Mapping the Future: Creating a Structural Overview of the Next 20 Years

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Many futures methodologies have been designed to provide insights into the near-future context. This paper outlines a method which provides a broad overview through posing six key questions. The answers to these questions will vary with time. However, at any particular time they permit a rich conceptual framework to be developed. Such a framework allows us to pose a number of further questions which represent starting points for action and enquiry in the present. Overall, the approach can be considered as a "meta-method" which can be elaborated in many ways and applied within many different cultures.

Introduction

In popular terms the future is either an empty space or a kind of blank screen upon which hopes and fears are widely projected. Yet futures studies regards it as an imaginative and intellectual realm with positive content and many implications for the conduct of human affairs in the here-and-now. This paper suggests an approach to creating a "structural overview" of the near-term future. Such an overview draws insight and understanding from a variety of contexts. Six questions are used delineate key areas of enquiry. While the answers to them are not simple, they provide the grounds for many insights into the overall structure of the near-term furture. The overview so produced is not predictive. Rather, it provides an

interpretative framework for coming to grips with the coming decades. As such it is part of a collective scholarly process that will be constantly critiqued, altered and added to over time.

The main purpose of the paper is not to create an authoritative account of the future world (which would require a very much larger work), but rather to establish a basic framework that can be adapted and used for a range of purposes. As such it outlines one approach to a general futures methodology.[1]

Elements of a structural overview

Knowledge of the future is problematic and its status is uncertain. But that does not mean that the future is a blank space or a vacuum. On the contrary. A clear view of aspects of past and present, coupled with a range of futures concepts and methods, means that we can understand many of the forces that will shape the next 20 years and, indeed, the next century. We cannot know either in a hard, empirical sense, but *a coherent structural analysis* based on interpretative knowledge is achievable and useful. Table 1 provides a summary of six key questions.

Table 1

Six questions for a structural overview

What are the main continuities?
What are the major trends?
What are the most important change processes?
What are the most serious problems?
What are the new factors " in the pipeline"?
What are the main sources of inspiration and hope?

Future events cannot be predicted. Prediction in social systems is a logical impossibility because accurate prediction would cancel out the grounds of action, decision and human agency itself. But there are ways of reading the global context that enable us to create a coherent view of the terrain ahead. Collectively we already know

a great deal about *continuities* of, eg., language, culture, tradition, the environment and so on. *Trends* are also the subject of wide study by many individuals and organisations. Equally, we know a great deal about *processes of change.* Futures researchers listen very carefully to those who study change and learn what they can from them. This provides an empirical basis for futures studies. We can review the nature of *global systemic problems* and we can outline many *new factors* and forces that will come into play during this time. However, as the poet William Blake understood, "reason alone leads to despair", so it is important in this context to identify *sources of inspiration and hope.* Each of these is explored briefly below.

Material derived from such sources provides an evolving view of "the big picture". So, using all the tools and capacities available, it is well within our grasp and capacity to outline aspects of the next two decades. From our present vantage point in time we can sketch in major structural features of the near-future landscape without predicting every twist and turn of the journey.

The "map of the future" is a metaphor that describes what the futures field as a whole tries to do. Essentially, it attempts to provide policy-makers and others with views, images, alternatives etc. about futures in order to inform the present. So the underlying purpose is that of illuminating alternatives. Hence the loop of futures-scanning always returns to the present in the form of choices, actions, new policies and the like. Obviously, this map, or broad-brush picture, is never complete, never finished. It is continually updated as events, new information and data feed new insights. It follows that to describe this future context is not primarily a matter of forecasts and predictions. Rather, it is *an interpretative process* comprised of stages that include: environmental scanning, detection of "signals", interpretation, decision-making, implementation and evaluation. This corresponds to the general pattern of strategic planning. However, unlike strategic planning in business, the forward view needs to go well beyond the next year or two. This is due to the fact that the human species does not merely face a number of strategic challenges, but a more fundamental civilisational challenge.[2]

Continuities

Much of the futures literature stresses change but fails to mention that some things change very little from era to era. Table 2 sketches in a few of these continuities.

