Systems Practice: How to Act in a Climate-Change World

Book

Part I
Thinking and Acting Differently

Chapter 1
Introduction and Rationale

1.1 Managing in a Climate That We Are Changing

This book is about how we can take responsibility for the world we are creating by paying much more attention to how we think and act. If we look around us, it is easy to see that we are not making a very good job of it at the moment. When atomic bombs were invented, human beings, for the first time, had to face the prospect of producing the circumstances for their own destruction. So far we have survived the atomic threat! Now we have human-induced climate change with challenges that, for many, are still beyond imagination. In the face of such complexity and uncertainty many will be tempted to give up or to feel that nothing can be done. I admit to not being overly optimistic myself. I certainly do not have a magic wand to wave. What I do have, however, is a strong conviction that thinking and acting differently will have to be at the core of our strategies of action.

The acceptance that humans are changing the climate of the earth is the most compelling, amongst a long litany of reasons, as to why we have to change our ways of thinking and acting.[1] Few now question that we have to be capable of adapting quickly as new and uncertain circumstances emerge and that this capability will need to exist at the personal, group, community, regional, national and international levels all at the same time. The phenomenon of human-induced climate change is new to human history and it is accompanied by 'peak oil', rising population and consumerism, changing demographics and over exploitation of the natural world. In the face of such complexity and uncertainty it is tempting to say it is all too hard! It certainly won't be easy.

At this important historical moment what can we learn from our past? When we look around us what different ways of thinking and acting could be helpful? This book argues that development of our capabilities to think and act systemically is an

[1] I will make the case as the book develops that changing our thinking and acting is not just what we as individuals need to do – it is also what our ancestors have done which shape our current institutions and thus so much of what we take for granted in going about our daily lives.

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urgent priority.[2] Systems thinking and practice are not new but individually and socially our capability to do it is very limited. Unfortunately these are not abilities developed universally through schooling or at University. In the latter, the rise of specialised subject matter disciplines, the focus on science and technology at the expense of praxis (theory informed practical action) and reductionist research approaches have driven the intellectual and practical field of Systems,[3] a form of trans-disciplinary or 'meta' thinking, from the curriculum.

In calling for a new politics to begin to deal with climate change, Anthony Giddens [6] argues that 'as far as possible we have to prepare beforehand – adaptation must be proactive' [p. 13]. As compelling as his arguments are, he has very little to say about the forms of practice or praxis that will be required. I will argue that re-engaging with and revitalising systems thinking and practice is one of the most significant opportunities we have.[4] One of many reasons for this is because systems thinkers in the past have recognised that there are particular situations that we confront that only appear amenable to change and improvement through systems thinking and practice – these situations have been described as 'messes', 'wicked problems' or issues of the real-life swamp. I will argue that it makes sense to see climate change as part of a lineage of understanding these types of situations in particular ways. The good news is that we have some experience of how to use systems thinking and practice to engage with and change such situations for the better. The bad news is that these capabilities are not widespread, often they are not done very well and many organisations set up rules and practices that get in the way of thinking and acting systemically.

Change of course starts at home, with each of us but only if the circumstances are conducive, amongst which includes knowing what change for the better might look like. In my experience it is not easy to think and act differently. How we think and act is patterned into the very fabric of our existence from birth. It is affected by and sustained by our physiology, particularly our underlying emotions, by the structures of our language, by our practice of reifying explanations (particular ways of thinking) in rules, procedures, techniques and objects, by our culture and our social

[2] There are two adjectives derived from the word 'system', i.e. systemic, pertaining to wholes, though not in the sense that wholes are pre-given, but in the sense of a systemic chemical that has the capacity, through a network of interactions, to affect a whole organism and 'systematic', linear or sequential thinking and acting. The Systems approaches I am concerned with encompass both.

[3] Throughout the text I use the capitalised 'Systems' to cover the broad area of scholarship and practice that could be also described as the 'systems field' or the many 'systems approaches'; others have described 'Systems' as a trans-disciplinary meta-subject' but in some contexts it makes more sense to see Systems as a discipline in its own right or as part of interdisciplinary practices [9, 10].

[4] In making this claim I am not Utopian in outlook – there are many other priorities as well – and using systems approaches will not deliver 'utopian solutions' but they can increase our capacity to act effectively.

relations, all of them as they change over time.[5] How technology functions in our society is an important consideration as well. The result is a hugely complex web, a web of existence, in which we are immersed and of which we are only partly aware.

