity of such a scale as to be beyond us. These are not small alterations. These are giant leaps. We give up before we start.

2. Your viewpoint determines the future, specifically how we view ‘nature’ as a risk. ‘We all have to predict what risks are around us, in anything from the risk of crossing the road to the risk of climate change’, concludes Mark Maslim. Bringing together two theories of the myths of nature and of the myths of human nature, he segments people into four types. There are those perceiving nature as benign: throw anything at it and it will continue. Then there is the perception of nature as ephemeral: fragile and unforgiving, it breaks and in so doing will break you. Or it might be nature as perverse/intolerant: within limits nature can be relied on – overstep those limits and it becomes nasty. Finally, nature is capricious, or unpredictable: it may or may not be benign or ephemeral, it is beyond human control, nothing can be done. Do you relate to any of these types?
These perceptions of the behaviour of nature then fashion people’s responses. ‘Ephemeral’ and ‘perverse/intolerant’ observers will act, the ‘benign’ and ‘capricious’ will not. But ‘remember that individuals can be extremely fluid in their beliefs, particularly when it comes to risk and uncertainty. People will, thus, shift in their opinion depending on the evidence put forward’. There is hope.

3. **People are not static in their response to enforced change.** We react to change, usually adversely at first, even if it is likely to be beneficial. From family upheaval to redundancy to mass immigration, people take a long time to adapt, following the classic and well-observed change curve of shock, denial, depression, anger, resignation, acceptance and understanding.

Where on this curve are we now for climate change? Certainly the shock is over. Much denial of its very existence followed, now all but ceased except in some powerful business and political redoubts. Depression and some anger are around in activists. But most people are far from acceptance and understanding. What will help the shift? Is change a property of the individual as old-fashioned cognitivists and behavioural theorists posit as well as modern-day nudgers? Or is change a social process that arises out of relational dynamics as understood in social theories of learning?

4. **The language we speak and how it expresses the future may influence our attitude to risk and thus our propensity to act now for climate change.** At first sight, this might seem a case of spurious correlation rather than cause. But in those languages like Finnish, in effect without future tenses, the individual has no linguistic separation from the future. Life is a continuum. The present is not separate from the future. Me now is also me tomorrow. What I do now is hard-wired to what happens to me then. I know I am growing old and so save money sufficiently today. Accumulating a pension for that time in my unsegmented life when I need it goes without saying. Note, ‘when I need it’, not ‘when I will need it’. Don’t panic.

Future tenses imply a different state: when this happens in a future separate from me today, then, yes, that. But that (a pension) is not an issue for today that requires present attention. It is in the future. English has several ways of expressing the future and is a cavalier culture in comparison with Finnish. This has its upside in creativity, humour, irreverence, but not, alas, in pension planning.

Can the same linguistic relationship to the future be seen in responses to climate? George Lakoff explains it in terms of direct and systemic causation: ‘Direct causation is very simple: you pick up a glass of water, you drink it, and then the glass doesn’t have water in it anymore. It happens here; it happens now’. It’s simple to understand and to express. ‘Every language in the whole world can express direct causation in its grammar’. But the language we use cannot cope with the concept of systemic causation.

It is disturbing to ponder that history may conclude that the adoption of English as the world language was a prime reason the planet collapsed for human habitation. Time will tell.
5. Cultures shape values, and those values shape history; by the same token, our values will shape our future. The seeds of our destruction are found in the myths and metaphors that have made a culture, concludes Jeremy Lent in his epic *The Patterning Instinct*. Articulated first by the philosophers of Ancient Greece, this Western pattern of meaning can be traced back to Abrahamic thought (the Old Testament), the emergence of scientism and demarcated, disciplinary silos, the commodification of the Earth as ‘natural resources’ and the invention of institutions and practices that exploit the resources of the Earth or diminish the quality of the relationship we humans have with the bio-physical world.

Far from breaking with previous patterns of thought, Rene Descartes’s famous belief that he consisted of ‘a substance whose whole essence or nature is to think and whose being requires no place and depends on no material thing’, was an extension of Platonic and Christian cosmologies, with a crucial difference: he substituted mind for soul.

If our identity is established only in the mind, then, as the Christians insisted, our body and the rest of nature, being incapable of reason, has no intrinsic value. Descartes was explicit about this: he insisted that there is no difference ‘between the machines made by craftsmen and the various bodies that nature alone composes’. The mind or soul was sacred, while the natural world possessed neither innate worth nor meaning. It existed to be remorselessly dissected and exploited.