Table 2
Global continuities

The fundamental laws of physics that set limits to and conditions upon life.
The ecological principles of interdependence and system maintenance.
The annual cycles and seasons created by the earth's passage around the sun.
The basic neurological structures, characteristics and needs of people.
The archetypal myths and myth cycles in different cultures.
The universal role of religion and/or spirituality in cultures.
The need for enduring principles of social organisation.

Clearly these are only a few of the many factors and forces that could be described under the heading of continuities, but this is not the place to debate them further. The point of drawing attention to them is that processes of change tend to be limited or conditioned by preexisting realities. Hence, in our concern to deal with change, we should not lose sight of these long-term stabilising influences.

Implications of global trends

A rich literature has developed over recent decades to track and interpret global change processes. A wide variety of think-tanks, research institutes, government departments, non-governmental organisations (NGOs) and independent researchers carry out this work. The result is a resonably consistent picture of empirically-verifiable trends. One example is World 2000, which is a project of the World Future Society. It attempts to synthesise a number of overviews and insights from many individuals and organisations, and to present them as a "collaborative planning dialogue". The three key foci are

presented in Table 3. Here are nine "supertrends" or "principal driving forces", five "critical issues" and five broad strategies that emerge from the above.

Table 3

Trends, issues and strategies from "World 2000"

Major Trends

1. A stable population of 10-14 billion people.
2. Industrial output increased by a factor of 5-10.
3. Information technology will permit the "wiring of the globe".
4. A continuation of the "high-tech" revolution (DNA mapping, robotics, new materials etc).
5. Closer integration of the globe into a single community.
6. Diversity and complexity though ethnic regions, subcultures etc.
7. A universal standard of freedom and human rights.
8. Limited crime, terrorism, war and disease.
9. A resurgence of transcendent values.

Critical Issues

1. Making the transition from separate nation states to a global order.
2. Resolving the conflict between economic growth and sustainability.
3. Reconciling economic interests through a new economic paradigm.
4. Understanding and managing complexity at the institutional level.
5. Alleviating the disparities between North and South.

Strategies

1. Disseminate advanced technology to unify the globe.
2. Integrate economics and society.
3. Nestle society into its environment.
4. Decentralise institutions to empower individuals.
5. Foster collaborative working relationships and productive alliances.

Sources: Halal, *W. World 2000.*[3]

The trends are not simply regarded as isolated phenomena. They are used to create a composite scenario in which "the Earth appears to be moving along a fairly well prescribed path of development" which is also seen as akin to "a natural process of maturation". This "central scenario" is taken as a "standard future from which other scenarios could be defined".[4] As may be seen, the critical issues cover geopolitics, economics, environmental limits, complexity and North/South disparities. Furthermore, "these disparities are exacerbated by one of the most pervasive problems of our time - a collapse of faith in the familiar old world system which guided humans through the past epoch with good success". So the key "metaissue" is that of how to respond to the breakdown of the old order, lack of leadership and other social malfunctions. An explicit case is therefore made for "a new paradigm, model, story, or belief system (that) must somehow be formed (to) allow people to make sense of today's radically different global realities".[5]

To deal with such concerns, a "master strategy" employing wholism and systems thinking is recommended. This is broken down into the five strategies listed in Table 3. Finally, five alternative scenarios are derived from possible failures to pursue the "master strategy". They cover the following emphases: low-tech; neo-capitalism; ecological collapse; authoritarian rule; and social conflict. The paper mentions the "paradox of large-scale social change". That is, the view that "global change is utterly beyond our personal control since massive evolutionary forces are involved, yet these forces largely emanate from the collective actions and awareness of countless individuals".[6] The limits to certainty are acknowledged, and the notion of co-creation is highlighted. The primary skill called for is "a gentle attentive humility". It is a welcome contrast to the dominant intellectualism of the field.

Change processes

"Change" is a notoriously difficult concept to come to grips with. In this short paper I want only to touch on two aspects. First, empirically-verifiable changes that are the result of work at the empirical/analytic level, and second, changes in worldviews and underying epistemological assumptions. Both are vitally important, though most observers tend to favour one or the other.