1.2 What Do We Do When We Do What We Do?

On the bright side it is possible to become more aware of the nature of this web. With awareness, new understandings are possible and from these can flow new practices.[6] One way to raise awareness is to ask new or different questions. The first question I invite you to explore with me in this book is:

> What is it that we do when we do what we do?[7]

A question like this is not a typical question. Too often we inhabit a taken-for-granted world where our ways of doing things are not questioned. Questions like this that invite critical reflection on our circumstances are not common. Answering this sort of question is also not easy because we are not used to doing the thinking needed to supply an answer. To answer questions like this requires us to take a double look – to look at what we do when we do the original doing and to look at our looking at what we do! By the end of this book I hope you will be much more familiar with what this type of question entails.[8]

Here is an example of what the question means to me. As an academic one of the common practices I have had to learn is how to mark exam papers. This usually involves allocating a mark for an answer, perhaps a mark out of ten, against some criteria that I have specified or have in my head. This practice is widespread not only in schools and universities, but can be used in judging research bids, ranking applicants for a job, ranking achievements or evaluating progress in meeting targets. In fact the practice of quantifying a process is so widespread that we tend to take it for granted. But if I reflect on this particular practice (my doing … or others who do it) then I can become aware of a range of issues which cause me concern. These include:

- My awareness that practice at the Open University, built around distance teaching, is very different to most other universities because we have to develop marking schemes in advance that can be used by other staff to do the marking. In my

[5] Reifying is the process of converting a concept mentally into a thing. The process can have the unintended consequence of giving a concept a seemingly material existence, almost as if it was there all of the time, rather than being 'invented' by someone at some historical moment; I expand on this in Chapter 6.

[6] Language constrains me here – I do not imply a linear sequence – awareness, understanding and practice are all sites for transformation and change. We know this from experience – doing something, like exploring your new mobile phone, a practice, can result in new understandings.

[7] I am grateful to Humberto Maturana for introducing me to this question and for offering the explanation of how human beings live in the braiding of language and emotion.

[8] I will refer to this type of question as a second-order question.

experience most academics at other universities do not develop formal marking schemes but use their own judgement as they mark

- An unintended consequence of not having a marking scheme can be that it becomes easier for students to score high marks in quantitative subjects or where there are clear right and wrong answers than in more qualitative subjects based on essays, mainly because in the latter case academics do not like to award marks over the full range 0–100, i.e. they do not much like giving marks over 80% or 90%
- An unintended consequence of having a marking scheme can be that the creative coupling of the answer to a question in context specific ways may go unrewarded or even unrecognised[9]
- If I think really deeply about marking then I realise that I am giving a quantitative performance measure to someone else's learning… or am I? Perhaps I am giving them a reward for mastering a particular technique, such as answering exam papers in a particular way? And how do I understand learning?[10]
- If I am honest with myself I realise that no matter how hard I try I find it hard to be generous when I find it difficult to understand the handwriting
- If I explore further I might realise that the practice of awarding quantitative marks to student work began in the 1790s – before that it was not imaginable that student learning would be treated in such a way (the 'normal' methods then involved discussion, presentation, discourse and professional judgement). Today quantification seems so much part of our daily life we do not question it. Yet prior to 1792, when it was first carried out at the University of Cambridge, this was an unknown practice. Interestingly it was subsequently fostered mainly by military colleges [7, 12][11,12]

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[9] At the Open University we attempt to address this by developing marking schemes that operate at several conceptual levels and leave space for context sensitive judgement, but experience shows that some tutors are better at this than others.

[10] In April 2008 a group of 34 British Academics under the banner of 'The Weston Manor Group' produced a manifesto calling for major changes in how Universities assess their students. They argued the need to reorientate current assessment fashions characterised by an 'obsession with marks and grades to one which puts more emphasis on developing effectiveness for learning, rather than assessment of what sometimes passes as learning' (see http://www.timeshighereducation.co.uk/story.asp?storyCode=401576&sectioncode=26 accessed 18th June 2008).

[11] Postman [12, p. 13] following Hoskins [5, pp. 135–146], attributes this 'innovation' to William Farish, a professor of Engineering at Cambridge, and claims that this was a major step in 'constructing a mathematical concept of reality'. He makes the further point, valid to my argument here, that 'if a number can be given to the quality of a thought, then a number can be given to the qualities of mercy, love, hate, beauty, creativity, intelligence, even sanity itself'.

[12] It is possible to successfully design and run 'education systems' which do not rely on quantification as part of an 'assessment system' – I have been fortunate to be part of doing this – see Bawden [2]. I would argue that one of the unintended consequences of assessment systems that primarily rely on 'quantification of learning' is that we have collectively become less skilled in processes of deliberation, which are so important to an effective democracy. But this argument is not one I wish to pursue here.

