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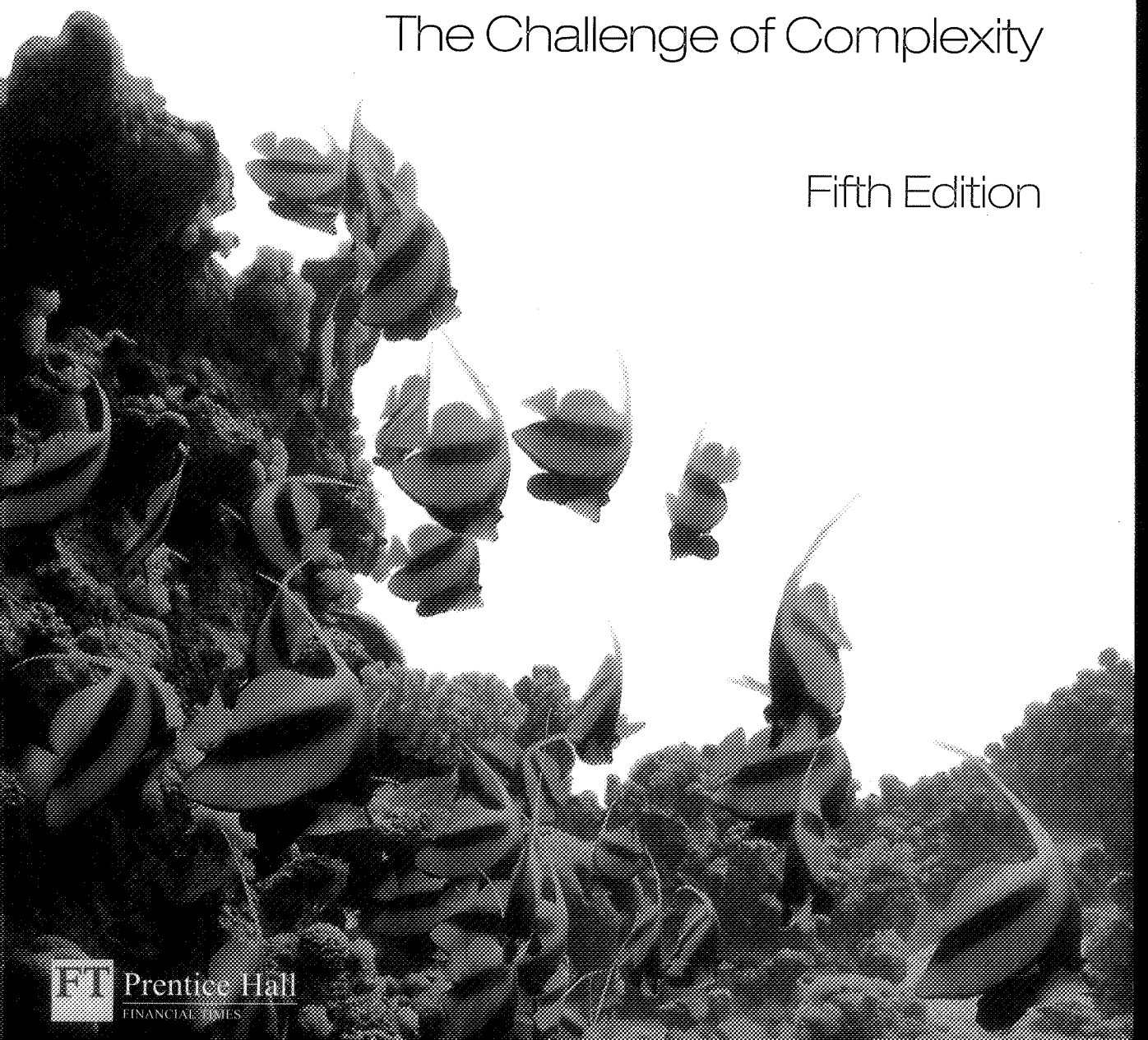
Strategic Management and Organisational Dynamics

The Challenge of Complexity

Fifth Edition



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Chapter 10

Responsive processes thinking

This chapter invites you to draw on your own experience to reflect on and consider the implications of:

- An alternative to systemic ways of thinking about process in human action. I call this alternative view 'responsive processes' in order to distinguish it from the notion of systemic process discussed in Chapter 7.
- The fundamental assumptions upon which this alternative notion of process is based and its location in the historical tradition of Western thought.
- The concepts of self-organisation and emergence in human action.
- The key differences between the notions of systemic process and responsive processes of human action.

This chapter provides foundational concepts required to understand the theory of complex responsive processes of human relating and the explanation it provides of strategising and organising, which will be developed in later chapters. I believe it is very important to understand the nature of responsive processes and how this notion differs from systemic process because it leads to a very different way of thinking about what an organisation is. As soon as one takes one view rather than the other, one inevitably goes down a particular path of thought and action. From a systemic process perspective it is easy to think of an organisation as a thing separate from people, a thing that managers can give direction to, and move about in time and conceptual space. As soon as one takes a responsive processes view one goes into a way of thinking about organisations as nothing more or less than patterns of interaction between human persons. These two different starting points lead to very different ways of thinking about what it means to manage, strategise and lead, which will be explored in some detail in Chapters 11 to 13. In broad terms, the difference is as follows. If you think from a systemic process perspective about what you are doing as leader or manager then you will believe that you can and should take an objective viewpoint from outside of your organisation as a whole or the part of it that you are responsible for. From this viewpoint you will be concerned with designing, or at the very least, shaping, influencing or conditioning organisational process. You will understand process in terms of administrative systems and decision-making procedures. You will be concerned with changing the whole system and the whole process. However, if you take the alternative perspective on process, you will understand what you are doing as leader or manager as participating in relationships with

other people. You will understand that there is no objective, external position in relationships, only the subjective–objective, involved–detached, participation in relating to others. You will understand your work as influencing, perhaps even manipulating, other people, not some abstract system or process, in order to get things done. You will understand what you are doing as processes of communication with others, as patterns of power relations between you, as choices based on ideological criteria. From the systemic perspective one's thinking is abstracted from the direct experience of relating to others while in the responsive processes perspective that relating, both good and bad, is at the centre of one's attention. Moving from the systemic to the responsive perspective challenges the belief that 'you' can be 'in control' and directly change the whole. Instead, it invites you to reflect on what you are actually doing in the ordinary, everyday activities of leading, managing and organising.

10.1 Introduction

Social, responsive processes thinking developed in reaction to Kantian philosophy, so by way of introduction I will first briefly summarise some points made in Chapter 2 about Kant's thought. Kant thought in terms of dualisms:

- On the one hand, there is reality, the noumenal, which is unknowable, and on the other hand, there is the appearance of reality, the phenomenal, which is knowable.
- On the one hand, there are subjects, that is, autonomous individual humans, who can freely choose goals and actions through their reasoning capacity and are therefore subject to rationalist causality. On the other hand, there are objects, the natural phenomena, which human subjects can know because they have innate mental categories by means of which they can classify and causally connect phenomena.

Kant argued that humans come to know phenomena by means of the scientific method, which means that they take the position of the objective observer external to the phenomena to be known, formulate hypotheses about them and then test the hypotheses in experimental action. These hypotheses can take the form of mechanistic 'if–then' rules, that is, efficient cause, in the case of inanimate matter, or they can take the form of regulative ideas in relation to organisms, which means that the objective observer ascribes an 'as if' purpose to organisms, understood as systems. Kant defined a system as a self-organising whole consisting of parts which interact with each other to form both themselves and the whole. Furthermore the whole develops over time in a purposive manner as it moves from its embryonic to its mature form in developmental stages. The system is understood as unfolding the purpose or mature form ascribed to, or enfolded in, the idea of the system.

What Kant was doing here was *presenting a particular notion of process, systemic process, involving a particular notion of time*. Process here is the interaction of parts to form a whole and time takes a linear, life cycle form. Chapter 7 explored just how this systemic notion of process pervades the literature on the process and activity-based views of strategy. According to Kant, then, organisms in nature are understood to move according to the formative, systemic process of the system, that

is, formative cause, and the human subject can take a rational, external position. The result is another dualism:

- Human action is understood to be subject to *rationalist* causality and nature is understood to be subject to either *efficient* or *formative* causality.