Thurow's account of five economic "tectonic plates" of change is as good as any (see Table 4).[7] He draws together an impressive body of evidence to show how economic and geopolitical factors are helping to condition and shape the near-future environment. The end of communism means that capitalism holds sway; but those who lived under communism must now learn new rules while those under capitalism must find new ways to assimilate these nations and groups. The rise of brainpower industries spells the end of comparitive advantage. Now products can be manufactured anywhere and economic relations have a fluidity they never had before. The demography of burgeoning, shifting populations in the Third World in contrast with the aging of First and Second world populations creates new pressures and tensions, new "fault lines" of present and future conflict. The term "globalisation" is on everyone's lips, but shifts toward de-regulation means that there is no over-arching global structure to control and integrate the process. In particular there are contradictions between the declining power of national governments to regulate economic activity and the growing power of trans-national companies to do so. Finally, a "multipolar" world with no clearly dominant power is one in which the capacity to define the rules of international behaviour and exchange falls on everyone and no-one. It is a demanding and unstable prospect. To successfully negotiate such times will require care, attention, intelligence and wisdom on an unprecedented scale.

Table 4

Two asspects of global change

Thurow's five "tectonic plates"

The end of communism
An era of man-made brainpower industries
Demography - growing, moving, getting older
A global economy
A multipolar world with no dominant power

Ideas in decline: aspects of the industrial worldview

The idea of an *industrial* society.
The view that nature is merely a thing or a resource.
The idea of progress and unlimited material growth.
The view that technologies are inherently neutral.
The idea of separate and sovereign nation states.
The hegemony of instrumental rationality.

The lower part of Table 4 takes a different approach based on critical futures scholarship. It considers some ideas and assumptions (epistemological "givens") which arguably underlie the empirical landscape described above but appear to be in decline. (Table 7, below, suggests several which appear to be growing, or developing). None are wholly discrete or without problematic aspects. Yet, they are of no less interest than empirical observations because they operate at the foundations of our symbol manipulation, meaning-making, policy-formulation and educational processes. They suggest that some major shifts are under way at the deeper levels. While no-one can predict exactly how these shifts and oppositions will finally be resolved, we can be sure that the lives of those now in school will be powerfully affected by them.

We know that we no longer live in an industrial society but, on the whole, we do not see clearly how thoroughly our society is permeated by industrial assumptions and outlooks. For example, much private and commercial behaviour is still dominated by a utilitarian outlook which dictates that nature is simply a resource. Many still

believe in old-style material growth, progress and the inherent neutrality of science and technology. The nation state still exists on maps and in human minds but it has little or no reality in terms of systems or ecologies.

Over all this, what has been termed "the hegemony of instrumental rationality" casts a shadow across the entire civilisation. At heart this is the view that knowledge, power and technique are of primary significance and should therefore dictate the path to the future. Given such assumptioins there are no limits. Nothing is protected or special. Values and futures have less reality than ghosts. What matters are the practical arrangements for getting things done. Here we see the foundations of Dystopia, the machine-led view of the future which leads inexorably to a world unfit for life.[8] These are the futures that writers of speculative fiction have been warning us of from the earliest years of the 20th Century and before.[9]

We may conclude that at the level of empirical trends and underlying assumptions the outlook is challenging and profoundly unstable. This reinforces the picture provided by the overview of global trends, above.

Serious problems

Given the above, it is hardly surprising that the world of the mid-1990s is caught between hope and despair. This is a time of transition, and much is at stake. Confusion is evident at the highest levels of education, government, business and industry. One major contradiction is that present economic orthodoxy states that economic growth is necessary for a society to progress. Yet, in direct opposition to this, informed observers are questioning the whole basis of old-style, growth-oriented economics. It seems clear that this conflict will be long and hard. For, on the one hand are all the habits, outlooks and practices developed during several centuries of growth that shape and condition contemporary life; while on the other are the inexorable "limits to growth" phenomena which are becoming increasingly clear.

