1. Introduction

It was a time of uncertainty, in ever more rapid transition, but to an uncer-
tain destination. It was a time of turbulence. It was the best of times, it was
the worst of times, but now on a planetary scale – an extraordinary period
ushered in by two world wars of unprecedented lethality, and marked by
a frenetic cycle of invention, construction, consumption and destruction,
unlike anything the planet had ever seen.

In half a century, from 1950 to 2000, the human population more than
doubled, from 2.5 to 6 billion.\(^1\) It was projected to rise to more than 9
billion by 2050.\(^2\) A global nuclear weapons system was built and deployed
capable of annihilating most of that population and much of the rest of
the biosphere. In less than twenty-five years, a computer network was
constructed which had already joined together some 1.3 billion users,\(^3\) and
whose use continued to grow exponentially.

The unique character of this period in the history of humans, and of
the planet, was reflected in numerous trends, all of which pointed to a
strikingly common pattern. In constant dollars the world economy grew
sevenfold in the space of 50 years,\(^4\) with a corresponding rise in con-
sumption and production.\(^5\) Powering this economic dynamism was the
untrammelled consumption of fossil fuels, which grew by 350 per cent
over the half century,\(^6\) with an estimated 30 to 50 per cent of the planet’s
accumulated oil burnt largely within this relatively short period.\(^7\) As a con-
sequence of this profligate use of fossil fuels, the carbon dioxide that had
accumulated in the atmosphere was reshaping the planet’s temperature
and climate, with atmospheric concentrations of carbon dioxide in a range
unprecedented for 650,000 years.\(^8\)

In their intensifying consumption of the physical and biological world,
humans had already accelerated the extinction of other species by some
500 to 1000 times the background rate,\(^9\) threatening within the follow-
ing twenty-five years to eliminate close to one-third of all other species.\(^10\)
Continuation of these trends suggested that within the century a ‘sixth
extinction’ would be unleashed,\(^11\) rivalled only five times in the 4 billion
years of the planet’s living history – the last occasion having come 65
million years ago with the end of the ‘age of dinosaurs’.\(^12\)

The common pattern referred to above centred on the roughly expo-

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more precipitous and apparently unsustainable trajectories. As many have observed, rather than the needed steadying hand at the helm, a chaotic crowd seemed to be tugging in opposite directions.

This study examines the significance of this dynamic period, and the critical moment it had reached. It positions this moment as a transition from an earlier epoch that had reached the limits of sustainability. One outcome was now clearly in sight. Whatever lay beyond the boundary of that transition, not all that far away, would be a rather different landscape – physically and socially – from what had come before.

With this in mind we have developed an evolutionary perspective which seems well fitted to illuminate the emerging social and organisational complexity of human affairs. While incremental change has occurred continuously in both the physical and social domains of human evolution, compelling evidence (see Chapters 3 and 4) points to significant discontinuous change. Evolutionary theory suggests that the pace and pattern of change can vary over time with relatively stable periods or phases punctuated by shorter periods of intense change and turbulence.

We argue that human culture has evolved through a succession of major epochs, each with its own distinguishing characteristics, and separated by periods of upheaval. It is particularly during these transitions that prevailing worldviews, practices and institutions are called sharply into question. While we present an evolutionary time frame, we use it primarily as a conceptual tool that can help clarify the dynamics of social and institutional development in the ‘Modern’ epoch’ (the subject of later examination), which ends in the first few decades of the twentieth century, and is followed by the current transition period.

As we stress, beliefs and forms of social organisation (for example the institutions associated with theocracy, feudalism or slavery) established in earlier periods do not entirely disappear. Rather they are overlaid, not unlike the layers of an onion, by newer beliefs, practices and organisational forms. Older forms may re-emerge, especially if later approaches begin to falter. It is in this sense, and in the context of civilisational and other expressions of cultural diversity, that we speak of worlds, rather than just one world, in transition. It is also because of the persistence of these worlds and layers that we argue that the trend is first and foremost towards increasing complexity and intensifying interconnection between all levels of human organisation. Rather than portray this, as many do, as the era of globalisation, we argue for a characterisation that is more faithful to a highly complex and contradictory reality.

