1 **Survival of the human race**

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Introduction

> It is interesting to contemplate an entangled bank, clothed with many
> plants of many kinds, with birds singing on the bushes, with various
> insects flitting about, and with worms crawling through the damp earth,
> and to reflect that these elaborately constructed forms, so different from
> each other, and dependent on each other in so complex a manner, have all
> been produced by laws acting around us . . . Thus, from the war of nature,
> from famine and death, the most exalted object which we are capable of
> conceiving, namely, the production of the higher animals, directly follows.
>
> (From the final paragraph to *On the Origin of Species by Means
> of Natural Selection*, 1859.)

'Survival of the fittest' is probably the best-known reduction of Charles
Darwin's thought. The phrase was coined by the British economist Herbert
Spencer in an 1864 work, after reading Darwin's thesis, but it was adopted
by Darwin himself in later editions of his work, who said he found it 'more
accurate, and sometimes equally convenient' (5th edition, 1869).

Spencer used the phrase beyond the realms of naturalists to lend support
to his social theories. In *The Man versus the State*, 1884, he wrote:

> And yet, strange to say, now that this truth [the survival of the fittest] is
> recognised by most cultivated people, now more than ever before in the
> history of the world, are they doing all they can to further survival of
> the unfittest!

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He goes on to explain this statement by saying that those who try to assist the 'unworthy' make the 'struggle for existence harder for the worthy' by inflicting on them 'artificial evils in addition to the natural evils they have to bear'. Thomas Huxley, a friend of Spencer and an ardent supporter of Darwin's theory of evolution, argued conversely that social organisation securing 'a fair amount of physical and moral welfare' was needed to mitigate against the natural, gladiatorial struggle for existence.

Others followed. Almost everywhere in Western civilisation thinkers of the Darwinian era seized upon the new theory and attempted to sound its meaning for their own disciplines. Life is struggle; and in that struggle the fittest survive: this concept pervaded all aspects of *life*. To the British imperial propagandists, a number of whom founded the National Efficiency Movement at the turn of the twentieth century (see G. R. Searle's book of that title), protecting culture, language, health, were component parts of the grand struggle for survival in the world at large. In America, captains of industry like John D. Rockefeller and Andrew Carnegie used it to justify laissez-faire capitalism. Thus Darwin's thoughts on survival were invoked *broadly*, not just in the context of understanding the natural world, but also in a host of other areas.

This book considers the 'survival of the human race' in the same broad sense as these Darwinist thinkers. By detailed examination of a number of very distinct aspects of human life, we will explore what strategies can be adopted to assist us in our individual struggle for existence and to preserve and indeed improve our collective lifestyles. The topic is vast in its coverage, and we will be restricted to examination of but a few distinct fragments.

We will start by examining the survival of one of the main types of polity within which humans have chosen or been compelled to live: empires (*Survival of empires*, Paul Kennedy). Expressions of identity and cultural heritage have been integral parts – and problems – not just of empires but of the entire human experience, and will form the subjects of the following two chapters (*Survival of culture*, Edith Hall and *Survival of language*, Peter Austin). Subsequent chapters (*Surviving disease*, Richard Feachem and Oliver Sabot, *Surviving natural disasters*, James Jackson and *Surviving famine*, Andrew Prentice) will consider questions of survival in the face of horrors that are both prosaic and profound for

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many – perhaps most – human beings, now as in the past. The final two chapters (*Surviving longer*, Cynthia Kenyon and Claire Cockcroft; and *Surviving into the future*, Diana Liverman) will conclude our journey by examining aspects of survival which have a distinctively modern feel: the biological challenge of living longer, and the future survival of societies on a planet influenced by climate change.

Threats to survival

Quite clearly we humans are to large extent the creators of our own destiny and the makers of our own doom. Natural selection there may be, but more often than not the selective pressure is now of an underlying anthropogenic cause. This allows for a gruesome and potentially catastrophic feedback, as poignantly described in a recent book entitled *Hegemony or Survival*, by Noam Chomsky. He suggests we 'are entering a period of human history that may provide an answer to the question of whether it is better to be smart than stupid', and suggests that if this question receives a definite answer it can only be that 'humans were a kind of "biological error," using their allotted 100,000 years to destroy themselves and, in the process, much else'.