The essence of Kantian thinking, therefore, is the dualism. This way of thinking has a 'both . . . and' structure in which one side of the dualism applies at one time or place and the other side of the dualism applies at another time or place. First one side is the figure and the other the background and then this is reversed. The effect of this dualistic, figure–ground way of thinking is to eliminate paradox. Locating the opposites of the dualism in a sequence avoids the need to hold the two together *at the same time*, which is the essence of paradoxical thinking (Griffin, 2002).

Although Kant had cautioned against thinking about human action as a system because this was incompatible with the autonomy of the individual, all of the systems thinkers of the twentieth century have ignored this caution and applied systems thinking not only to nature but to human action and interaction as well. The *how* of strategy, the process, is then thought to be designing, shaping and influencing the system as a whole and its process. The content of strategy is thought of as the pattern of intended movement of the system and intended changes in the process over time by a regulator or controller standing outside them. Strategy, here, is all about moving systems and designing process.

This chapter explores an alternative to systems thinking about organisations. The philosopher Hegel argued against Kant's dualisms and their elimination of paradox. Instead, for him, thought was essentially paradoxical. Unlike Kant, who located human knowing in the innate capacities of the individual mind, Hegel presented a view of human knowing that is essentially social and, as later chapters will explain, this immediately signals a move away from individual-based views of human psychology. In doing this, Hegel was in effect developing a notion of processes that differed fundamentally from Kant's notion of systemic process. Hegel's notion of processes is a social one, essentially involving the interaction of human persons in what I would call *responsive* processes of struggling for mutual recognition as participants. Here there is no external viewpoint and everything any of us does is as a participant in some interaction with others. This alternative view of processes indicates a different notion of time from the linear one of Kant's systemic process, a matter I will take up later in this chapter. From a responsive processes perspective, the *how* of strategy is thought of as social processes of interaction between conscious and self-conscious persons in which their very identities emerge. The content of strategy is thought of as patterns of interaction, that is, as iterated identity. Strategy, here, is all about sustaining and changing identity, that is, who we are and what we are doing together.

The next section of this chapter briefly reviews Hegel's thinking and how the sociologists Mead and Elias thought in essentially the same terms. The section after that suggests that the insights of the natural complexity sciences can be interpreted in human terms using the kind of social, responsive processes thinking that derives from Hegel and Elias, rather than the dominant systemic process theory implicit in the writings of most others who appeal to the complexity sciences (*see* Chapter 9).

This chapter seeks to clarify the sense in which systemic and responsive processes thinking provide two incompatibly different ways of understanding human

organisations. Later chapters in this part will point to some of the consequences of thinking in responsive processes terms about strategy and organisational dynamics.

10.2 Responsive processes thinking

In the late eighteenth and early nineteenth centuries, the philosophers known as Romantic idealists (Fichte, Schelling and Hegel) moved from Kant's split between the knowing subject and the object to be known and argued that the object of knowledge was constituted by the *process of knowing* performed by the subject or self. Subjects, then, were together mentally creating their knowledge of the world of objects and of themselves at the same time. The Romantic idealists were particularly concerned with self-consciousness where the subject is an object to itself. It is the self that is real and all experience is carried back to this immediate experience of the self so that the reflexive position becomes central. This immediately challenges the external objective position and claims instead that knowledge is socially constructed in the interaction of interdependent, conscious and self-conscious persons. Kant held that the mind encountered contradictions when it attempted to go beyond the phenomenal world to the noumenal and these contradictions were warnings of a mind going beyond its limits. For the Romantic idealists, however, contradictions were inherent in the movement of thought. The Romantic idealists moved away from a Kantian innate logic, with already given forms of thought outside of experience (transcendental), to a dialectical logic in which human consciousness and self-consciousness as experience are central to knowing. Furthermore, individual selves and social relations were understood to be intimately interconnected and *experience was understood as historical, social processes of consciousness and self-consciousness.* This represented a powerful break with the notion of the autonomous individual and innate, transcendental, pre-given knowing. From the Kantian perspective it is possible to take a position external to social interaction and objectively observe it. From the perspective of the Romantic idealists, this is not possible because all self-conscious persons are always participating in social activity even when they think they are observing it from an external position.

Hegel

In Hegel's philosophy, the development of thought takes place through *conflict* between persons and the world of *our experience is the world we are creating in our thought.* Hegel held that one cannot begin, as Kant had done, with an isolated individual subject experiencing the world and then ask how a world of objective experience gets built up out of the inner world of purely subjective, individual representations as in systems and mental models. Rather, one must begin with an already shared world of subjects making judgements in the light of possible judgements by other subjects, in other words interacting responsively. Hegel also emphasised the notion of *mutual recognition* to argue that there was an intersubjective unity of mutually recognising agents, in other words, agents acting responsively. He argued against any separate realm outside of experience. In this, he moved decisively away from the Kantian notion of a system, which others had directly applied

to human interaction, lying outside of direct experience of such interaction and causing it.

For Hegel, the notions of person and subject are historically specific and are given content only by the social institutions in which each individual achieves social identity through interdependence and mutual recognition. Mind or consciousness is manifested in social institutions, that is, ways of life, which give identities, self-concepts, to individuals. Each person is self-consciously, purposively directing herself or himself but each is also dependent on others at the same time. How we come to understand our own desires, interpret their intensity and priority, how we categorise objects to satisfy our desires, is not fixed or determined by our natures or the real world but depends on the concepts we employ and these are socially evolved. Self-determination by a free subject can only occur through other persons who are also self-determining subjects and are doing the same. Another self-conscious subject offers resistance to the realisation of my desires by testing or challenging me and my self-world conception. It is inevitable that two self-determining, self-conscious subjects will conflict and struggle.

Hegel argued that individuals are fundamentally social practitioners and what they do, think or say takes form in the context of *social practices*, while these practices provide the required resources, objects of desire, skills and procedures. In contrast to Kantian thinking, where there is a duality of the individual and the social, Hegel presents a perspective in which they cannot be separated. Indeed, individual consciousness and self-consciousness arise in the social relations, which they are simultaneously constructing. This is clearly a paradoxical perspective in which individual minds are simultaneously forming and being formed by social relations. This presents a different notion of causality, which we may call *transformative* causality (Stacey *et al.*, 2000).

The move from systemic to responsive processes thinking is, therefore, fundamentally a move from a dualistic theory of rationalist–formative causality to one of transformative causality. These different notions of causality are summarised in Table 10.1.

Table 10.1 Comparison of different ways of thinking about causality

	Nature of movement	Cause of movement
Efficient cause	Corrective repetition of past in order to realise an optimal future state	Universal, timeless laws of an 'if–then' kind
Rationalist cause	Towards rationally chosen goals for the future in order to realise a designed, desired state	Human reason
Formative cause	Unfolding of enfolded mature form in order to realise that form in the future	Self-organising systemic process of unfolding in developmental stages
Transformative cause	Iterated interaction perpetually constructing the future in the present in order to express continuity and potential transformation in identity at the same time	Responsive processes of local interaction between entities in the present

The Kantian and Hegelian ways of thinking have continued to influence sociologists, psychologists and organisational theorists up to the present time. The sociologist Mead continued in the Hegelian tradition and worked out in detail how one might think of mind, self and the social in a responsive processes way, and this will be explored in Chapter 11. First, however, consider how another sociologist, Elias, who was also influenced by Hegel's thought, reflects the notion of social, responsive processes in his sociology.