The upshot is that late industrial societies, economies and cultures are heading into the 21st Century more-or-less blindly, with outlooks that may have been appropriate for an earlier age, but which are now increasingly dysfunctional. Observers frequently comment upon the short-term outlook of our major institutions and upon the seeming impossibility of effective political responses and leadership. So, as we look ahead, there are powerful reasons for believing that things will get harder before they get easier. Some are summarised in Table 5.

Table 5
Six "negatrends"
(or why things get harder before they get easier)

The time taken to identify deficiencies in the Western Industrial Worldview.
The continuing unsatisfactory operation of the global economy.
Failure to resolve the global problematique (the interlocking set of global problems).
Continuing technical innovation creates new dilemmas superimposed on older ones.
The ethical basis of late industrial social life remains inadequate and unsustainable.
There is inadequate investment in foresight.

The worldview problem has been widely overlooked by educators and mainstream futurists. Yet it powerfully affects the ways we see the world (often through unregarded assumptions and taken-for-granted commitments). Yet there is no rule book for re-constituting a culture. One can't discard a particular "structure of consciousness" overnight. Moreover, personal and institutional learning lags slow down the process of cultural innovation. At present formal education is very much part of the problem, in part because it remains immersed in the past and has not yet taken up the many concepts, tools and techniques for teaching and learning about futures.

Gross inequalities between nations persist and are worsening in

some cases. They appear to be a systemic feature of the global system. Market economies do not have an intrinsic interest in the future, and market signals operate retrospectively. Classical economics excludes the wider world and regards ecological impacts as "externalities". Global problems of poverty, environmental deterioration, pollution and loss of genetic diversity also continue to grow. Most people feel that these are too remote to deal with and are outside of their world of reference. Governments have short-term, limited agendas, linked to the electoral cycle. So, on the whole, they try to ignore the global problematique. The time-frames of governance and those that apply to global atmospheric and other environmental systems are drastically out of step.

New technologies such as virtual reality, the human genome project, nanotechnology and so-called "artificial intelligence" all raise as many new problems as they promise to solve. No-one is asking for them. But we are reliably informed that "they are coming". The notion of "control" in this context is problematic. Technology is often seen as providing new solutions, but this is a naive view. It tends to be over-valued, while questions of language, meaning and conflicting interests are overlooked. On the whole, Western societies and, indeed, many Western futurists, have yet to decisively wean themselves away from anodyne, machine-led views of futures that are clearly not viable in the long term.

The still-powerful (but inadequate) industrial-era ethics of pragmatism, utilitarianism, competitive individualism and the marketing imperative have not, and will not proveide a sound basis for individual or social decision-making. There is a spiritual vacuum at the heart of industrialised culture which makes it very difficult for people or organisations to resolve the perennial concerns of human existence. A series of substitute satisfactions are readily available, but they merely shove problems out of sight. Yet the human subconscious and spirit are not fooled; they know that a confidence trick is being played. This helps to explain the continuous outpouring of apocalyptic imagery and the largely unnecessary view of the future as a dark and forbidding place. This vrey dilemma provides the cul-

tural and historical grounds for critical and creative futures work, but too few are working in these modes.

Finally, as noted, foresight needs to be deployed at the social and organisational levels. But in habitually short-termist, past-oriented cultures, there is little interest in doing so. Hence the savings of successful foresight are denied and the risks of "overshoot and collapse" beyond critical limits continue to grow.[10]

New factors "in the pipeline"

How can we identify items "in the pipeline"? The answer is deceptively simple: we make specific arragments to detect them. That is, the more effort we put into *environmental scanning,* the more we become aware of innovations, particularly scientific and technical ones, that will impact upon us in a range of powerful ways. Table 6 summarises some of them.