This worldview underpinned the scientific revolution, which brought us the astonishing marvels and benefits that have transformed our lives. But it also embedded in our minds some catastrophic root-metaphors that help to explain our current relationship to the living world. Among them are the notions of human detachment from nature, our dominion over nature, nature as a machine.

These are values we see in action all around us. At the same time, the search for meaning, other than through its displacement into consumerism, is all around us too – religious fundamentalism, spirituality, low-impact living, conspiracy seeking, authenticity in leaders, fresh political parties. In their construction, governance systems for the Anthropocene cannot avoid meaning, rejecting these ancient myths and reconnecting, profoundly, with the natural world.

6. The values held by each of us can and do change. By the term ‘values’ is meant that nest of beliefs and motivations – largely subconscious – that underpin our attitudes to everything we encounter. But people are not all the same. ‘Values Modes’ (VM) divides people and their motivations into 12 psychographic groups. It helps to answer the question of why people do the things and make the choices that they do and to understand the dynamics of change over time – our attitudes are not static. *What Makes People Tick* describes how to communicate with each segment. This might be in social marketing, politics or campaigning for a cause.
Far from confirming that all is lost and that humanity is dooming itself to a hot watery grave, VM analysis indicates that the reverse is the case. Given a clear and specific plan, developed with targeted public deliberation, precisely communicated, and articulated by a committed and collective leadership, enough people would be ready to support and make the changes. Once in motion, most of the rest would follow – the snowball effect. A study by the Centre for Comparative and International Studies in Zurich found unexpectedly in the world’s largest democracies of India and the US ‘robust public support for unilateral climate policy … [and] support declines with increasing costs, and increases with growing co-benefits and problem solving effectiveness’.49

7. The internet may render history as a predictor of future human behaviour less relevant. As a source of intelligence and knowledge, separate and free from the traditional controlled sources, the age of authority-curated knowledge is over. The downside of this free-for-all has been well reported – notably by the old media and the other sources it is challenging. But it is the malign end of social media and ‘totalitarian corporate’ AI-based intrusive marketing that is the problem, not Wikipedia, The Conversation, established science on YouTube, art history lessons, TED Talks and educational games like Minecraft. We have become a global village. Learning is advancing at a rapid pace. Our hope is that this advance will have sufficient force to put ideology and prejudice into retreat. It is the internet’s power for relating and learning, not least about those blocking myths, that we seek to harness.

1.5 Observations on action and inaction

What may we conclude from theories and observations on action and inaction? Humans do change, have changed and will change. But humans need the right conditions to change beneficially. Extant ‘systems’ in which we now live are what’s stopping us.

In turning to the concept system, we appreciate:

(i) The ability to bestow meanings – to ‘name’ things, acts, and ideas – is a source of power.

(ii) Meanings are not imprinted into things by nature, they are developed and imposed by humans.

(iii) Control of communication allows the managers of ideology to lay down the categories through which our world is perceived.

(iv) We can resist – we have agency.

There is ‘an economic and political side to the formation of an idea-system, and idea-systems, once produced, become weapons in the clash of social interests’.50

The statement ‘it is the system that is the problem’ conveys a level of insight and recognition, but may not get us far beyond shrugs of disillusioned agreement. At other times when ‘thesystemistheproblem’, what is actually at issue is
the lack of a functional and effective system that achieves the purpose set for it. A collage of dysfunctional relationships is what we receive. When pressed, what is really meant when failings of ‘the system’ are invoked? Journalists and politicians increasingly label the source of problems as ‘systemic’ rather than attributing responsibility. The term can be a free pass to an acceptance of impotence or as a veil over incompetence. It is systemic, aka nothing to be done. No one is to blame and everyone is at fault. But people know that only by looking at the whole encompassing the individual will the faults be found and cured. This emerging public awareness of the real source of failings is evidence of recovering systemic sensibility: some people are thinking differently.

However, to get beyond the shrugs takes understanding of just what is going on in these systems – in a systemic way. The word ‘system’ comes from the Greek verb synhistanai, meaning ‘to stand together’. A system is a perceived whole whose elements are ‘interconnected’. Someone who pays particular attention to interconnections is said to be systemic. The whole may be made up of institutions, government bodies, ministers, staff, and assets, all in a complex network of relationships functioning to varying effect. Out of the end of all this, someone actually does something for or to someone. Systemic thinking and practice are about understanding what this whole is there for, how it works and embarking on its reform. This understanding has been developed into a set of concepts that are applied and adjusted or changed whilst being used to improve a situation. The technical terms draw on circular, recursive, multi-relational understandings and actions (see the Glossary in Appendix 2).