Elias

Following the tradition of Hegel, Elias did not think about the relationship between the individual and society in terms of any spatial distinction between inside and outside, as in systems thinking. He argued that while the notion of a receptacle containing something inside it might be applicable to the physical aspects of a human being, it could not be applied to the personality or the mind (Elias, 1991, p. 480). In rejecting the notion of the individual mind as an 'internal world', he also argued against thinking of the social as an organic unity or supra-individual with a 'group mind' developing through stages of youth, maturity and old age to death (pp. 5–6). Instead, he pointed to the essential interdependence of people. Elias also usually avoided any kind of systemic formulation, arguing that such formulations abstract from experience. Instead, he understood both individual and social purely in what I am calling responsive processes terms. He did not think of the individual and society first existing and then subsequently affecting each other (p. 456). He suggested that we can see the connection between individual and social more precisely if we refuse to abstract from the processes of their development, of their becoming. Elias also argued against concepts of society as some kind of 'whole', arguing that the social life of human beings was full of contradictions, tensions and explosions rather than being more or less harmonious as the concept of a 'whole' implies. Furthermore, while the concept of a 'whole' implies something complete in itself, societies are always more or less incomplete, remaining open in time as a continuous flow (p. 12). What Elias is doing here is moving completely away from any notion of human interaction as a system and any notion of some 'whole' existing outside of that interaction and causing it. Instead, he is focusing entirely on the processes of interaction between human bodies. Elias argued that the concept of the whole applied to human action simply created a mystery in order to solve a mystery.

In order to understand the nature of human interaction, Elias made a detailed study of changes in the way Western people have experienced themselves over hundreds of years and pointed to how social order *emerges* in interactions between people.

The emergence of social order

Elias argued that what we now call Western civilisation is not the result of any kind of calculated long-term planning. Individual people did not form an intention to change civilisation and then gradually realise this intention through rational, purposive measures. It is not conceivable that the evolution of society could have been planned because that would suppose that modern rational, calculating individuals with a degree of self-mastery already existed centuries ago, whereas Elias's research shows that such individuals did not exist then but were, rather, themselves the products of social evolution. Societal changes produced rational, planning kinds of

individuals, not the other way around. In medieval times, people experienced their self-consciousness in a completely different way, in a completely different kind of society, compared with the way we experience our self-consciousness in modern society. Elias concluded that the development of a society was not caused by 'mysterious' social forces but was the consequence of the interweaving, the *interplay* of the intentions and actions of many, many people. He talked about the moves of many interdependent players intertwining in ways that none of them could control no matter how powerful they were. However, despite the development of a society being unplanned and outside the immediate control of its members, the interplay of individual plans and intentions nevertheless produced an orderly pattern of development, tending in a particular direction (Elias, 1991, pp. 146–7)

So, Elias argued that change in society occurred in an unplanned manner but nevertheless displayed a specific type of order. His research demonstrated how the constraints imposed by others were converted into self-restraints and how many human bodily activities were progressively pushed behind the scenes of communal social life and invested with feelings of shame. Elias explained how the growing interdependence of people caused by the increasing division of labour and specialisation of tasks could only be sustained by the increasing self-control of those interdependent people. In other words, increasing interdependence, taken together with the increasing state monopolisation of violence, came to be reflected in the very personality structures of people. The 'civilising' process is one of increasing self-control bringing with it the benefits of social order but also the disadvantages of neurotic behaviour associated with such self-control and increasing anxiety of contravening social norms. Furthermore, this civilising trend is easily reversed by any threat to, or breakdown in, social order. Although this transformation of societies and personality structures could not have been planned and intended, it was not simply a sequence of unstructured changes (Elias, 2000, p. 365). Elias looked for an explanation of how it was possible that orderly population-wide formations, which no human being had intended, arose in the human world:

> *It is simple enough: plans and actions, the emotional and rational impulses of individual people, constantly interweave in a friendly or hostile way.* This basic tissue resulting from many single plans and actions of men can give rise to changes and patterns that no individual person has planned or created. From this interdependence of people arises an order sui generis, an order more compelling and stronger than the will and reason of the individual people composing it. *It is the order of interweaving human impulses and strivings, the social order, which determines the course of historical change; it underlies the civilizing process.*
> (Elias, 2000, p. 366)

Although it is highly unlikely that Elias was ever aware of the complexity sciences, what he is describing here is what complexity scientists call self-organisation and emergence. Elias is arguing that individuals and groups are interacting with each other, in their local situations, in intentional, planned ways. However, the widespread, population-wide consequences of the interplay of these intentions and plans cannot be foreseen by any of them – long-term population-wide patterns emerge without an overall plan or blueprint. Elias explains that long-term consequences cannot be foreseen because the interplay of the actions, plans and purposes of many individuals constantly gives rise to something that has not been planned,

intended or created by any of those individuals. Elias pointed to the important fact that individuals pursuing their plans are always in relationship with each other in a group or power figuration. While individuals can plan their own actions, they cannot plan the actions of others and so cannot plan the interplay of plans and actions. The fact that each person depends on others means that none can simply realise their plans. However, this does not mean that anarchy, or disorder, results. Elias talks about a trend or direction in the evolution of the consequences of the interweaving of individual plans and intentions. In other words, he is talking about self-organisation and emergence. Consider how we might understand recent developments at British Airways from Elias's perspective of the interplay of intentions.

The interplay of intentions in the airline industry

Gate Gourmet is a catering company in the UK owned by a corporation in the United States. Some years ago, a group of executives at British Airways (BA) chose to outsource the provision of all of its in-flight meals and chose Gate Gourmet as its sole provider because this was the least-cost solution. Here, in their local interaction, executives form BA's plan to outsource while another group of executives at Gate Gourmet interact locally to plan their bid for the contract and in the interplay of these plans a different population-wide pattern of supplying in-flight meals emerges. So far, it looks as if the interplay of plans produces the population-wide pattern that all had intended. However, by mid-2005, executives at Gate Gourmet were coming under pressure from another group of locally interacting executives at their parent company to stem the large losses they were making from supplying BA meals. Notice the local interaction on both sides of the Atlantic. In August 2005, in response, the directors of Gate Gourmet decided to reduce costs by making 670 employees redundant, intending to replace them with cheaper labour from Eastern Europe. And here we have another Gate Gourmet plan emerging in the interplay with the intentions of executives on the other side of the Atlantic. The 670 staff who packed meal containers for the in-flight services were predominantly Sikh women who lived in a close-knit community, organised around a Sikh temple near to Heathrow airport. When these women were abruptly dismissed, they angrily informed members of their families and the wider community. That night there was a meeting in the temple. Notice the population-wide pattern emerging in the interplay of the intentions of executives and workers. Many of the husbands of the dismissed women happened to work for BA as luggage handlers at Heathrow. At the meeting in the temple they agreed to form picket lines outside Gate Gourmet to interrupt the delivery of meals to BA flights and also to call a wild-cat strike of BA luggage handlers. So here we have the workers' plans arising in their local interaction. On the next day, within hours, managers at BA found that the only way to deal with the escalating situation was to ground all of their flights around the world. Here another BA plan emerges in response to the interplay of the plans of Gate Gourmet's executives and workers. For days after this, thousands of passengers were stranded at airports around the world and even months later meal services on BA fights were still not back to normal and a large dent had been made in BA profits. Another population-wide pattern has emerged.

Here we have an example of the interplay of intentions that Elias talked about. Executives at BA intended to outsource the provision of meals. Executives at Gate Gourmet intended to reduce its labour force. The affected members and others in

their community intended to take action against this. In response, executives at BA intended to ground all its flight. However, the overall, widespread pattern of the interaction between all the players was not intended by anyone but, rather, emerged in the many local interactions between all of those involved. If we think of strategy as a widespread pattern of actions over time, we can see the emergent nature of the individual strategies, that is, intentions of all involved. Instead of thinking about strategy in terms of an isolated organisation making choices, we can see from this example how the choices, intentions, decisions, strategies of all are all responses to what the others involved are doing. Together they are creating the ongoing processes of local interaction, aspects of which could be described as strategising, and it is in the interplay of these local actions that population-wide patterns emerge and we could call these strategies.

Intention and emergence are not polarised

It is important to note how Elias does not polarise intention and emergence. I pointed out in Chapter 7 how writers in the process and activity-based strategy traditions polarise intention and emergence. They argue either that emergence means that everything happens by chance or that emergence is such that it can be designed, conditioned or at least influenced by powerful, effective individuals with intention. Elias takes a completely different view. People interact with intentions but their intentions will differ – indeed, each of these intentions is a response to the intentions of others – and so what happens emerges in the interplay of all of their intentions. Intention and emergence are thus in play at the same time without either being opposed by or subordinated to the other. No one can get outside of the interplay and so there is no doubling of process in the sense of someone using a process called influencing to shape a process called interplay or emergence. All that *everyone*, no matter how powerful, can do is to continue participating with intention and continually negotiate and respond to others who are also intentionally doing the same. It is in this ongoing, intentional, local interaction of strategising that the population-wide patterns of strategy emerge.