Table 6
New factors with future impacts

The human genome project and synthetic organ replacement
Research on the control of aging
The forging of new person/machine links
The development and applications of nanotechnology
Universal digital communications systems
High tech terrorism using miniaturised weapons

The genome project is a fascinating and worthwhile attempt to understand the genetic structure of humankind. In time it promises to eliminate many diseases and to provide us with new curative powers. Yet its social impacts remain under-appreciated. While some see a new era in medicine others, equally qualified, foresee the creation of a new genetic underclass and quite new threats to privacy.[11] Research on aging is similarly a two-edged sword. Who wants to die? And yet the promise of significant life-extension raises a host of

social concerns, not least of which is the exacerbation of current population issues. These issues are not well addressed but, according to some, the "life-extension revolution" may soon be underway.[12]

The steady dissolving of boundaries between machines and people is very exciting to those currently involved with a variety of research programs. And their work is regularly reported on tv shows like Beyond 2000 that characteristically take an anodyne view of such things. But the implications are staggering. I am not suggesting that they are necessarily negative. However, the potential for further de-humanisation is certainly there, along with all the new powers bestowed by the gadgets and applications. For example, the options for social control in a dictatorship are unpleasant to say the least. I, for one, am not at all sure that our social ethics are anywhere near robust enough yet to cope with such developments.

No-one can say if the nanotech revolution will live up to the advance advertising. But one thing is sure, if a fairly comprehensive version does appear, it will reinvent society wholesale. This is because it will provide the ability to create complex machines and sophisticated materials molecule-by-molecule and very cheaply indeed. It is mind-blowing scenario; moreover, many of the early steps have already been taken. If anyone thinks this can be dismissed as science-fictional fantasy, I can do no better than direct them to Drexler's book Engines of Creation.[13]

Universal digital communication is certainly on the way, and I imagine that most people welocme it. However, once again, there is growing evidence that this much-hyped "information revolution" has quite profound costs.[14] For example, changes in the nature and uses of literacy, ready access to regressive and dangerous material (pornography, bomb-making receipes) and new threats to privacy. The impacts on schools will also be significant. Early indications are that the revolution in communications will re-invent them in major ways. Finally, one of the most worrying aspects of the near-term future is the likely use of nuclear and other high technology weapons. Just as some major powers are reducing their nuclear stockpiles, so less responsible agencies are watching the military technologists very

carefully. It is only a matter of time before someone, somewhere, holds a whole city to ransom. More generally, a complex technological infrastructure is highly vulnerable to the mis-use of technical knowledge. It is one thing to design robust systems for normal use and quite another to design and operate them in environments where terrorist action is an ever present possibility. We now have to accomodate the uncomfortable fact that, while modern technological infrastructures are marvels of engineering skill, it would take only a very few determined individuls to bring them to a standstill. This is one of the most serious unacknowledged dangers of the foreseeable future.

So this is indeed a "Brave New World" and these are just some of the new factors with future impacts that we must take into account. We cannot predict exactly what impacts may be associated with each but, with applied foresight, we could extend our grasp of possible future developments, applications and dangers than is now usual. The basic issue is that, while foresight is a common human characteristic, we have not yet evolved ways of applying it at the social level. But if we collectively saw the point we could easily do so.[15]

Sources of inspiration and hope

Given all of the above it would be easy to conclude that the near-term future is too challenging, too depressing, just too difficult to cope with. This is an understandable first response. But to accept it means adopting a fatalistic outlook which would undermine our autonomy and our legitimate hopes and desires for a viable future. In this most challenging of all contexts it is therefore vital to locate sources of inspiration and hope. While they can take some effort to locate and use, I am satisfied that we do in fact have at our disposal all the means necessary not only to confront the future, but to move into it with skill and confidence.

Some of the more positive aspects of the near-term future are illustrated in Table 7. They correspond less to empirical trends than

to interpretations of deeper social and cultural phenomena, as mentioned above. As such, they are grounded in ideas, paradigms and texts as much as they are in external events. For example, the idea of sustainability as a social goal is not one that will go away. However, since it challenges so many aspects of existing social reality, power relations, economics and marketing, there are bound to be numerous conflicts over an extended period. The shift from quantitative and material growth to qualitative and non-material growth will not be easy, but it may progressively occur as human cultures meet global limits and explore other ways of meeting human needs.