Specifically, we formulate the following central hypothesis. In the course of the last six or more decades we have seen the unfolding of a radical transition. The organisation of human affairs is shifting in ways that markedly
A transition is taking shape as momentous in its significance and possible ramifications for governance as many of the preceding transitions in human evolution. This is no more than a hypothesis because its ultimate validity can be determined only in the future. Nevertheless, it is a hypothesis supported by a rapidly expanding body of evidence. Indeed, a careful examination of the distinguishing features and underlying dynamic of this period of transition offers even now a highly revealing diagnosis of emerging trends.

A transformative process is discernible in almost every sphere of human activity, even though much of the old is still with us and much of the new has only just begun to take shape. But its manifestations are pervasive. They are particularly evident in the stresses, challenges and innovations that define the way humans, individually and collectively, are attempting to reshape their future.

To make sense of this period of transition we focus attention on the evolution of ‘governance’. By governance we have in mind the complex set of rules, laws, practices and institutions which humans progressively develop as they set about the task of collectively organising their affairs. We are especially interested in public governance, in the legal and political arrangements that underpin human responses to physical and social challenges. Central to our analysis is the proposition that the principles around which public governance has been structured during the Modern epoch have reached their limits. The ensuing period of transition reflects the diverse and closely interconnected challenges that have gathered pace at every level of human organisation, not just nationally, but locally, regionally and globally. It remains to be seen whether the cumulative effect of these responses, now and in the future, will successfully negotiate the complex task of adaptation.

This is a large subject – arguably too large for any single book. Yet, over a prolonged period of reflection we have formed the view that much can be gained from situating the present moment within a longer time horizon. To be more precise, the contemporary period can be more clearly understood if it is viewed as one more stage in the evolutionary trajectory of human social and technological development. In taking the long view we inevitably omit much, thinly examining some questions, while considering others in greater depth. Without due care, the project can be misinterpreted as articulating some metanarrative of human history, or as attempting to predict or prescribe the future. Our purpose is more limited. It is to characterise the present transitional period by placing it within a longer time frame, that is, within an evolutionary context. Because we are considering humans and their elaborate forms of social organisation, we
are required to consider both biological and cultural evolution, and their complex and elusive interplay.

The lineage of *Homo sapiens* has built upon the genetic potential acquired over a period of 5 million years, which has resulted in the development of human culture and society. The growth of the cerebral cortex has been central to this trajectory. Its development, accelerated in the immediate ancestors of humans, reached explosive proportions in the last million years of human history, and culminated some 130,000 years ago in the appearance of *Homo sapiens sapiens* (the term used to denote anatomically modern humans). Thereafter, humans embarked upon a remarkable journey of cultural development. The primitive region in the brain that held the ‘circuits’ for the instinctive behaviour of earlier animal species, now enveloped by the human cerebral cortex, remained active in humans, vying with the more recently developed cerebral cortex for control of the body, pitting the inherited ‘programmes’ of the old brain against the flexible responses of the new one. Nevertheless, as we shall see, the human brain continued to evolve by the combined effect of natural and cultural selection. As time went on, the challenge/response dynamic that connects the species to a constantly changing physical environment gave added impetus to the processes of cultural adaptation. The development of language has been critical to this process, as has the gradual emergence of ethical concepts, the increasingly sophisticated expression of needs, and the progressively more powerful tools of science and technology which have been deployed in their service.

**EVOLVING REFLEXIVITY**

Building upon the genetic potential of the brain, humans have over time acquired what is generally believed to be a uniquely potent reflexive capacity. They are as a result able to contemplate and react to their environment in ways that draw upon both their deepest human emotions and the complex mechanisms that constitute human reasoning. The equipment for *reflexivity*¹⁴ has been critically important in the capacity to adapt, successfully thus far, to the challenges posed by a changing environment. This capacity has been integral to the process of learning both of individuals and the social systems which they inhabit.