Elias talked about essentially paradoxical processes in which individuals form groups while being formed by them at the same time. This is a fundamentally different way of thinking compared with the dualism of individual and social to be found in systems thinking. In Elias's process theory, change occurs in paradoxical transformative processes – change is self-organising, emergent processes of perpetually constructing the future as continuity and potential transformation at the same time. Elias argued that we cannot identify self-organising social order with the order of nature, or with some kind of supra-individual. Instead the order arises in specific dynamics of social interplay in particular places at particular times.

If it makes sense to think of societies and their 'strategies' in this way, then there is no reason why we could not think about organisations in this way too and this is what the rest of the chapters in this part of the book will be doing. We can come to understand how organisational strategies emerge unpredictably in the interplay of many different intentions and, as such, emergence is not a matter of chance. What emerges does so precisely because of what all involved do and do not do. This notion of emergence presents a serious challenge to the dominant discourse on strategy and organisation, which assumes that leaders or others can directly change some whole system, process or population-wide pattern in an intentional manner.

The whole notion of planned global change programmes 'rolled' down organisations begins to look rather like a fantasy.

Elias developed his process sociology during the 1930s and 1940s well before the emergence of the complexity sciences. He continued to develop his theories until his death in 1990 but it is unlikely that he knew anything about the developments in the natural complexity sciences. However, these sciences provide considerable support for what Elias was arguing. What these sciences are pointing to is the ubiquitous presence in nature of the unpredictable emergence of order in disorder through processes of spontaneous self-organisation or, to put it another way, the emergence of population-wide patterns in local interactions. The sociology of Elias, and some others in the Hegelian tradition, therefore provides an alternative to systems thinking for interpreting the insights of complexity theories into human terms.

10.3 Chaos, complexity and analogy

The complexity sciences present an ongoing, rigorous exploration of what self-organisation and emergence mean and in doing so represent a departure from some of the scientific foundations long ago imported into organisational thinking. They offer an important source of understanding the concepts of self-organisation and emergence and since these concepts are central to the responsive processes perspective, it becomes important to draw on what the natural complexity scientists have to say. The purpose of this section, therefore, is to explore how the abstract relationships studied in the complexity sciences might provide analogies for human interaction understood from the perspective of Elias's process sociology and also the work of Mead. This will involve taking abstract relationships from the domain of natural science complexity theories and interpreting them in the human domain by taking account of the distinctive features of human agents. Unlike agents in the natural sciences or in the computer simulations described in Chapter 8, human agents are conscious and self-conscious, they form intentions and have some freedom of choice, they display emotion and spontaneity, and they have the capacity to articulate the population-wide patterns emerging in their local interactions, even desire different ones, and these desires and articulations affect their local interactions at the same time as they are being articulated and desired. These are all matters to be taken up in subsequent chapters.

First, however, consider whether it is reasonable to regard chaos and complexity theories as source domains for analogy with human interaction.

Chaos theory

Chaos theory (*see* Chapter 8) is concerned with the properties of iterative, deterministic, nonlinear mathematical relationships (i.e. algorithms) in which the output of one iteration becomes the input of the next. In other words, the current state is determined by referring, through a deterministic nonlinear algorithm, to its own previous state. At some values of a control parameter, such models display a strange attractor called chaos, a paradox of stability and instability, predictability and unpredictability, at the same time. However, the pattern of movement takes one,

and only one, form, namely that of the particular strange attractor generated by the particular algorithmic relationship specified. Furthermore, mathematical models are not reality but simply logical structures created by mathematicians. The physicist, meteorologist, chemist, biologist, or any other scientist in any other field, then has to interpret how these abstract logical structures might apply to the field they are interested in. They do this by calling upon what is already known, through scientific experiments, about the phenomena in their field of study. They also perform new experiments suggested by chaos theory in order to provide empirical support for the claim that the abstract mathematical models they have developed do apply to the phenomena in their field of interest.

In Chapter 9, I referred briefly to the work of some economists and organisational theorists who adopt exactly the same approach. They use data on macro events, such as foreign exchange rates, to explore whether the mathematical equations of chaos theory fit the data. As soon as they do this, they make implicit assumptions about the nature of human interaction. They assume that human beings are such that patterns in their interaction can be described at the macro level in terms of deterministic equations. Alternatively, some organisational theorists use the properties revealed by the mathematical models of chaos as metaphors to describe organisations. For example, Chapter 9 reviewed the work of a number of researchers who describe an organisation as chaotic. As soon as they do this, they too are making the implicit assumptions about the nature of human interaction just described.

It is very important not to jump straight from a mathematical model to an application in a particular field without examining how the model is being interpreted in that particular field. In other words, the implicit assumptions being made about human action when chaos theory is applied to organisations need to be made explicit if one is to think rigorously. If one applies chaos theory directly to any form of human action, including organisations, then one is assuming that human interaction is deterministic or, at least, can be thought of 'as if' it is. This immediately means that one is assuming away any form of human freedom, that is, any possibility of individuals making any kind of choice or learning from experience. Since this is so directly contrary to our experience, it follows that chaos theory cannot be directly applied to human action. Furthermore, chaos theory cannot offer analogies for human action. In *reasoning by analogy*, we take relationships, without any attributes, from one domain and argue that these relationships apply in some other domain. The relationships in chaos theory are abstract relationships between mathematical symbols of a deterministic kind yielding abstract patterns in those symbols, for example patterns called strange attractors, fractal or mathematical chaos. I have already argued that we cannot take abstract deterministic relationships as analogous to real human relationships because that would amount to assuming that humans do not exercise choice. However, we might still want to reason using metaphor. When we *reason by metaphor* we take the attributes of phenomena in one domain to another domain without taking the nature of the relationships. So, one could use chaos theory to provide metaphors for human interactions. For example, one might want to say that human interactions are patterned like the paradoxical patterns of mathematical chaos, strange attractors or fractals. Chaos theory, then, can only ever provide what might be experienced as provocative metaphors, which might give us some kind of poetic insight into patterns of human action. The same conclusion applies to dissipative structure theory because it too is based on deterministic models.

Complex adaptive systems theory

The theory of complex adaptive systems differs from chaos and dissipative structure theory in that it reveals the properties of iterating the interaction between separate algorithms representing entities comprising a system, rather than those of iterating algorithms modelling the system as a whole. The former focuses at the micro level while the latter focuses at the macro level. Chapter 8 distinguished between two substantially different kinds of complex adaptive system simulation. The first is where the algorithms, or agents comprising the system, are all the same as each other, as for example in the Boids simulation (Reynolds, 1987), and the second is where the agents differ from each other, as for example in the Tierra simulation (Ray, 1992).

Complex adaptive systems with homogeneous agents

In some simulations of complex adaptive systems, the agents are algorithms, or computer programs, that are all the same as each other. For example, Reynolds' simulation of Boids consists of a number of computer programs, each comprising the same three instructions that organise the interaction of each computer program with other programs. Furthermore, the algorithms or computer programs are cybernetic entities. This is so because one of the algorithms, for example, requires each agent to keep a target distance from its nearest neighbours. The actual distance from a neighbour is compared with the target and the difference is fed back so as either to increase or to decrease the distance. The agents in complex adaptive systems of this homogeneous kind are deterministic, cybernetic algorithms.

The simulation then reveals that this interaction between each individual algorithm with some others, that is, local interaction between them, yields a population-wide pattern in the relationship between all of them. They clump together. When each algorithm is represented as a dot on the computer screen, the clumping pattern can be seen and the programmer can observe how it persists in various forms over time. Reynolds then makes an interpretation. He calls each individual algorithm a 'Boid' and he calls the population-wide pattern they produce 'flocking'. He makes a further interpretation when he suggests that the Boids are logically equivalent to real birds and that the model points to how real birds produce flocking behaviour. He then points to how a few simple rules of local interaction can yield emergent population-wide patterns of a very complex kind, without the need for any overall blueprint to determine the population-wide patterns. Each algorithm interacting with a few others at their own local level of interaction is sufficient to produce a population-wide pattern of relationships between all of them. What the iteration of their interaction reveals is the *emergence* of a coherent collective pattern, that is, an attractor for the whole system.