Popular belief has us either invincible or en route to defeat. To some, the greatest woes of global society are so unimaginably vast that there isn't much we as individuals or even as collective bodies can do to ameliorate them; indeed much is utterly beyond our control. Others believe in the limitless ability of modern civilisation, with its scientific and technological capabilities, understanding of economic principles and knowledge gained from historical precedents, to overcome any crisis. Either one of these beliefs may ultimately prove accurate, but as we shall see in later chapters of this book, the problems of global pandemics, natural disasters and global climate change whilst being serious threats to our survival, need not be considered insurmountable. As Amartya Sen put it in *Development as Freedom*, 'Tacit pessimism often dominates international reactions to [the] miseries in the world today.' But, he goes on, 'there is little factual basis for such pessimism, nor are there any cogent grounds for assuming the immutability of hunger and deprivation'.

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It is perhaps futile to try to tease out absolute causes of the many varied threats to survival, but some factors seem to be frequently present. One such factor is poverty, taken in its broadest sense to describe a deprivation of basic capabilities reflected in premature mortality, significant under-nourishment (especially of children), persistent morbidity, widespread illiteracy and other failures. Time after time we will see in the following chapters that it is the most poverty-stricken who are most vulnerable. In the final chapter, Diana Liverman talks about the 'double exposure' of vulnerable groups to the risks of climate change and economic instability. For these groups, poverty is inextricably linked to deprivation of economic and political strength, which in turn is linked to poor health and education and this is then linked back to poverty and reduced freedoms. Feeding off this depressing loop is a greater vulnerability to a broad range of threats to survival, impacting cultural identity as well as longevity. The effects of this cruel web of feedbacks are felt particularly in African countries ravished by the terror of HIV/AIDS as is potently described by Richard Feachem and Oliver Sabot in their chapter on *Surviving disease*. Indeed the millennium year opened with the United Nations Secretary-General Kofi Annan declaring the impact of AIDS in Africa to be 'no less destructive than that of warfare itself'.

Subjugation, be it in the form of internal repression by governing powers or of restrictive policies of colonial rulers, is another factor frequently associated with threats to survival to both the life of individuals and the culture of communities; Peter Austin describes the loss of language in this context in his chapter. In her chapter on *Survival of culture*, Edith Hall uses one of the most famous tales of subjugation – Odysseus and the Cyclops – to explore the interleaving between colonial oppression and cultural heritage.

In considering the collapse or survival of past societies, Jared Diamond in his books *Guns, Germs and Steel* and *Collapse* has emphasised the role of environmental factors often play. He puts forward five factors often contributing to the failure of societies: environmental damage, climate change, hostile neighbours, decreased support from trade partners and the society's response to its environmental problems. Indeed danger lies not only in current responses to environmental problems. In his chapter on *Surviving natural disasters*, James Jackson discusses the dangers posed by historical reaction of a society to their environment, exemplified by the

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engineers of ancient Persian civilisations, whose ingenious technology to bring water supplies to the deserts have resulted in vastly populated cities such as Tehran evolving in near-certain earthquake disaster zones.

Thus poverty, subjugation and environmental concerns are all factors associated with threats to survival, be they threats to the lives of individuals or to the cultural integrity of communities. If there is a virtue in finding a common linkage between all these various factors, then perhaps the best description follows Amartya Sen's thinking and considers the *restriction of individual freedoms*, taken to involve both the processes that allow freedom of actions and decisions and the actual opportunities that people have given their personal and social circumstances. He has famously commented that 'no famine has ever taken place in the history of the world in a functioning democracy', pointing out that 'authoritarian rulers...lack the incentives to take preventative measures' whereas 'democratic governments...have to win elections and face public criticisms, and have strong incentives to undertake measures to avert famines and other catastrophes'.

Yet in this soup of interdependencies, disasters themselves often bring about loss of law and order, and the breakdown of democratic stability. Andrew Prentice in his chapter on *Surviving famine* notes that in surveys carried out after famines, nearly everyone will admit that hunger drove them to theft. Similarly, the terrible plague of Athens in 430–427 BC resulted in a general lawlessness as is described by the Greek historian Thucydides in *The History of the Peloponnesian War*:

> No fear of god or law of man had a restraining influence...no one expected to live long enough to be brought to trial and punished: instead everyone felt that already a far heavier sentence had been passed on him and was hanging over him, and that before the time for its execution arrived it was only natural to get some pleasure out of life.