Human culture largely mirrors the evolution of this reflexive capacity which has proceeded at a remarkably rapid pace, especially with the development first of language and then of other communication skills and technologies, in particular writing. The net effect has been to facilitate various forms of social collaboration, which in turn has given rise to what may
loosely be referred to as collective or social reflexive capacity. Human communities have, as a result, been able to share and build upon their intuitions, insights and knowledge and so create institutions of increasing social complexity. ‘Complexity’, as used here, does not necessarily mean ‘intricacy’; a system may produce complex behaviour even when structured on the basis of elemental principles. The parallel and interacting processes of cerebral and social complexification (development towards successively higher levels of complexity), we shall argue, constitute one of the defining tendencies of human evolution.

Over time, the genetic substratum of the human species has provided the basis for a new structure of behaviour and social interaction that is commonly referred to as culture. The evolution of culture remains necessarily linked to human biological origins, but does not unfold by precisely the same mechanisms as biological evolution (that is, by genetic transmission subject to natural selection). Rather culture appears to co-evolve in highly complex ways which we consider further in Chapter 2. Suffice it here to say that co-evolution has enabled human culture to develop reflexive endowments which have in turn contributed to resilience and adaptive success, at least as viewed from the vantage point of human history and prehistory.

ADAPTIVE RESPONSES

Human adaptiveness, itself the product of biological and cultural evolution, describes the ability of the species to respond to challenges in ways that maximise long-term reproductive success (the capacity to reproduce indefinitely into the future and so maintain the species). In this fundamental but highly specific sense, successful adaptation is the same for the human species as it is for other animal species. Such adaptation can be judged only over the long term, and only retrospectively, which makes it exceedingly difficult to assess adaptation in relation to the recent past, let alone the future. For example, a short-term explosion in human population may weaken rather than enhance the prospects for long-term survival.

However, as we shall see, there is more to human adaptation. To state the obvious, the genetic endowment of the human species plays a crucial part in its capacity to adapt to a changing environment, but so does its cultural endowment. The two together, in ways that subsequent chapters will explore, have contributed to but have also limited human adaptive capacity. In any case, past adaptation offers no guarantee of future success. The evolution of culture generally, and in particular the evolution of the complex ways in which human needs are expressed and satisfied, can in certain circumstances prove inimical to successful adaptation. At different
times norms, values, customs and traditions may emerge that are not well suited to maximising a sustainable relationship with the natural environment, a prerequisite for long-term reproductive success. It is conceivable, for example, that, when a given population acts in line with either short-term interests or the narrowly defined interests of a particular family, clan, tribe or community, such behaviour may weaken the adaptive potential of the species as a whole. Conversely, it is just as conceivable that a drastic reduction in the size of the human population could enhance its long-term adaptation by bringing it more closely into line with the earth’s carrying capacity. However, culture, in this case though the intrusion of widely held moral norms may, justifiably from an ethical perspective, place such a course of action beyond the realm of the feasible.

Whether, in a given period, humans will duly consider the implications of their decisions, practices and institutions for adaptation over the longer term, and the means by which they will assess the adaptiveness of different courses of action, will depend on a range of dispositions. In all of this, emotion and reasoning, and instinctive and learned behaviour, are likely to combine in unpredictable and often contradictory ways.

In examining the complex interaction between humans, their culture, and the physical environment, it will prove helpful to analyse the dynamic of attempted adaptation as a process of ‘challenge’ and ‘response’. Here both challenges and responses are considered in the wider biophysical and cultural context in which humans find themselves at any given moment. Human responses inevitably give rise to an intricate web of social relations, norms, economic activities and governance arrangements. Little or no conscious thought may be given to these patterns of collective existence, so long as they conform to expectations and deliver at least a modicum of satisfaction. When these patterns of collective life fail to deliver, that is, when they fall markedly short of expectations especially if it is over a prolonged period of time, societal concern and even disorientation may begin to grow. In these circumstances, change may seem more urgent, even if it is risky, and varying forms and degrees of innovation may be increasingly considered and, at times, implemented. An intense preoccupation with change is one clear indicator of a period of transition. It is potentially a time of considerable risk and challenge, but also opportunity for experimentation and innovation.

In biological evolution, there is no certainty that the evolutionary paths followed by a species will ensure its survival. The ecological history of the planet is built on the carcasses of extinct species. Similarly, with the human species, human evolution carries with it no guarantee of long-term success. What we propose here is not a study of the long-term prospects for human survival. Rather it is a study of current trends. It is the study of current attempts by humans (whether by their respective political communities or
by the human community as a whole) to devise responses to challenges at a particularly stressed moment in the evolutionary trajectory of the species.