There is a very important point to note about simulations, such as the Boids one, where each interacting symbol pattern, or agent, is the same as all the others. This is interaction where there is no diversity amongst the symbol patterns, no non-average interaction between them, no noise, no fluctuations in Prigogine's terms. Because of this lack of diversity, the simulation cannot display spontaneous moves from one attractor to another, nor can it spontaneously generate a new attractor (Allen, 1998a, 1998b). The symbol patterns, or rules, always yield the

same attractor and change can occur only when the programmer changes the individual algorithms. Furthermore, each of the agents is a deterministic cybernetic system, a set of rules, a blueprint. In other words, such a model cannot explain novelty because it has no freedom of choice and does not evolve of its own accord, and because it is deterministic it cannot be applied to human action other than metaphoricaly.

Each individual Boid is itself a blueprint, doing only what its programme enables it to, and it is constrained by that programme from doing anything else. These agents cannot be said to be organising themselves in some kind of individual manner with connotations of doing whatever they please. They are constrained by the need to interact locally with each other. In fact, self-organisation does not mean that something is organising itself. It means local interaction. Furthermore, emergence does not mean that some pattern arises by chance. Emergence means that population-wide patterns arise in local interaction in the complete absence of a blueprint, program or plan for that population-wide pattern. The global pattern is what it is because of the manner in which the agents interact locally and this is not a matter of chance. The overall pattern of interaction is said to be emerging because there is no blueprint for it.

Organisational interpretations

Some organisational theorists interpret simulations like the Boids to suggest that if a manager wants his or her organisation to produce an overall pattern, or strategy, of a highly complex kind then it is not necessary to formulate and implement an overall strategy. Instead, the manager should establish a few simple ground rules and this is held to unleash the power of self-organisation and allow emergence to happen. In this interpretation, the manager is, without any explicit justification, equated with the programmer. Reynolds, the programmer, took the position of the objective observer, standing outside the pre-given reality of birds flocking, and induced rules that might produce flocking. He then simulated them in the computer and showed that they do produce the equivalent of flocking. This is what the manager is now supposed to do. Implicit in the prescription to formulate a few simple rules that all in the organisation are to follow is the notion that the manager must first choose which attractor he or she wants the organisation to be drawn to. The manager then has to induce the few simple rules that will produce it.

However, note the consequence of this. Assuming for the moment that an organisation is a system and that people do follow rules, then if the manager succeeds in identifying the *right* set of rules and people do follow them, the required attractor will emerge. However, this is all that will emerge. The organisation will follow this attractor until the manager changes the rules, because a system in which the separate entities are all following the same rules does not possess the capacity for spontaneously moving to another attractor, nor does it possess the capacity to generate new attractors spontaneously. The prescription ensures that the organisation will not be creative. The only change from strategic choice theory is that the manager is now relieved from having to formulate detailed overall plans. This is not a radically different insight since it was long ago concluded that detailed long-term plans were not very helpful in turbulent times and that what managers needed to do was set the direction in the form of a few guidelines or a vision.

Now consider whether complex adaptive systems, such as the Boids one where all the agents are the same, can provide a source domain for analogies with human behaviour. The abstract relationships in such systems are relationships between cybernetic entities defined as deterministic, simple rules. It follows that such complex adaptive systems cannot provide analogies with human interaction for exactly the same reasons as chaos and dissipative structure theories cannot: humans are not cybernetic entities. In addition, if people really are to follow rules then they will need rules to interpret the rules in a particular contingent situation. And then they will need rules to select the appropriate rules of interpretation and so on in infinite regress. Furthermore, if people following rules keep altering their interpretations even according to rules, rather than following them rigidly, then they are no longer following a given set of simple rules and so they will not produce the attractor enfolded in the first rule set. It follows that simulations with homogeneous agents can only ever provide metaphors that may or may not provoke thinking about human interaction. The most immediately obvious metaphor is the human cult or fascist power structure – here people do follow simple rules, for a time at least.

Complex adaptive systems with heterogeneous agents

Now consider another simulation in which the interacting algorithms (agents) do not all follow the same rules and can change from one iteration to another. This means that the algorithms in the population fall into different categories, so that difference is located between categories and sameness within a category. An example of this kind of system is provided by the Tierra simulation in Chapter 8. In the Tierra simulation, each agent is an algorithm consisting of 80 instructions specifying in detail how the algorithm is to copy itself. The programmer then introduces a mechanism to generate diversity, namely, random mutation in the copying of an algorithm, and selection criteria, namely, limited computer time available for replicating and a limited total time period over which an individual algorithm has the opportunity to replicate. The programmer then runs the program and observes what happens.

A population-wide pattern rapidly emerges in the form of an increase in the number of algorithms. The attractor is one of exponentially increasing numbers, which eventually impose a constraint on further replication. The population-wide pattern is continually moving from sparse occupation of the computer memory to overcrowding. The algorithms are also gradually changing through random mutation and so they are gradually differing from each other – increasing diversity is appearing. Before long, a new attractor appears in the form of shorter algorithms with only 40 instructions. Now there are distinctively different kinds of algorithms, namely, long ones and short ones. The constraints on computer time favour smaller ones and the emerging population-wide pattern is now decline in the number of long algorithms and increase in the number of short ones. The system has spontaneously produced a new attractor. Later, another kind of algorithm emerges, taking the form of instructions to read the replication code of neighbouring algorithms. Another new attractor has emerged, which is usually understood to be a system where agents are at one level and the global system is at a higher level.

However, we could think about what is happening in this simulation in another way. We could say that new forms of individual algorithm and new overall patterns

of the population have emerged at the same time. There can be no population-wide pattern of increase and decline without simultaneous change in the length of some individual algorithms. There can be no sustained change in individual algorithms without the population-wide pattern of increase and decline. Individual algorithms and the population-wide pattern can be said to be forming and being formed by each other, at the same time. Here we do not need to say that the agents are forming a system at a higher level. Instead, we could argue that agents and population-wide patterns are emerging at the same time and that neither constitutes a system. This is very much the argument presented by Elias in relation to individual human agents and populations in the previous section.

The important point is that the programmer has not programmed the new attractors in advance. They emerge because overall, global, population-wide pattern is emerging through the local interaction of the agents (self-organisation) within the constraints that the programmer has set, but the programmer is not able to predict what the global patterns will be before they emerge. The new emerges through self-organisation (local interaction), not prior design of the whole. Here, again, I am avoiding an interpretation involving systems and levels because I want to explore a responsive processes perspective, rather than a systemic one, for the reasons provided by Elias and outlined earlier in this chapter.

This simulation is very different from the Boids one. The latter displayed only one population-wide pattern and could not spontaneously move to another or generate a novel one. The programmer would have to change the individual agents for this to happen. In the Tierra simulation, however, there are spontaneous moves to emergent new individual algorithms and population-wide patterns. The programmer did introduce a mechanism for generating diversity in the replication process in the first place, but once diversity has appeared the random-generating device can be turned off and the evolution continues without it.

Note how the agents are not feedback mechanisms in that they do not compare their actual state with some target; instead, each refers back to itself as it interacts locally with others, as when some use the code of others. The key point here is that the agents are different from each other and the nonlinearity of the iterating interaction can amplify tiny differences into major qualitative changes in population-wide pattern. This microdiversity is what enables both the population-wide pattern and the individual algorithms to simultaneously evolve in the sense of producing emergent, unpredictable, novel forms (Allen, 1998a, 1998b). Note that the agents and the interactions between them are not deterministic but evolving and that the capacity for evolution arises because of the presence of microdiversity in the interaction between diverse entities.

Important points to note

With models of the heterogeneous kind just discussed there is the possibility of reasoning by analogy about human action. This is because the agents in these models are not deterministic or cybernetic but evolving. One can, therefore, explore the transfer of abstract relationships from the model domain to the human domain and this will require some kind of interpretation that adds human attributes. While agents in the models interact in the medium of digital symbols, humans interact in the medium of other kinds of symbols, particularly those of language.