Fig. 1.1 An application form is an example of a widespread social technology – not all are the same but all have several elements in common and the 'forms' mediate similar social practices

I call practices such as grading and examining, which become incorporated into a culture, social technologies. Social technologies are all around us. Sometimes they are beneficial and facilitate effective practices like creating road rules that minimise accidents. Sometimes they incorporate understandings that, experience shows, were inappropriate in the first place or that, on reflection, are no longer valid. So, based on my experience and reflection on 'marking', it is legitimate to ask, or inquire further, as to whether quantification is really in the best interests of student learning?[13]

Writing about UK public sector reform John Seddon gives another example. He describes the 'inspection industry' which 'has become an instrument of the regime [New Labour], a political instrument. Like ministers, it has lost focus on what works. Instead inspection is concerned with compliance. It is now an integral part of dysfunction' [14, p. 56]. If I unpack Seddon's claims I come to see that 'inspection' and the role of 'inspectors' are social technologies and that what is good 'inspection' or a good 'inspector' is open to intellectual and political fashion.[14]

Social technologies are distinct from artefacts such as a hammer or a computer considered in isolation, which is what we usually think about when technology is mentioned. Social technologies are characterised by a set of relationships in which the technology plays a mediating role just as the document template does in Fig. 1.1. In my terms management, or decision making, can be a social technology when it is made up of procedures and rules designed to standardise behaviour – or in other words, sets of techniques used routinely without awareness of the origins and implications of the use of such techniques, the role of the practitioner and the need for contextual understanding about the situation. My examples of 'marking' and 'inspecting' may seem, at first, a far cry from responding to climate change.

[13] I return to the role of social technologies in Chapter 6.

[14] In this case the process of 'inspecting' has become reified at some historical moment into a professional role called 'inspector'. The inspector role brings with it historical connotations about 'inspecting' as well as day-to-day political and intellectual considerations that reshape what it is to be an 'inspector'. Etymologically the process of inspection means to 'examine closely' derived from 'en' (in, within, into) and 'spek' (to see or regard) [15].

It is my contention however that the profound and effective responses to major issues will arise when we become more systemically aware of the 'what and why' in the everyday. Marking and inspecting are seemingly benign practices that touch on the lives of a significant proportion of the world's population. But if we have, in some ways, got these 'wrong' think about the possible implications for many of our other practices! I say more about this in Part II.[15]

1.3 Living in Language

A second question I address is:

What are the consequences of living in language?

Neil Postman made the point that a sentence acts very much like a machine and that a language enables or constrains our thinking in particular ways. He points out that neither the form of a question or its content is neutral. The form of a question may ease our way or pose obstacles. Or, when even slightly altered, it may generate antithetical answers, as in the case of the two priests who, being unsure if it was permissible to eat and pray at the same time, wrote to the Pope for a definitive answer. One priest phrased the question: 'Is it permissible to eat while praying?' and was told it was not, since prayer should be the focus of one's whole attention; the other priest asked if it was permissible to pray while eating and was told that it is, since it is always appropriate to pray [12, pp. 125–126]. The form of a question may even block us from seeing opportunities that become visible through a different question.

A consequence of living in language is that the social and political dynamics of explanations becomes very important – as a species we appear to live with a craving for explanations. An explanation does not exist in and of itself – it is part of a social dynamic between an explainer, an explanation (the form of an explanation) and a listener or reader (Fig. 1.2). As I outline in Part II, accepting a new or different explanation changes who we are; the accepting and rejecting of explanations is a key dynamic of being human. My invitation in this book is to explore what it is like to develop systemic explanations and actions in complex and uncertain situations. I will argue that systems thinking and practice are particular ways of living in language – a systems language – that is unfortunately not greatly valued nor well understood or practised.[16]

Of course all explanations have a history and it is possible to explore this history. In my own approach to systems practice I place a lot of emphasis on attempts to

[15] In Part II, I will explain how my use of the term 'social technologies' is very close to what some economists, particularly institutional economists, refer to as 'institutions'.

[16] It can be argued that this in part rests on the contemporary focus on efficiency rather than effectiveness – achieving the latter is more difficult.