Stress characterises this historical moment in two different but related senses. First, serious doubts have emerged as to whether deeply felt needs (whether material or psychosocial) can be adequately met in the medium-term future, if present pressures on the physical world continue to escalate. Secondly, it is far from certain whether the current human trajectory will favour adaptation over the long term. Here the key question is not so much whether any given response will in the reasonably near future tilt the balance in favour of survival or extinction. Rather, the focus is on the cumulative impact of these responses. Judgement here arises out of, and is limited by, our collective reflexive capacity. Much of the debate, for example, over environmental sustainability and nuclear weapons proliferation, is instructive for what it reveals not just about possible short to medium-term consequences but about long-term reflexive capacity.

SCALES AND MODES OF REFLEXIVITY

The evolution of human culture generally and reflexive capacity in particular has proceeded at first largely by means of the physical senses (which, unaided by technology, we might call observation at the ‘primitive human scale’). Keen senses of sight, touch and hearing focused human attention most spontaneously on ‘human scales’ of space. Soon, human consciousness gave rise to an awareness of unfolding time. Three dimensions of space, and one of time, initially on a human scale, provided the basis for organising the framework of human knowledge, including the relationship between the species and its environment. The most familiar and ‘natural’ units of this framework were localised to the spatial distances and periods of time which humans experience (personally and socially) as part of everyday life. The evolution of culture progressively extended the understanding of space and time at increasing levels of abstraction over much longer (and shorter) spatial distances and periods of time. Modern physics and its associated instrumentation substantially extended the reflexive understanding of time. The ‘big bang’ became the moment from which time could be said to unfold, with the speed of light providing a natural basis for measuring time in relation to distance. Similarly, Modern physics extended our conception of space out to the finite but expanding radius of the universe, and contracted it to the minute dimensions along which fundamental particles interact.

These extensions of reflexivity beyond the ‘primitive scale’ have been socially constructed. They involve the communicative capacities, notably
language, cooperative strategies and those social institutions which were eventually elaborated into the sophisticated processes and techniques of Modern science. These social institutions and associated technologies have enabled the collective extension of human perception and knowledge, including understanding of the individual’s sense of place within a larger social whole. In this sense, human culture has extended human capacity to reflect on culture itself, its constitution and its future ramifications. As with the reflexive understanding of space and time in their physical dimensions, this reflexive capacity has been progressively extended over social time and space to provide two distinct but closely connected windows on the social world as we understand it.

In short, we can say that human reflexivity has developed first from a highly personalised sense of the world, with human beings concentrating their reflexive energies on their own needs and actions, and then their immediate and personal relationships (primarily family and clan). In this study we will explore the ways in which the earliest experience of self connected with the experience of community in ever more complex ways, resulting in what we may loosely label a ‘culturally-extended’ reflexivity that embraces socially (and technologically) higher and lower scales, tending to increasing abstraction outside the ‘human scale’.

REFLEXIVITY IN TRANSITION?

The preceding observations raise a key question. If this is indeed a moment of transition, when past ways of thinking about and organising human affairs are encountering critical limits, might human reflexivity, as it is socially organised and experienced, itself be in transition? If so, what is the direction of this transition, and how might it be modifying human cognitive, evaluative and behavioural responses? What, in brief, might all this tell us about the evolutionary trajectory of human governance, and what might be its implications for human adaptive capacity?

Given the magnitude of current challenges, it is not unreasonable to assume that human responses are likely to entail an extension of existing reflexive capacity. However, it is equally reasonable to assume that such extension need not prove uniformly beneficial from the vantage point of adaptation. The development of powerful new reflexive capacities might have ambivalent consequences, enhancing the efficacy of certain remedies while blunting that of others. In any case, expanded reflexive capacity might in some cases aggravate rather than attenuate the hazards to which humans are exposed.