Two adjectives are derived from the noun ‘system’ – systemic, as above, and systematic. Think of an assembly line where a car is systematically put together – onto the chassis is attached the engine, gearbox and drivetrain, the axles to the drive train, the brakes and wheels to the axle and so on. In stable situations, this can work in government – issuing driving licenses for example – linear, mechanistic, causal, targets, standardisation, bureaucracy – one step follows another. The difficulty is that governments rarely work with stable situations where the end state – a car or a driving license – is predictable. Managing an economy, limiting violent crime or achieving the most good and the least bad through welfare regimes, for example, are not amenable to systematic solutions. The almost automatic use of systematic means of implementation underlies much of why governments fail. Whenever unintended consequences arise, you can be sure a government has used a systematic process for a systemic situation – biofuels is one example we will consider later. The consequences of the Anthropocene are especially uncertain, which will require both systemic and systematic responses, but in the right place. To appreciate the difference, look upon systematic as applicable to solids and systemic to fluids. When governments try to ‘pick up’ a fluid as if it were a solid, it slips through their fingers. As in chemistry, much of what is happening inside the fluid is unseen. This theme is developed throughout the book.

Just as seeds in a forest need light to germinate, light that comes from the death of surrounding trees, we will need to create light for new governing systems to
emerge. As we look forwards to craft the new, opening up spaces for innovation and change, we should not recoil from felling the institutional timbers of our current world that took hold in a time before the Anthropocene. Fortunately, many systems thinkers before us – and the new wave of ‘system changers’, especially from civil society where most change will in our view originate – lay down pathways of change.

Eric Wolf asked in 1982, for example,

what difference would it make to our understanding if we looked at the world as a whole, a totality, a system, instead of a sum of self-contained societies and cultures; if we took seriously the admonition to think of human aggregates as ‘inextricably involved with other aggregates, near and far, in weblike, netlike connections’.

Roy Scranton provides further insight when he says

we can continue acting as if tomorrow will be just like yesterday, growing less and less prepared for each new disaster as it comes, and more and more desperately invested in a life we can’t sustain. Or we can learn to see each day as the death of what came before, freeing ourselves to deal with whatever problems the present offers without attachment or fear.

Indy Johar sums up the increasing recognition by many that

our governance model is broken. We live in a ‘systemocracy’ – a world of massive inter-dependency yet we are holding on to 19th century versions of governance. This creates the illusion of sovereignty & supremacy – acting as a denial of the complexity we must confront. We need a new governance model which acknowledges our global interdependence at all scales & focuses on the quality, diversity and integrity of feedback in all its natures, whilst recognising the future is real-time and negotiatory. For us to move forward structurally, we need massive reform of our model of governance – reinventing it for the 21st century.

But this dual recognition of governance failure and of systems thinking as being essential to our futures is not happening fast enough. Systems can be dissolved, or deemed not to exist, or re-invented, or re-designed, but the praxis (practical action that is theory-informed or aware) for doing this requires a combination of systemic sensibility, systems literacy and systems thinking in practice capability. This is what this book seeks to explain.

This book says we can act. We have choice. The ‘systems’ we experience as determining much of the way we live, work and organise are not set in stone, the immutable consequence of ‘natural’ laws. The systems we have are the systems we have. They can be changed, they have to be changed, so let’s change them.
The next part of the book examines why governance and governments are failing.

Notes


3. The question ‘What do we do when we do what we do?’ is a second-order question that in its answering invites reflexivity (i.e. reflection on reflection).

4. *The Guardian* reported the resumption of deliberations by a ‘little-noticed treaty [with] nothing to do with the Paris accord, the United Nations Framework Convention on Climate Change (UNFCCC) … that have dragged on since 1992, on energy sector emissions, which have resumed their rise. The Kigali amendment, which was agreed on 15 October 2016 and comes into force on 1 January 2019, will drastically reduce hydrofluorocarbons (HFCs). These heat-trapping gases are the byproduct of industrial processes such as refrigeration and can be eliminated from those processes by re-engineering. The amendment comes under the Montreal Protocol, the world’s most successful international environmental treaty, which aims to stop the depletion of the ozone layer. HFCs are prime examples of short-lived climate pollutants (SLCPs), a range of chemicals that are spewed into the atmosphere by human activities and contribute to global warming.’ https://www.theguardian.com/environment/2018/oct/08/kigali-amendment-little-noticed-treaty-could-help-delay-climate-catastrophe?CMP=ShareiOSAppOther (Accessed 11 October 2018).