Fig. 1.2 The dynamic between an explainer, an explanation and a listener (or reader)

become more aware of the traditions of understanding out of which we think and act. In Chapter 7, I will describe how this can be done in a practical way by exploring metaphors and their entailments as part of a process of systemic inquiry. Recent scholarship in the newish academic disciplines in the history and sociology of science and technology demonstrate the importance of understanding the history of ideas, practices and explanations.[17]

1.4 A Failure to Institutionalise[18]

One of my main arguments is that we have failed to institutionalise systems thinking in our society in general and our organisational practices in particular, and that this has been, to a large extent a failure of knowing what systems practice is, valuing what it can deliver and knowing how to do it! So one of the main aims of this book is to give you, the reader, ideas about how to do it, i.e. to think and act systemically. I will also try to make apparent the sorts of benefits doing Systems can provide in a climate-change world. My ambition is that as you read you will engage in an active inquiry into your own ways of thinking and acting, or put another way, that you will transform your situation through changes in understanding and practice, where neither understanding or practice are prime (Fig. 1.3).

[17] Fortunately, explanations are open to historical inquiry and reinterpretation but in my view we need to do much more so as to break out of widespread traps in our thinking, traps that make it difficult for us to respond to complex situations such as climate change.

[18] By institutionalise I mean the failure to create systems practice as an 'institution', a norm or 'rule of the game'. I say more about institutions in Chapter 6.

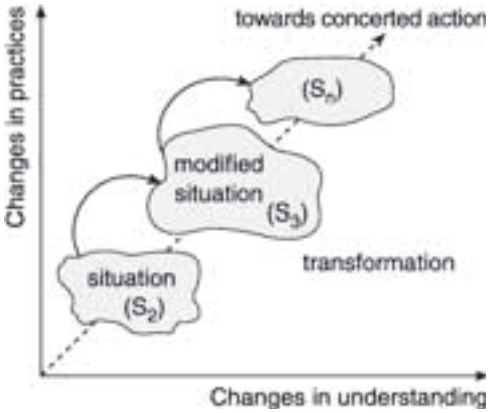

Fig. 1.3 Situations characterised by complexity, uncertainty interdependencies, multiple stakeholders and thus perspectives can be transformed (as indicated by the arrows) through concerted action by stakeholders who build their stakeholding in the process. This leads to changed understandings (knowledge in action) and practices (S = situation; S1 [not shown] is the history of the current situation (S2) which through changes in understanding and practices of stakeholders is transformed to S3 etc. [16])

The transformation I allude to in Fig. 1.3 is towards more effective concerted action by stakeholders in complex and uncertain situations.[19] I could describe this as cooperative, collaborative or collective action, but I prefer 'concerted' (understood as done or performed together or in cooperation) as it evokes for me the idea that, at scales ranging from the local to the global, we, as a species, have to develop more effective performances. My organising metaphor here is that of an orchestra or jazz ensemble. This metaphor enables me to appreciate that what constitutes an effective performance is an emergent property between the actions of an orchestra (i.e. a group of people with different histories, understandings, emotions, instruments who come together and work hard at some common purpose) and an audience (i.e. situation), and that this unfolds in context sensitive ways.[20] A jazz ensemble reveals aspects of improvisation rather than performing a set piece!

[19] It is important to my arguments that Fig. 1.3 is read carefully; as a heuristic device I have found it very useful in many face-to-face presentations – but it is useful mainly because of what it enables me to say and the questions it triggers. In Chapter 2, I will say more about how I understand particular situations and use the term 'situation'. Figure 1.3 is also built on a theoretical perspective that sees learning as social rather than individual and learning processes as embedded in the dotted line (which is rarely unidirectional in practice). Another key aspect of the transformation process, but not depicted in Fig. 1.3, is that changes in social relations usually accompany a change in practice or a change in understanding, i.e. in effecting situation improving action one is rarely alone.

[20] All metaphors reveal and conceal – what my use of this metaphor conceals is questions about conductor, score and music composition. I can side-step this partially by deferring to jazz and the improvisation that is part of jazz practice. In my reading of this metaphor I see many different performances operating at different scales, playing different music! I also think that in terms of climate change adaptation we need to write the music as well as perform it!

Illustration 1.1

Of course all metaphors can be interpreted in many ways and this one is no different. If I make clear what I mean by 'action that is systemically desirable', then I can take responsibility for my own normative position, what I would seek in a good performance. My position is that it is not the future of the Earth that is threatened by human actions but our relationship with the Earth, with other species and with other human beings, including future generations. So, for me, an effective performance arises from actions that enhance and sustain the quality of these relationships. At this stage I do not wish to be more specific than this; I will say more about this in Part II.