Several important and connected questions immediately arise. In what
directions have human reflexive capacities generally pointed during this period of transition? What role did the contesting facets of human reflexive capacity play, and how did this role evolve over time? What were the implications of this trajectory in terms of the adequacy and efficacy of human responses? It will be the task of the chapters that follow to explicate these questions. In Chapter 2 we elaborate our understanding of biological and cultural evolution as a basis for the more detailed analysis that is to follow. Over evolutionary timescales, we observe a tendency towards progressively more complex representations of the natural and social order. Human reflexivity is at the heart of this process of complexification. We advance the hypothesis that with the passing of the Modern epoch we see another leap in human reflexivity gradually taking shape, announcing a new and distinctive epoch, which for reasons to be outlined we have chosen to label ‘holoreflexive’. At issue here is an attempt at self-understanding that encompasses simultaneously the world as a whole and its diverse constituent parts.

While the argument will be the subject of detailed analysis, it may be helpful to sketch here something of its tenor by noting one clearly discernible trend that marks the transition from the Modern age. This has to do with the multiple difficulties, as much conceptual as organisational, which derived from the practice of dividing and subdividing physical and social reality into relatively self-contained, hence more easily comprehensible, parts.

Characteristic of the Modern epoch was the marked tendency to extend reflexive power by partitioning the natural and social order into manageable units which might then be more adequately understood and controlled. Whether applied to biology and medicine (how the human body works), or to physics and chemistry (the basic constitution and behaviour of matter), this division of reality into distinct but interacting parts through the elaboration of basic principles, has proved a decisive and extraordinarily potent tool of human reasoning, organisation and action. Many Modern concepts were built around this foundation, not least the dichotomy that separated humanity from the rest of the biosphere (or, to put it differently, the artificial from the natural).

An alternative approach, easy enough to visualise but difficult to operationalise, is to seek to understand human action in the world as constituting a single system. Compartmentalisation as a way of understanding such a system works well to the extent that the behaviour of the whole system can be considered to be the ‘linear’ sum of the actions and reactions of its compartments. This can be a fruitful approach when the interactions within compartments are stronger than the interactions between them. However, such an assumption becomes troublesome with more complex
systems which do not share this simplifying characteristic. Human social relationships and organisation, not to speak of the web of interactions with the rest of the biosphere, constitute a paradigmatic example of such systemic complexity.

The Modern (‘reductionist’) approach of partitioning reality has played a pivotal role in extending human perceptions by subdividing the world down to its tiniest sub-atomic particles and their relationships, while at the same time extending that world across immense constellations forming structures that span the entire universe. Compartmentalisation has emerged as a methodology characteristic of Modern science, but more broadly as the dominant mode of understanding and organising most facets of human experience. The point is not that in the current transition period this form of thinking could or should be abandoned. Rather, it is to recognise the limits of its applicability in the vastly altered conditions of the twentieth century. Increasingly we have witnessed changes in one aspect (compartment) of human organisation impact on several or most, if not all, other aspects (compartments). This tendency has strengthened as the number and intensity of interactions between compartments has increased, and may now be considered the dominant tendency in the emerging pattern of social organisation. Not surprisingly, during the transition period new approaches, not least systems theory, have been developed and applied in a range of disciplines with a view to understanding the behaviour of a system as a coherent whole. This is but one, albeit critical feature of holoreflexivity in the emerging intellectual and organisational landscape.

In the Modern epoch, compartmentalisation was widely applied both to the social and natural order. The theory and practice of governance generally rested on the pyramidal division of society into families, villages, municipalities, provinces, states and regions. Even after the emergence of a few organisations with global reach, the state remained the privileged unit of public governance. Within this context the sovereignty model found particular resonance. Here we perceive something of the emerging governance dilemma. When large human populations interact across a finite planet at high levels of social and organisational complexity, the notion that they can successfully manage their affairs through neatly partitioned governance arrangements begins to break down. Confronted with this challenge, diverse, often uncoordinated responses, we shall argue, have slowly unfolded in this period of transition. They seek, often in less than fully conscious, at times incoherent and even contradictory ways, to rethink how human societies can be adaptively managed when they are engaged in highly complex, dynamic and intense interaction with their physical and biological surroundings.

The compartmentalising mindset to which we have just alluded was
but part of the larger conceptual and organisational framework that once empowered the Modern epoch, but now exposed the limits of its efficacy. The aim of this study is to identify these theoretical and practical limits, and to examine whether and to what extent new ideas, norms and institutions had emerged (or might soon emerge) to enable human governance to navigate in these turbulent seas.