5. One could speculate that effective responses to CFCs, which were causing the ozone ‘hole’, happened before private-sector companies, aided by some governments, learnt from Big Tobacco, Big Coal, and Big Oil how to delay and obfuscate collective global action for the environment.


8. Regardless of whether one accepts the framing offered by the neologism ‘Anthropocene’ (others have suggested ‘economocene’, or ‘capitalocene’) it is clear that the phenomena to which it refers are real and call for transformations in our individual and collective understandings and practices.


11. A mock war. The Phoney War was that period at the start of World War II after the invasion of Poland during which, despite having declared war and the terms of the Anglo-Polish and Franco-Polish military alliances that obliged the United Kingdom and France to assist Poland, no Western power committed to launching a significant land offensive.


16 Adapted from IPCC (International Panel on Climate Change) Report, 2001.
18 Perez, I. Climate change and rising food prices heightened Arab Spring. *Scientific American.* 4 March 2013.
22 A full explication of how and why we use the term ‘biosphere’ is given in Chapter 4.
23 We use the term ‘systemic reformation’ purposefully; the period of the Reformation in Europe combined challenges to ways of thinking about the world and the place of humans in it as well as being a period of great institutional reform. We face an even greater challenge and have less time to effect the transformations needed.
27 Changing our relationship with the planet demands also that we change our relationships with each other – after all, many humans have done little to contribute to the Anthropocene – and we must also change our relationships with other species, what some might call conserving biodiversity.
28 In making these distinctions between citizen and consumer (values, or ways of being) we draw on the following book: Sagoff, Mark. 1988. *The Economy of the Earth.* Cambridge: Cambridge University Press.
29 Extinction Rebellion and Schools Climate Strikes are, as we write, challenging this notion hard.
33 A variation is parents wanting their children to have more opportunities than their- selves (e.g. not to be farmers).
34 Mulvey, Michael (personal communication, September 2018).
36 There is a view that history says exploration is full of surprise, and may uncover something of much relevance; but exploration where? Our history to date shows a predisposition to avoid responsibility for human cohabitation with the biosphere.

Ibid.

In some circles these simplistic approaches to effecting behaviour change have come up for major challenges, especially in terms of their long term effectiveness as well as their theoretical and methodological validity. Nudge is ‘a concept in behavioral science, political theory and economics which proposes positive reinforcement and indirect suggestions as ways to influence the behavior and decision making of groups or individuals.’ Nudging is said to contrast with other ways to achieve compliance, such as education, legislation or enforcement but these are not the only approaches to effecting social change. https://en.wikipedia.org/wiki/Nudge_theory (Accessed 21 September 2018).

Wenger’s social theory of learning starts with four premises: (i) We are social beings. Far from being trivially true, this fact is a central aspect of learning; (ii) Knowledge is a matter of competence with respect to valued enterprises – such as singing in tune, discovering scientific facts, fixing machines, writing poetry, being convivial, growing up as a boy or a girl, and so forth; (iii) Knowing is a matter of participating in the pursuit of such enterprises, that is, of active engagement in the world; (iv) Meaning – our ability to experience the world and our engagement with it as meaningful – is ultimately what learning is to produce. http://pagi.wikidot.com/wenger-social-theory-learning (Accessed 21 September 2018).


Michael Mulvey (personal communication, September 2018) makes the point that ‘the word “religion” has its roots in the Latin verb “religo” meaning “to bind back together”. Thus it is that humankind now needs a new way of binding itself back together, a new religion in the sense of “set of shared beliefs” that unifies rather than divides.’ He asks: ‘Could not the focus of such a shared belief system be “stewardship of Planet Earth for future generations or some such?”


Ibid.


In making this claim, our position is that all systems are socially constructed, even ‘ecosystems’ because it is we humans who invented the term ‘ecosystem’ and thus we can choose how to use the concept. In taking this stance we are not denying the materiality of the world and what might loosely be described as the ‘laws of physics’, ‘even of nature’.