Table 7

Sources of hope: foundations of a new worldview?

The idea of a sustainable society and qualitative growth.
The notion of a stewardship ethic; the environment as a community.
The notion that the future is deeply implicated in the present.
The "new science" reflecting an interconnected reality.
The benefits of systematic foresight.
The re-birth of the sacred.
The conservation and re-valuing of native peoples and cultures.

While, as noted, industrialism was built on a utilitarian view of nature, this view is ceasing to be credible. Instead we are seeing the rise of a stewardship ethic and a view of human beings as part of a wider biotic community. If this ethic continues to grow in strength and becomes a standard assumption in the coming century, it will help to transform previously growth-addicted cultures. Reinforcing this is the dawning recognition that "the future" is no mere abstraction, but a principle of present action which is *constitutive* of the social order. It follows that time-frames are likely to beome more flexible and long-term. This, in turn, will encourage the development of inter-generational ethics, and all that they imply.

The "new science" has turned materialism on its head and made reductionism look quaint. It has re-established a sense of purpose and significance right at the heart of matter/energy. Quantum

mechanics may not necessarily constitute a paradigm for social knowing, social being, but it has certainly established the notion of interconnectedness as a principle of existence. Again, this insight serves to support and augment some of the others mentioned here. An interconnected universe brimming with meaning and significance is no longer the lonely, alienated place portrayed by cynics, existentialists and in the great Dystopias. I suspect that this insight alone may one day be seen as a vast source of as-yet unrealised cultural power. On a more practical level, the systematic application of foresight at the social level has hardly started. Yet the principles and practice of foresight are well understood. If this widely-shared human capacity is implemented socially it will help to encourage a much more prudent, wise and, indeed, far-sighted outlook. Institutions of foresight are poised to become one of the great social innovations of our time.[16]

The re-birth of the sacred, or numinous, is another development which promises to help transform Western cultures. It is intimately related to the re-valuing of non-Western cultures and traditions. The latter are increasingly being seen as no longer peripheral, but central to the evolution of a truly post-post-industrial civilisation. A sense of the sacred, of the cosmic in everyday life, may bring a depth of perception and experience back into societies which had forgotten how rich they may be.

All these can be seen as very positive aspects of the near-term future. They provide plenty of support for hope, inspiration, social innovation and policy-making. Far-sighted individuals everywhere will make intensive use of such material for a wide range of socially innovative purposes.

Conclusion: four major challenges for humanity

The account I have given portrays a range of forces interacting on several levels. It suggests a way of handling complexity in the forward view which captures some of the features and qualities of the time without an over-emphasis on simple trend-analysis. It is

clear that, while there may be "light at the end of the tunnel" (ie., in a reconstructed worldview), many of the trends, policies, outlooks and modes of understanding which presently frame the near-term future, do not inspire confidence. Quite the opposite. Though powerful constituencies will continue to deny it for some time, it is therefore now appropriate to resist what, by now, are clearly untenable accounts of Western-style progress and development. Though this has been the dominant historical trajectory over the last two hundred or so years, it is clearly not a viable path into the 21st Century. Yet it is also clear that the means to empower a real "change of direction" and to work toward a wise, far-sighted culture are readily available. The above analysis obviously leads to a number of major challenges for humanity. Four are briefly outlined here as questions. The wider debate can be accessed through recent summaries of the quality futures literature.[17]

First, can humanity free itself from the inherent fatalism of a "business as usual" mentality? Such a view communicates the wrong message and induces a false sense of security. In part it is founded upon an unsupportable and irrational belief in the durability of present ways of life. In the context outlined above this is a dangerous fallacy.

Second, to what extent, and how quickly, can powerful constituencies (governments, corporations, key decision-makers in all fields and enterprises) bring themselves to set aside the old industrial "game", worldview, etc. and develop a different outlook based on a new or renewed worldview oriented toward new ends; for example, a stewardship ethic; qualitative growth; more caring and inclusive human and economic relationships? It is particularly vital for educators - those who are preparing the citizens and decision-makers of the future - to have a view on this, and to guide their practice accordingly.