THEMATIC FRAMEWORK

The analytical framework to be developed in the next three chapters will provide the necessary foundations for a series of ‘sectoral studies’, focusing on different categories of social activity and organisation. Each of these studies has been chosen because it places a set of otherwise seemingly disconnected changes and relationships into a larger whole which, when viewed from the vantage point of the proposed conceptual framework, helps to illuminate our analysis of emerging trends.

In selecting and elaborating these studies we direct attention to the tidy hierarchy of compartments used to divide the physical and social world, to the assumptions made about their interaction, and to increasing evidence of disruption caused by the multiplicity of expanding and interacting flows. Population growth, increasing technological and organisational sophistication, and ever more complex systems of production and consumption have been important contributing factors.

The sectors have been chosen precisely because each points, though in different and often contrasting ways, to the same underlying dynamic. We examine (in this order) the rapidly evolving flows associated with economic activity, atmospheric pollution, climate change, the information revolution, communicable diseases and security threats. Though all these areas of human activity and organisation can be considered in terms of flows, each also points to a complex but specific set of challenges and emerging governance responses. Each sector has its own distinctive origins, normative and institutional implications, and dilemmas for the future. Yet each is connected to the other, and in this sense contributes to a holistic understanding of the evolving human trajectory and its complex interplay with the rest of the biosphere.

We begin by examining the flows associated with the production and distribution of goods and services and the central role played by the market which has consistently extended its reach and progressively shaped or displaced other forms of social interaction. Polanyi’s penetrating concept of the ‘double movement’ will help to characterise the trajectory of the market in the contemporary period. Particular attention will centre on the
Economic activity, and especially economic flows that increasingly cut across state boundaries, cannot but have wide-ranging environmental ramifications. The interplay between economy and environment is critical to the relationship between humans and the biosphere. Over thousands of years of intensifying production, we see the steady increase in scale and reach of atmospheric pollution. For most of this time the environmental impact could be contained within and regulated by existing (if often slowly evolving) social structures. However, containment and regulation have proved far more difficult during the current period of transition. Thickening flows of pollutants sweeping across national boundaries have inevitably provoked innovative responses, with states, markets and civil society in its various manifestations devising an assortment of new mechanisms and techniques across the spectrum of spatial jurisdictions, from the local to the global. Several questions arise: what is the underlying logic of these often uncoordinated innovations and remedies? How have they interacted thus far, and with what implications for the evolution of environmental governance, and for the wider evolution of norms, laws and institutions? What do they signify for reflexive capacity, and in the longer run for human adaptedness?

Of the multiple repercussions of human activity for the biophysical environment, it is the ever expanding flow of greenhouse gases into the atmosphere, and the attendant consequences of climate change, which pose perhaps the most instructive but also most demanding challenge to date, what a UN Secretary-General described as a ‘defining issue of our time’. Policy-makers in all three major sites of contestation (states, markets and civil society) accepted the need for new forms of regulation, but they differed markedly on the legal and institutional methodologies to be adopted, and on the timescales in which they were to be introduced. How could we make sense of this underlying challenge–response dynamic? What were the implications for the rapidly evolving architectural landscape generally and for atmospheric governance in particular?

The governance of trade, financial and atmospheric flows reflected profound changes in the understanding and organisation of both space and time. Indeed, the management of flows now rested on a different conception of the relationship between time and space. The monitoring, assessment and regulation of risk-taking was now central to policy formulation, to the construction and management of political space, and hence to the modalities and authorship of political action. Global warming had become a defining issue of the time precisely because it had brought the
regulation of risk-taking to global centre stage. Impact assessment was now a distinguishing feature not just of atmospheric or even environmental governance, but of regulation in almost every sphere of human activity and at every level of politico-legal organisation.