The computer simulations demonstrate the possibility of digital symbols arranged as algorithmic rules interacting locally (self-organising) in the dynamics at the edge of chaos to produce emergent attractors of a novel kind, provided that those symbol patterns are richly connected and diverse enough. Natural scientists at the Santa Fé Institute and elsewhere then use this demonstration of possibility in the medium of digital symbols as a source of analogy to provide explanations of phenomena in particular areas of interest such as biology. My argument is that the abstract, nonlinear, iterative relationships of heterogeneous complexity models are analogous to the interactive processes of social evolution proposed by Elias.

Analogies

I suggest the following analogies:

- *There is **no** analogy between the programmer of the complex adaptive system model and anything in human interaction.* There is no possibility of standing outside human interaction to design a program for it since we are all participants in that interaction and cannot control the interplay of our intentions. When Ray and others use a model of complex adaptive systems to simulate life they are quite clearly trying to simulate the evolution of a process where there is no outside programmer or designer. They are trying to model self-organising and emergent phenomena in nature, that is, phenomena that evolve without design. Since, they are using a model for this purpose, they naturally have to design the model, at least initially. But they do not propose any analogy in nature for the modeller of the system – on the contrary they argue that there is no designer outside nature. If one is trying to understand human organisations as self-organising and emergent phenomena then one cannot find an analogy for the programmer.
- Furthermore, following the arguments of Elias, I suggest that *there is no analogy between systems and humans.* Throughout Part 1, I pointed to the ways in which it is inappropriate to think of human interaction in systems terms, since that perspective reifies what are ongoing processes and ascribes a causality to human action that does not take account of individual capacities to choose actions and that does not explain the possibility of novel forms. Furthermore, the simulations of heterogeneous complexity models begin to pose problems for systems thinking, even though they are models of systems. For example, as I have explained above, these simulations can be understood in a way that does not involve hierarchical levels, which is a central concept in systems thinking. Then there are problems created for that other central concept in systems thinking, namely the 'whole'. Heterogeneous complexity models take on a life of their own, that is, they evolve in unpredictable and novel ways. It follows that the 'whole' is not there until it has emerged and since it is always evolving it is never complete. One then has to talk about incomplete or absent wholes and this begins to undermine the usefulness of the very concept of the whole itself. The explanation for the unpredictability and the novelty has nothing to do with the 'whole'. It lies in the *intrinsic properties of the process of interaction between diverse entities.* The notion of a model that takes on a life of its own also creates problems for the use of the models. If one is modelling a phenomenon with a life of its own then the

phenomenon and the model will soon diverge from each other. The usefulness of the model is then restricted to the insight it gives into the general nature of the dynamics. The points I have been making above apply to all systems, whether one thinks of a system as mechanistic or as a living organism.

- With regard to human action, the *analogy begins with the interaction* of agents in the complexity models. This interaction is analogous to the kind of interplay of individual human intentions and plans described by Elias earlier in this chapter.
- Furthermore, the *digital symbols of the complexity models are taken as analogies* for the symbols humans use to interact with each other. In other words, it is the aspects of responsive processes in the complex adaptive system models that I suggest provide analogies for human interaction, not the systemic aspects of those models. From a responsive processes point of view *there are no levels of operation*, only degrees of detail in which the phenomenon of interest is examined. Elias's description of societies forming individual minds while being formed by them at the same time is analogous to populations of algorithms forming individual algorithms while being formed by them.
- Finally, the *transformative causality* displayed by interaction between heterogeneous entities in the complexity model is analogous to the transformative causality that Elias posits in relation to interaction between people. This represents a move away from the dual causality of the theories described in Part 1 to the paradoxical transformative causality of 'forming and being formed by at the same time' that will be the basis of the theory developed in the subsequent chapters of this part.

What I hope to do in the subsequent chapters of Part 3 is to explore the implications of taking a responsive processes view of human action rather than a systemic one. I want to explore what happens when organisational analogies are sought for in simulations in which there is agent diversity and hence the spontaneous capacity to change. Instead of thinking about the manager as the analogue of the programmer I would like to consider the consequences if the manager is a participant in responsive processes of relating, and human interaction is thought of not as a system or a network but as responsive processes. Since humans do not always adapt to, or fit in, with each other, it might then be useful to think of human relating not as adaptive but as responsive. I will suggest that the human analogues for complex adaptive systems in the simulations are *complex responsive processes* of relating in organisations.

Table 10.2 summarises the different ways in which complexity theory is used as a source domain for systems and responsive processes thinking.

What is to be gained by drawing analogies between complex adaptive systems and human interaction is a clearer understanding of self-organisation and emergence and a strong argument that coherent, population-wide patterns can emerge from many, many local interactions. Other insights of importance have to do with unpredictability, the importance of diversity and conflicting constraints and the paradoxical dynamics in which novelty can emerge.

Having explored how analogies might be drawn and what insights they might give about human processes of interaction, I want to turn to another key aspect of process, namely, time.

Table 10.2 Human analogues of simulations of heterogeneous complex systems

Computer simulations	Systemic analogue in organisations	Responsive processes analogue in organisations
The programmer	CEO	None
The whole is a complex adaptive system	The whole is a complex adaptive system	None
Consisting of locally interacting (self-organising) algorithms	Consisting of interacting individuals said to be organising themselves, with minds	Complex responsive processes of relating between persons interacting locally (self-organising) in the medium of symbols (*see* Chapter 11) where the symbols are
Arranged as rules and called agents	Arranged as schemas and mental models as basis of individual as agent	Arranged as narrative and propositional themes that organise experience (*see* Chapter 13)
Reproduced through replication with random mutation	Reproduced through individual choice to change mental models	Reproduced through interaction with conflict, negation, misunderstanding and deviance as source of transformation (*see* Chapters 11 and 12)
What emerges is forms of algorithm and population-wide patterns at the same time	What emerges is the organisational system and the detail of action which can be shaped from an external position	What emerges is population-wide patterns as themes in conversations that are individual mind and group at the same time as well as figurations of power relations (*see* Chapters 11 to 13)
Novelty emerges at the edge of chaos, i.e. paradox of stability and instability in processes of self-organisation	Edge of chaos defined as crisis and stress in which self-organisation and emergence can be intentionally unleashed to produce novelty	Novelty emerges as re-patterning of conversational themes in paradoxical processes of human interaction simultaneously predictable and unpredictable, continuity and transformation (*see* Chapters 11 and 13). Self-organisation is local interaction between persons
Radical unpredictability	Unpredictability played down	Radical unpredictability
Attractor	A vision, etc., as something that draws the system towards it	A population-wide pattern such as a routine, habit, some generalisation or idealisation such as a social object or cult value (*see* Chapter 11) which has to be made operational in local interaction
Boundaries set by programmer	Boundaries set by CEO, i.e. simple rules	Emerging constraints of power relations and dynamics of inclusion and exclusion (*see* Chapter 12)

10.4 Time and responsive processes

From a responsive processes perspective, people interact with each other locally and in doing so produce population-wide patterns for which there are no global blueprints or programs. Furthermore, local interactions are iterative, that is, they are perpetually reproduced, and they are nonlinear, which means that differences, even very small ones, from one iteration to the next are potentially amplified to produce novelty. One consequence of thinking in these terms is that *time* is immediately of the essence because one is thinking of iteration or reproduction from one period

to the next in which the patterns of interactions in the present depend upon the history of interactions in the past and expectations of the future.

Mead (1932, 1938) distinguished between two ways of thinking about the past. First, the past may be thought of as real events that are independent of any present. On this view, the investigation of the past is a reconstruction, belonging to the past, of real events that unquestionably occurred in the past. Our investigation of the past is a process of slowly and imperfectly deciphering what actually happened. This past is then the background for, the constraint on, dealing with the issues we face in the present. We refer to a given past out of which the issues we are now dealing with have arisen. However, we know that a particular reconstruction of the past is questioned and reinterpreted at some later date – each generation rewrites history, indeed each of us tends to reinterpret our own past from time to time. Any present interpretation of the past is therefore open to doubt. This leads to the second view of the past, not as a given to be discovered but as a meaning to be formulated anew. Here, the significance or meaning of past events is to be found in, that is, belongs to, the present rather than to the past. In other words, we know the past through the present. Furthermore, the future is implicated in that the knowledge we gain of the past, the hypotheses we form about the past, depend upon the viewpoint of the present, which will change in the future. In other words, the future will change the meaning of the past. In this way we *construct different pasts* and one past displaces and abrogates another. There are coincidences and events that are relatively permanent and this makes possible a translation from one historical account to another but these coincidences are not the object of our knowledge.