Third, can a shift from short-term to long-term thinking be achieved across the board? Will the means to do this be implemented in practice? Around the world there are perhaps two hundred purpose-built "institutions of foresight". They have not been created

according to any master plan or grand scheme. Rather, those who have looked ahead have understood the challenge and have therefore started to create "look-out" institutions for their societies. Australia has barely made a beginning in this crucial area. It had an under-funded Commission for the Future (CFF). It still has a Parliamentary Committee for Long-Range Strategies, some church organisations and a few ethically-based foundations. None of them have a strong, influential role either politically or socially. Yet without a shift from short, to long-term thinking, it will be impossible to develop the kind of strategies that the near-future context clearly requires.

Finally, is it possible to move beyond the politics of expediency toward implementing the notion of sustainability and moving toward an intentional learning society? Both represent a huge social and political challenge. Education in its widest sense is central to this process, and to all of the above. Despite the many problems ahead, a worthwhile future is certainly possible for humanity. We have sophisticated institutions, advanced technologies, capable educational systems and all the human qualities of skill, imagination and intelligence that are needed. These elements now need to be marshalled toward coherent, long-term goals. The alternative is to fall back on fatalism and see the human project progressively decay. In this scenario the four horsemen of the apocalypse would ride unhindered over the densely populated landscapes and through all the cities of the world. The impersonal forces of history and the unavoidable laws of ecology would then bring about a world very different from the one humanity might consciously design and aspire to create. This is both a choice and no choice at all.

The civilisational challenge that stands before us is to comprehend what the near-future context is telling us with sufficient clarity and insight to cause us act in a thousand different but congruent ways to secure the human future in a world worth living in and handing on with pride to our children.

Notes

1. An overview of more detailed futures methods is given by Joseph Coates in Richard Slaughter(ed) *The Knowledge Base of Futures Studies, Volume Two: Organisations, Practices, Products,* DDM Media/Futures Study Centre, Melbourne, 1996.
2. See Richard Slaughter, *The Foresight Principle: Cultural Recovery in the 21st Century,* Adamantine, London, 1995, for an oerview of this challenge.
3. William Halal, World 2000. An international planning dialogue to help shape the new global system, *Futures,* 25(1), 1993, pp 5-21.
4. Ibid page 10.
5. Ibid page 12.
6. Ibid page 18.
7. Lester Thurow, *The Future of Capitalism,* William Morrow, New York, 1996.
8. A view expressed most clearly, perhaps, by Lewis Mumford in *The Pentagon of Power,* London, Secker & Warburg, 1971.
9. One of the earliest warnings was by E. M. Forster in The Machine Stops, in *The Eternal Moment and Other Stories,* HBJ, New York, 1929.
10. See Donella Meadows (et al) *Beyond the Limits: global collapse or a sustainable future?,* Earthscan, London, 1992 for a useful account of the dynamics of exponentional growth in the global system.
11. See Daniel Kevels & Leroy Hood (eds), *The Code of Codes: Scientific and Social Issues in the Human Genome Project,* Harvard University Press, Cambridge, Mass., 1993.
12. See, for example, B. Darrach,Can We Stop Aging? *Life* 15 (10), Oct. 1992, pages 32-45.
13. K. Eric Drexler's, *Engines of Creation,* Anchor/Doubleday, New York, 1986, still remains the best introduction to the problems and potentials of nanotecnology ten years later.
14. A critical backlash against the over-hyping of new communications technologies has been gathering pace for some time, eg.,

see Mark Slouka's, *War of the Worlds: the assault on reality,* Basic Books, New York, 1995.

15. See Richard Slaughter op cit 1995, note 1.
16. Ibid. Chapter 7, Why we need institions of foresight.
17. The most reliable source for such material is *Future Survey,* edited by Michael Marien and published monthly by the World Future Society, Washington DC. Also see Lester Brown (et al, eds), *The State of the World* (series), Allen & Unwin, New York and *Vital Signs* (series), Norton, New York.

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