Central to this multidimensional organisational complexity was the evolution of reflexive capacity, and central to evolving reflexivity was the changing mode and pace of information storage, retrieval and dissemination. It is only natural therefore that a chapter should be devoted to making sense of the far-reaching implications of the information revolution. While not anticipating the chapter’s conclusions, it is readily apparent that information flows and their management are at the core of contemporary developments in human reflexive capacity, and as a consequence pivotal in the evolution of governance in conditions of heightened stress. As with atmospheric governance, but in a structurally different context, information governance is indicative of the sharply contesting forces which have shaped it to its present form, and which continue to push and pull it in new directions. As with climate change, the responses of states, markets and civil society overlap and intersect at many levels, from the technical base on which these responses rest, to the national, regional and global forums seeking to establish the normative and policy frameworks in which future developments will occur. At stake are not simply the winners and losers of this still unfolding contest for power and influence, but the kind of reflexive capacity that the human species will have at its disposal as it seeks to grapple with the complex and stressed conditions that characterise the current period of transition.

While the evolution of the Internet – and more broadly information flows and technology – sits squarely within the framework of cultural evolution, it is important not to forget that the biosphere is itself evolving in every locality and globally. We will have occasion to observe more than once that much of biological evolution proceeds at a relatively slow rate when compared to the compressed timescales which characterise the escalating transformation of human culture, as evidenced in the recent pace of normative, legal and institutional innovation. However, some other species are biologically capable of responding to these changes at an equivalent or even faster rate. Pathogens provide a highly instructive example of this phenomenon. They are able to evolve as a species at a speed and in a manner which enables them to gain an adaptive edge by rapidly colonising new spaces and taking advantage of opportunities presented to them by human cultural evolution. Such communicable diseases as HIV/AIDS, SARS and Avian influenza reflect the pathogenic advances that can derive from human urbanisation, socio-economic disparities, and global flows of people, animals and food. The pandemic threat is both cause and effect of
human evolution, and central to understanding the global dimension of the contemporary challenge–response dynamic. The health systems and medical services which humans have created to meet their material and psychosocial needs are indicative of the challenges and responses which are shaping contemporary forms of governance.

Pathogenic flows are just one of the many contemporary threats to human security. Most of these are a product of human culture. Though military and paramilitary threats to security have a long history, and the ensuing violence has ranged from local hostilities to world war, the late Modern epoch and the current transitional period are deeply marked by the unprecedented destructiveness of military technology. Paradoxically, contemporary military systems have, by virtue of their offensive capabilities, emerged as the primary threats to their own physical security. These traditional military threats are now compounded by less dramatic but no less lethal subnational and transnational threats, each of which has global ramifications and all of which are increasingly interconnected. Chapter 10 examines the moral, legal and institutional responses to the security dilemma. Though these responses have developed incrementally and often erratically, the ensuing normative and architectural landscape is nevertheless highly revealing of the quantitative and qualitative shift that is under way in the theory and practice of governance.

We are conscious of the ambitious scope of the study on which we have embarked, and on the difficulty in striking the right balance between empirical detail, analytical focus, and historical synthesis of discernible trends. Our decision to elaborate a number of sectoral studies to flesh out our conceptual framework is a strategic one. We could have restricted ourselves to plotting in largely abstract terms the apparent direction of events and relationships. However, given that the distinctiveness of the period in question lies in the complexity and turbulence of relationships and the institutional frameworks within which they unfold, we have chosen to subject these to detailed investigation. Both complexity and turbulence as well as their effects are multidimensional in character, and their characterisation is inevitably contested. We see contradictory claims emerging in a multitude of locations. In this sense the devil is in the detail. At the same time, we are conscious of the need for perspective, of the value of placing contemporary disciplinary and inter-disciplinary debates within a larger conceptual framework. The domains of human interaction have been strategically selected to elucidate the nature of emerging challenges and their implications for governance. Whether it is climate change (and its historical antecedents), the relentless marketisation of economic activity, or the evolving interaction of humans and pathogens (socially and biophysically), the trends we observe when examining the detail acquire
greater sharpness and at the same time lend themselves to more effective comparison. In the light of differences and commonalities, we are able to interpret the trends and link them to our conceptual framework with greater confidence than would otherwise be the case.

**GATEWAY TO AN EMERGING EPOCH**

Enough has been said to indicate that a detailed examination of different spheres of human activity can greatly illuminate the challenge–response dynamic that underlies the contemporary evolution of governance. Each of the studies offers not only a piece of the jigsaw puzzle but also valuable insights into the overall pattern of change – its rationale, its modalities, its functions and its consequences.