Mead, then, is arguing that each present has a different past in that in each present we interpret the past differently because we have a different viewpoint and so construct different meanings of past events. The reality of the past that gets into our experience is thus different depending upon our present standpoint. Mead says that the only alternative is to think of our experience in terms of being a reflection of a transcendental reality. The perspective he suggests is one in which the past can only reach us though our own current frame of reference within which we are interpreting our own present and determining our future.

What Mead is doing here is pointing to iteration, that is, the reproduction and potential transformation of the past in the present. He is pointing to the time structure of the present in which the movement of present experience is that of forming and being formed by our reconstruction of the past while forming and being formed by our expectation of the future, all at the same time in the present. In complexity terms we might say that it is the nonlinear nature of this iteration that makes possible both continuity and potential transformation at the same time. Mead explicitly links this time structure of the present to the notion of emergence as the appearance of unique events.

Clearly, human experience is also experience of what Prigogine (1997) called the arrow of time, in the sense that we all know that what has been said cannot be unsaid, and what has been done cannot be undone. We cannot go back in time and unsay or undo. We can only go forward in time and elaborate on what we have said or done. It is also our experience that interacting with each other in one way immediately precludes all alternative ways of interacting and that what happens next will be different from what might have been if we had interacted in one of these alternative ways. It is because the past is not a given but a perpetual construction in the present

that we cannot go back to the past. It is because of the potential for small differences to escalate that we cannot retrace our steps. In other words, it is because time has the structure of the living present that we also experience the arrow of time.

Human interaction in the present is thus simultaneously forming and being formed by the past and the future. In other words, the arrow of time means that time moves only from the past through the present to the future because of the iterative nonlinearity of interactions and the bifurcations they encounter. In relation to human action, the arrow of time has an important temporal implication. It means that the present has a circular time structure in that the present both forms and is formed by the past and the future at the same time. The arrow of time then means that the movement of human experience in the present has the circular self-referential time structure of reconstructed pasts and imagined futures. We may call this the living present, which is very different from the notion of the 'here-and-now', which explicitly excludes the past and the future in focusing entirely on present feelings.

10.5 The differences between systemic process and responsive processes thinking

In dictionaries, the word 'process' is defined as 'going on, being constructed over time, a series of changes, a series of operations, or a course of action'. For the philosopher Whitehead (1978), process refers to *how entities become* what they become. Process, then, refers to some kind of movement over *time* in which entities are *becoming*. I think that there is a further implication, given a universe of interdependent entities, and this is that the movement of process always involves some kind of interaction between entities. So at its most basic, I take process to be the ongoing, interactive movement (the *how*) of entities over time through which these entities become, individually and collectively, the coherent patterns of activity (the *what*) that they are. Process is interactive movement, the *interaction* of entities, and what these interactions are continually producing or creating is the coherent *pattern* of the entities themselves both individual and collective.

Consider how systemic and responsive processes perspectives interpret the key terms of this general definition of process in substantially different ways.

The *entities* in systemic process are defined as parts of a system. These *parts interact* over time, *the process*, to produce a bounded whole, the coherent *pattern*, which actually exists, or is thought of 'as if' it exists, at a higher hierarchical level than the parts. In other words, the whole is more than the sum of the parts, has additional properties and can act back on the parts as a causal force in their interaction, giving meaning to the parts. In the organisational literature on systemic process, reviewed in Chapter 7, the parts were defined as routines, core micro-strategies, micro-practices, procedures and many similar concepts. In their interaction, sometimes called recombination, these parts are said to produce an activity system, or an organisation as a system, which is a coherent pattern. The parts themselves may also be thought of as subsystems produced by the interaction of sub-parts. For example, the subparts could be individuals or the mental models through which individuals interpret the nature of the organisational whole and its environment. In this systemic process view it is some kind of system which is *becoming* what it becomes.

From the perspective of responsive processes, however, the *entities* are embodied human persons and the movement, the *how*, is the *interacting*, the relating, *between persons* in their ongoing responding to each other. *Process* is understood as responsive acts of mutual recognition, where recognition is not simply good since persons may recognise each other and themselves as superior or inferior, as attractive or repugnant. The coherent *patterns* that are being produced in such interaction are not 'wholes' outside of the interaction but the coherent patterns of the interaction itself, of the process itself. Nothing is being produced above, below, behind or in front of the patterns of interaction, of the process. Patterns of interaction simply produce further patterns of interaction, individually and population-wide. What are *becoming* are the individual and collective identities of the persons interacting. Furthermore, in the responsive processes view, categories of pattern such as routines are instances of more fundamental patterns, namely the thematic patterning of communication (*see* Chapter 11), the patterning of power relations between people (*see* Chapter 12), and the patterning of the ideologically based choices people make (*see* Chapter 12). So in firmly grounding the notion of processes in interaction between human persons, the responsive process perspective makes central the iterative processes of communication, power and ideologically driven choice. This perspective, then, focuses attention not on abstract wholes or administrative procedures but on the actual micro, local interaction between people in the living present in which people may imaginatively construct 'wholes' felt as the unity of experience, especially the experience of value (*see* Chapter 12).

Second, notice how the systemic perspective on process is based on a spatial metaphor of 'inside' and 'outside'. The parts of an organisational system are inside the whole system, which is outside the parts, and outside the system there is its environment. Of course, the activities of the parts take place in a physical, spatial setting but in a systems view they also take place in conceptual space, that is, the system itself is thought of as a space. Furthermore, process itself is often thought about conceptually as spatial. This can be seen in Chapter 7 when writers refer to what is going on 'inside' the process. This conceptual spatial distinction immediately leads to the notion of an observer who can perceive the system or the process from the outside, as it were, and so can shape or influence the process and what goes on inside it. This leads to talking about a process called shaping which shapes another process called routines (*see* Chapter 7). In systemic process thinking there is a doubling of process – some process shapes, influences or conditions another process.

In the responsive processes view, although the activities of interdependent people obviously take place in a physical setting, space, there is no notion of the activities themselves being inside or outside of anything – mental activity, for example, is not thought of as being inside a person as it is in systemic process thinking. Responsive processes thinking is not based on a notion of conceptual space. Furthermore, there is no external objective observer, only participants. Participation also means something completely different in the two approaches. In systems thinking, people are thought to participate in a system, a whole. In responsive processes thinking, participation means direct interaction between persons in local situations in the living present. So the methodological position is a participative one rather than one based on the objective observer. In responsive processes thinking there is no doubling of process – there is only one process, namely interaction between persons which is creating the patterns in their interaction. Since persons can only participate in their

interaction with each other there is no outside position from which anyone could use another process to shape or influence the processes of interaction – any influence is exerted through relations between people in the interaction itself.

Third, the spatial metaphor and the taken-for-granted linear theory of time renders time itself a relatively unimportant aspect of systemic process. Instead, the systemic perspective focuses attention on routines, procedures and analytical tools. Systemic process thinking is built upon a linear notion of time in which the past is factually given, the future is yet to be unfolded and the present is simply a point dividing the two. It is based on linear phases or stages of development.

Responsive processes thinking, however, takes a circular, paradoxical view of time. This means that the past is not actually given but is being reiterated, retold in the present in the light of the expectations people are forming in the present for the future. Expectations for the future are affecting how the stories of the past are being retold and those stories are affecting expectations for the future, all in the present. In a sense the future is changing the past just as the retelling of the past is changing the future, all in the present. The present is thus living in the sense that it has a time structure incorporating both the past and the future. The *living present*, the present we actually live in, implies the arrow of time because you cannot tell the same story twice – you cannot return to the past. Systemic perspectives look for how the system moves over linear time, while the responsive processes approach asks about the narrative patterns being created in each living present, how narrative patterns are moving over time.