Shockingly, in the days following the 2005 hurricane in New Orleans the ensuing lawlessness was evident for the world to see with reports of shootings, carjackings and thefts across the city (see Figure 1.1). An article in the *Washington Post* entitled *A City of Despair and Lawlessness* started:

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FIGURE 1.1   New Orleans, United States: People waiting to be evacuated from the Superdome take cover after the National Guard reported shots being fired outside the arena on 3 September, 2005, six days after hurricane Katrina hit the city. Some 3,000 people are still believed to be outside the Superdome. (Photo credit: Nicholas Kamm/AFP/Getty Images).

NEW ORLEANS, Sept. 1 – Federal and local authorities struggled Thursday to regain control of this ruined and lawless city, where tens of thousands of desperate refugees remained stranded with little hope of rescue and rapidly diminishing supplies of food and drinking water.

There is one final factor of primary importance: population growth. In *An Essay on the Principle of Population* in 1798, Thomas Malthus made his dramatic and defining statement:

> The vices of mankind are active and able ministers of depopulation ... But should they fail in this war of extermination, sickly seasons, epidemics, pestilence, and plague, advance in terrific array, and sweep off their thousands and ten thousands. Should success be still incomplete, gigantic inevitable famine stalks in the rear, and with one mighty blow levels the population with the food of the world.

Although the Malthusian catastrophe has never materialised and population growth has failed to follow his exponential growth model, population

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size and growth cannot be ignored when considering threats to survival. On a crude and fundamental level, a larger population results in more people available to die as consequence of a threat to individual survival in one guise or another. This concept was captured by Pierre Verhulst in his logistic equation model of human population growth (1838). More subtly, the distribution trends of large populations influence the survival prospects. The inexorable move of peoples from rural to urban environments in the name of development is leading to what can only be described as mega-cities in many parts of the world today. In China urbanisation has been particularly remarkable – since the 1950s its urban population has increased nearly sevenfold to half a billion people, representing a third of the total population. Vast populations living in close proximity, often in environmentally ill-conceived locations. The increased risks are too numerous and too obvious to state.

Just one example comes from Amoy Gardens, a large housing estate in the Kowloon District of Hong Kong consisting of ten 35-storey buildings where around 15 000 people reside. During the SARS epidemic of 2003, a single person visiting the complex infected more than 300 residents in a matter of days, many from the same block, with the infection probably being spread through the plumbing system rather than person-to-person contact. Many observers link the tragic genocide that unfolded in Rwanda in 1994 to high population pressure. In the words of Gérard Prunier, 'The decision to kill was of course made by politicians, for political reasons. But at least part of the reason it was carried out so thoroughly by the ordinary rank-and-file peasants . . . was that there were too many people on too little land, and that with a reduction in their numbers, there would be more for the survivors.' (*The Rwandese Crisis, 1959–1994*.)

An interesting paradox of human nature is that we appear to be fascinated by the destructive power of the threats to the survival of others – one only needs to open a newspaper or switch on the television to find evidence of our obsession – whilst at the same time we appear to be somewhat oblivious of threats to our own personal or collective survival. This dichotomy sometimes manifests itself in 'them' and 'us' scenarios as exemplified by the initial attitude of many to HIV/AIDS: 'It's something that affects "them", not "us" (and it may even be their own fault).' Sometimes we simply are not aware of the threat that creeps upon us – the slow but

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steady decline in numbers speaking a language. At other times it is as if we have an innate belief in our indestructibility – this feeling seems to be especially prominent within the present-day Western world. Freak occurrences destabilise us, but only temporarily – in recent years the terrorist attacks of September 11th 2001 and the New Orleans hurricane of 2005 rocked the American nation, and have had long-lasting implications, but the fear is fading and the feeling of collective invulnerability is returning.

Mixed with this is perhaps a notion of what might be labelled 'devolved responsibility' for addressing global problems, i.e. the notion that they are something the greater population, national governments or international organisations should concern themselves with, but mere individuals are in no position to take effective action over. After decades of support of capitalist ideals and the power of individual destiny, it is almost an ideological struggle for us to accept both individual and collective responsibility, social responsibility, for addressing global threats, such as climate change, which after all are rooted in the combined impact of individuals. But examination of past societies shows that collapse of societies, when it occurs, can be rapid, the most recent example being the seemingly near-overnight collapse of the USSR. Largely as a result of enormous social and economic dislocation, life expectancy declined dramatically in Russia during the 1990s – an unprecedented experience for an industrialised nation. Thus we should perhaps be a little more cautious.