As we suggest here, and more carefully explore in the chapters that follow, we propose to advance an important proposition. It relates to the human trajectory as manifested in the signposts we have uncovered, and the diverse endeavours on which humanity has embarked in recent decades as it seeks to circumvent or transcend the limits of the Modern epoch. The period of transition ushered in by these endeavours foreshadows, but by no means guarantees, the emergence of a new stage in human evolution, a qualitatively higher level of reflexivity, which we have chosen to label the ‘holoreflexive’ epoch. Our final chapter will elaborate the concept and the rationale for this label. More importantly, it will draw together the threads of the analysis and connect the seemingly disparate elements that constitute the emerging normative, legal and institutional architecture. Here we simply note that to weather the current storm, humanity is faced with the daunting task of radically reshaping many of the cognitive assumptions, practices and institutions that have shaped the Modern epoch. Such reshaping cannot proceed with a tabula rasa, but has by necessity to build upon our existing biological and cultural inheritance, even while it gives due consideration to current environmental constraints.

Not surprisingly, the current period of transition is characterised by furious jostling and jockeying for position as different players, operating with ambiguous motives and competencies, seek to maximise the gains and minimise the pains of adaptation. As the concluding chapter will elaborate, one of the distinguishing characteristics of this period of transition is the multidimensional attempt to widen the net of ethical awareness and the scope of institutional action so as to encompass more effectively the interests of the whole species. Whether in relation to war and peace, development, financial stability, human rights, the environment, or just ‘good governance’, the world, understood both as the human species...
Worlds in transition

and the biosphere which it inhabits, becomes a key unit of analysis and normative judgement.

It is, however, one thing to countenance the idea, and quite another to put into effect. In any case, addressing the interests of the whole cannot proceed by ignoring the interests and preferences of the parts that constitute it. Perhaps for the first time, human beings are faced with the challenge of consciously devising a set of norms, laws, institutions and policies that reconcile the needs of the whole (the species) with the needs of the parts (the communities, polities and cultures that make it up). It is the complexity of this still dimly discernible reconciliation that lies at the heart of our analysis, and holds the key to the next phase of human evolution.

NOTES


13. In this book, Modern is spelt with a capital ‘M’ in those instances where it refers to the period (last several centuries) which we have chosen to label the ‘Modern’ epoch. It is spelt with a lower-case ‘m’ where it simply means ‘new’, ‘recent’ or ‘contemporary’.


15. Reflexivity can operate at the individual as much as at the social level. In fact, as we shall argue, the two levels are mutually constitutive. While many theorists contend that reflexivity of one kind or another underpins various forms of social innovation, there is often a lack of clarity as to the nature of change, its trajectory, its dynamics and, most importantly, its evolutionary context. The transformative potential of reflexivity is suggested by contemporary theorisations of modernity. For his part, Ulrich Beck distinguishes unreflexive ‘rule-directed’ politics from reflexive ‘rule-altering’ politics (see Ulrich Beck, Anthony Giddens and Scott Lash, *Reflexive Modernization: Politics, Tradition and Aesthetics in the Modern Social Order*, Stanford, CA: Stanford University Press, 1994, pp. 35–6). Indeed, the social dimensions of reflexivity have intruded with increasing vigour into the study of international relations. In this context, Petr Drulák has argued that reflexivity is central to constructivist theorising and to the work of Alexander Wendt (see, for example, his *Social Theory of International Politics*, Cambridge: Cambridge University Press, 1999). But more often than not, notions of reflexivity have been implicitly rather than explicitly addressed. Drulák points to simple notions of learning which relate to external changes in the agent’s environment, which in turn can lead to behavioural adaptation, but also to changes of identity (see Petr Drulák, ‘Reflexivity and structural change’, in Stefano Guzzini and Anna Leander (eds), *Constructivism and International Relations: Alexander Wendt and his Critics*, London: Routledge, 2006, pp. 141–2). Wendt appears to be principally concerned with institutional actors and to conceive of reflexivity primarily in terms of policy change. Our notion of reflexivity will be gradually elaborated in the course of several chapters, first by placing it in its evolutionary context, and secondly by relating explicitly to the theory and practice of governance.