Fourth, in systemic process thinking, causality takes a dual form. The individuals designing the system, with its routines and values, are subject to rationalist causality, which means that the cause of their actions lies in their rationally chosen objectives. The system itself is subjected to formative cause, which means that the operation of the system unfolds the form already designed into it in a move from an embryonic to a mature state.

Responsive processes thinking is based on a different theory of causality. In responsive processes thinking, the theory of causality is unitary and transformative in that patterns of interaction emerge as continuity and potential transformation at the same time in the iteration of interaction itself. The future is thus under perpetual construction in the interaction between people and it is the processes of interaction between differences that amplifies these differences into novelty. The explanation of novelty lies in the properties of the processes of interaction.

Fifth, it can be seen immediately that systemic and responsive processes thinking make completely different assumptions about human psychology. The former is based on the individualistic psychologies of cognitivism, constructivism, humanistic psychology or psychoanalysis, while the latter takes a relational, social perspective on individual psychology, a point that will be explained in Chapter 11.

Sixth, in systemic process thinking, practice means the system of routines, cultural traditions and so on that individuals use as tools in their practices or praxis. From the systemic view, experience is the formulation and testing of hypotheses about an objective world understood in terms of systems, where the system is outside of experience, a hidden reality or given categories such as mental models.

In responsive processes thinking, individuals are social practitioners through and through in that their very selves emerge in social practice. Practice is the local activity of bodily interaction as communication, power relating and evaluative choice.

Generalisations such as routines and cultural traditions are to be found only in their particularisation in local interaction (*see* Chapter 11). As for Hegel, experience is the historical, social processes of consciousness and self-consciousness, the world we are creating in our thought.

Seventh, the systemic view places thought before action while from the responsive processes point of view there is no necessary sequence because interaction is continuous over time.

Eighth, from the perspective of responsive processes, population-wide pattern emerges in local interaction rather than being intentionally created by a plan. The systemic process perspective takes the view that population-wide pattern, understood as a system, can be intentionally planned or at least the process producing it can be shaped from some external position.

The differences between systemic process and responsive processes are summarised in Table 10.3.

10.6 Summary

This chapter has presented arguments for interpreting the relevance of complexity theories for organisations from a responsive processes perspective rather than the systemic process point of view discussed in Chapter 7.

Systems thinkers use the word 'process' to mean the interaction of parts of a system to produce that system, whether that system be real or a mental construct. In human terms this amounts to the assumption that, in their interaction, people either actually are a system or that they understand their interaction as if it were a system. Here a macro perspective is taken, which I have signalled by using 'process' in the singular when referring to systems views. It is easy then to reify 'process' and talk about shaping and choosing it. In responsive processes thinking, the interaction between persons is understood to produce further interaction between them. In responsive processes thinking, people are thought of not as parts producing a system but as interdependent persons producing patterns of relationships, which produce them as selves at the same time. In the kind of responsive processes thinking I am talking about there is no notion of system at all. In talking about this perspective I have used 'processes' in the plural to indicate the micro perspective being taken, in which the macro emerges not in one monolithic process but in many local processes of local human interaction which cannot be reified and talked about as if they could be influenced from the outside.

From a responsive processes perspective, there is also no notion of hierarchical levels in human action. Instead of thinking that individuals produce organisations as another level, which shapes their identities, individual identities and the organisational are thought of as the same responsive processes. In responsive processes thinking, people interacting are intrinsically social and what they produce is further interaction with widespread, population-wide patterns, not some higher-level system or whole. In systems thinking, emergence relates to levels in that interaction at one level produces an emergent system at another level. In responsive processes thinking, relationships are emerging in relationships and the question of levels does not even arise.

Table 10.3 The differences between systemic process and responsive processes

	Systemic process	Responsive processes
Entity	Parts of a system, which could be individuals, routines, etc., and which can be thought of as subsystems, such as mental models. Psychological assumptions are those of individual-centred cognitivism, etc.	Embodied interdependent human persons. A social, relational view of human psychology is taken
Process	Interaction of parts	Responsive acts of mutual recognition by persons
What is becoming	The system, a bounded whole which exists at a higher level than the parts, has properties of its own, and acts causally on the parts	Coherent patterns of interaction, of the process itself. Patterns of interaction produce further patterns of interaction and nothing else. These constitute individual and collective identities
Causality	Dual causality of the rationalist, objectively observing autonomous individual and the formative cause of the system unfolding a mature form of itself imputed by the observer	Transformative causality in which continuity and potential transformation emerge at the same time. The potential for transformation arises in the capacity of nonlinear interaction to amplify difference and in the inherent possibility of spontaneity in human agents
Theory of time	Linear view of time where past is factually given and future is yet to be unfolded in developmental stages	Time as the living present in which both accounts of the past and expectations for the future are formed in the perpetual construction of the future in the present
Conceptual space	Spatial metaphor of parts inside the system and the system outside the parts	No spatial metaphor in that human action itself is not inside or outside of anything. So there is no society or organisation at a level higher than human interaction
Emergence	Not central to the process and, where used, equated with chance happenings as the opposite of intention	Central to the process of human interaction where emergence is understood in terms of the interplay of human intentions. Emergence is not seen as the polar opposite of intention and what emerges does so because of the interplay of what people intend to do, not by chance
Doubling of process	Autonomous individuals can stand outside a process, such as strategising, and shape it, that is, use another process to shape a process	No doubling of process since there are only the processes of human interaction and no one can take an external vantage point in relation to this
Practice	Practice is a system of routines, etc.	Practice is the local, social activity of communication, power relating and evaluative choice
Experience	The use of tools and techniques to make decisions and act	Historical, social processes of consciousness and self-consciousness in interaction with others. The world we together create in our thought
Organisation	A thing to be moved around	Patterns of relating in which one can only participate

Responsive processes thinking involves moving away from any form of systems thinking when it comes to human action and focuses on:

- The detail of local interaction between diverse people in the living present as patterning of experience, emergent identity and transformation.
- Interaction in the form of conversation and how it patterns experience in narrative-like forms. This emphasises the importance of the informal and the narrative rather than the prescriptive and instrumental.
- Ideology as the basis of evaluative choices made by persons.
- The importance of conflicting constraints emerging as power and the dynamics of inclusion and exclusion and the links to how people deal with anxiety.
- The emergence of population-wide patterns in the local interaction of inter-dependent persons.
- The simultaneous emergence of continuity and novelty, creation and destruction, in the iteration of nonlinear interaction and its amplification of small changes.

By patterns of interaction, then, I mean the activities of interdependent people and these activities can be categorised in many different ways. For example, such patterns may take the form of routines as in the process and activity-based literature but now they are thought of not as systems but as the patterns of activities of human persons iterated over time.

I will be arguing that a perspective along these lines forms a coherent way of thinking that directs attention to the narrative forms of human experience. The focus is on lived experience in local situations in the present, paying particular attention to the diversity of relationships within which individual and organisational identities emerge. The practical implication of such a move is that we focus attention directly on patterns of human relating and ask what kind of power relations, ideology and communication they reflect. We ask how themes such as planning or routines are becoming in ordinary daily life. We look beyond the already given, beyond the tools, to the ordinary everyday nature of human interaction in organisations.

Further reading

The arguments presented in this chapter are explored in Stacey *et al.* (2001) and Stacey (2003, 2005). Further information on the differences between Kantian and Hegelian thinking can be found in Ameriks (2002).

Questions to aid further reflection

1. What do the terms systemic process and responsive processes mean and what are the key distinctions between these notions?
2. How would you articulate different notions of process, practice and experience in human action generally and in organisational life in particular?

3. In what traditions of thought are the notions of systemic process and responsive processes located?
4. What does it mean to reason by analogy?
5. On what analogies with the complexity sciences does the notion of responsive processes draw?
6. What do the concepts of emergence and self-organisation mean to you and how would you take them up in thinking about human action?
7. Elias argued that change in societies is unplanned and emerges in the interplay of intentions. Would it make sense to think of organisations in the same way?
8. What difference would it make to thinking about the nature of organisations and the strategising of managers if you think in terms of responsive processes? For example, would it be possible for a leader to change the culture or values of an organisation?
9. In your own experience, can you trace out how what actually happens in organisations emerges in the interplay of many intentions?