1.5 Managing in a Co-evolutionary World[21]

Some readers may by this point be struggling to locate themselves in this book. If you are a health professional, a civil servant, an engineer or from a myriad other contexts in which systems thinking and practice can be applied you may not yet have encountered anecdotes or language that resonate with you? I see this as both a challenge and an opportunity… for reader and author alike. This is not a book designed for one specific professional sector – it transcends individual professions. My own experience is that systems thinking and practice can become a skill that is relevant in all aspects of life, personal and professional, individual and group. My ambition and motivation is more than the utilitarian, however. Our circumstances have become such that more of the same, a business as usual approach, even if done better is no longer good enough. We face an unparalleled situation, one which requires responses, small and large, in all aspects of our daily lives.

[21] Material in this section comes mainly from Collins & Ison [4].

Illustration 1.2

Atomic bombs and human-induced climate change do not mean the end of the world, but they could ultimately mean the end of the world as we have come to know it, or a world in which we humans are a part. The situation is as serious as that! In the discourses that have built up around the acceptance that humans are actually affecting the climate of the earth, two terms have come to prominence. These are climate change mitigation and climate change adaptation. The former is concerned with acting now to stop climate change, or to minimise it, as it is not really stoppable. The latter concerns how we go on living in a world affected by climate change.

The word 'adaptation' has always been important in scientific fields associated with evolution, ecology and environmental change. The advent of anthropogenic climate change has again positioned 'adaptation' as a key term and concept. Etymologically 'adaptation' means 'fitted or suited' and to adapt is 'to fit' or 'make suitable'. At the level of metaphor two possible conceptions arise from these meanings which have significant practical and policy implications. The first metaphor, and the most widespread understanding, is that of 'adaptation as fitting into'. In this metaphor something (predetermined) is fitted into a situation (also predetermined or knowable in advance) to which it is fit-able or suited, like when doing a jigsaw [2].[22]

The other metaphor is that of 'adaptation as a good pair of shoes'. This metaphor requires a little more explication. What makes a good pair of shoes at a given moment? Well, usually because you have worn them in, they are comfortable, flexible etc. But these same shoes may not be a good pair of shoes if you were to put them in a cupboard for a year before wearing them again. Why? Because your feet will have changed! Within this metaphor a good pair of shoes arises from the recurrent interactions between shoes and feet – this is an example of co-evolution. This has also been described as the structural coupling of a system to its environment over

[22] It can be argued that this is a common understanding that informs practices like plant breeding and agronomy.

time [8, 11]. For those who understand the dynamics of co-evolution, and are not so interested in shoes, then the metaphor can become 'adaptation as co-evolution' [4].

Rather than seeing adaptation as one way, co-evolution is different – the idea of a separate environment is set aside in favour of processes of mutual interaction which in human social systems can be seen as processes of learning and development [5, p. 121; 6]. Despite our capabilities we seem to have room for improvement in the realms of learning and development. If we are to manage in a climate-changing world that is essentially unknowable in advance, and where we need to take more responsibility for the systemic effects we as a species have, then adaptation as co-evolution seems to me the only way forward. This requires an effective form of praxis – a systems practice.[23]

An increasing number of policy makers recognise that, in the face of climate change, a global water crisis and the like, a business as usual approach to governance is no longer tenable [1, 3, 6, 17].[24] These same commentators recognise that systems thinking and practice are key to delivering effective policy and practice that address long-term complex and intractable issues. Noting the long-term nature of many of Australia's key policy challenges the Australian Prime Minister, Kevin Rudd, argued the need to "invest in a greater strategic policy capability" by which he meant "a greater capacity to see emerging challenges and opportunities – and to see them not just from the perspective of government, but also from the perspective of all parts of the community" and delivering "genuine joined-up government" [13]. But, as experience in Britain demonstrates, joined-up government is easy to talk about but much harder to enact [14].

The material that follows explicates an 'ideal type' model of systems practice that, with investment, has the potential to deliver the missing praxis elements of joined-up, or systemic and adaptive, governance (Part II). But effective practice is always contextual and at the moment there are various constraints to institutionalising effective systems practice. These constraints as well as opportunities are explored in Part III. Our governance arrangements call out for transformation but such a transformation has to be built on fundamental shifts in thinking and practice as well as what we choose to value (Part IV). In our current context, systems thinking and practice is dangerous: dangerous because it may change who you are and how you act. I can think of no better time than now to live dangerously!

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[23] Praxis: the means by which a theory or philosophy becomes a practical social action.

[24] By governance, I mean the ways and means by which social groups 'steer' themselves in relation to feedback processes as they chart an uncertain future (I take this up again in Chapter 9).

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