Routes to survival

Arguably, the key human strategy to promote survival is to *organise*. We have been developing organisational skills since the introduction of agriculture some ten thousand years ago in the so-called Fertile Crescent. A quick review of our subsequent evolution is enlightening for it reveals this and other strategies for survival. The two civilisations that emerged in the fourth millennium BC – the Sumerians of Mesopotamia and the Egyptians – invented various techniques to produce more plentiful harvests, most notably irrigation. They also instigated long-distance trade to access key resources that were lacking in the region, and consequently communication and co-ordination became essential. This prompted an innovation of immense importance – writing – and with it the evolution of an organised social structure involving a complex hierarchy including

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professional scribes. Writing dramatically extended the collective memory of societies, enabling the transmission of knowledge useful for individual survival and the survival of a community's cultural heritage. It would also come to enable societies to retain closer cultural links with their, sometimes more glorious, past (the Egyptians of the seventh and sixth centuries BC harked back to the art and architecture of the third millennium BC, just as today we remain attracted to fashions of classical times). Social complexity and political organisation continued to increase such that the Sumerians were divided into some thirty city–states in the third millennium BC, and by the first millennium BC these had given way to empires like those of the Assyrians and Babylonians. Successful groups were those able to organise themselves to control and distribute resources. From there, political struggle, expansion and colonisation, education and democratisation resulted in the world as we know it today.

We can easily pick out from above the strategies our predecessors have used to be successful: organisation, communication and innovation. These are very human strategies, seen rarely elsewhere in the animal kingdom. Indeed there is some suggestion, discussed further by Cynthia Kenyon in her chapter *Surviving longer*, that the length of human lifespan – in particular our post-reproductive lifespan – is linked to this strategy. Moreover, we will see in future chapters that these strategies are essential in promoting survival in all its senses. The success of empires can be found in their logistics and communications networks, as Paul Kennedy describes in his chapter *Survival of empires*. Policies for promoting survival against disease, famine, natural disasters and climate change all must have these three strategies at their heart, so too policies for promoting the survival of language and other components of our cultural identity.

A note of caution though is necessary. In his book *The Collapse of Complex Societies*, Joseph Tainter suggests that such societies 'by their very nature tend to experience cumulative organisational problems'. By way of example he goes on to describe how 'as regulations are issued and taxes established, lobbyists seek loopholes and regulators strive to close these', and that with an increased need for specialists to deal with such matters, 'an unending spiral unfolds of loophole discovery and closure, with complexity and costs continuously increasing'. This example strikes a chord with the description of the political situation surrounding

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carbon emissions reduction mechanisms described by Diana Liverman in her chapter. Tainter argues that the return on an investment in complexity varies, and that this variation follows a characteristic curve where a situation of declining marginal returns is inevitably reached. At that stage he says collapse can occur from one or both of two reasons: 'lack of sufficient reserves with which to meet stress surges, and alienation of the over-taxed support population'. Thus too much organisation may generate its own threat to survival through social exhaustion.

Now let us consider some of the current threats to our survival. The population of the world presently stands at some 6.5 billion. That is an estimated 5.5 billion more people living on the Earth now than in 1800, and indeed a doubling of the global population since the 1960s. China and India lead the list of the most populous countries and are both growing fast. We are packing the planet ever more densely. Moreover as technology develops, we are travelling further and faster, mixing and integrating more and more. The result is that where once local problems were the most urgent for individuals, over the past decades, global problems have started to take precedence. Naturally concerns are raised as to the consequences of China, with its large population, succeeding in its goal of achieving First World living standards, and with them the First World's per-capita environmental impact.

How should we react to these global problems? If organisation is largely the key to our success then global problems should surely be addressed by global organisation. But if so, what form of global organisation? – the United Nations for all its worthiness hasn't exactly earned itself gold-star status as a global problem-solver. Indeed, increasingly it is non-nation–state actors who are seen to be addressing global problems: the Bill and Melinda Gates Foundation, now reputed to be the world's largest charity, paid out $1.36 billion in grants for a wide variety of causes in 2005 alone; the Global Fund, whose first executive director was Richard Feachem, has been set up as an independent body to spearhead the fight against AIDS, tuberculosis and malaria; a host of other charities and non-governmental organisations battle daily against threats to survival; and millions of individuals throughout the world have become involved in a variety of schemes, perhaps the most visible being the recent celebrity-backed campaigns to fight global poverty.