



An Overview of Futures Studies

Wendell Bell

Introduction

Today, 'spaceship Earth' has become a compelling and familiar metaphor, conjuring a picture of the Earth and its people hurtling through space, dependent on each other and the planet's limited resources. But there is another equally compelling metaphor needed to make the story complete: the image of 'time machine earth' seen as an inexorable movement through time from the past into the future. Thus, not only are all people on Earth space travellers; they are also time travellers. Their tickets through time, however, are only good for a one-way trip - they can only travel forward toward the future.

The future, of course, is still being made: it is what people can shape and design through their own actions. To act intelligently, people need to know the consequences of these actions, of others' actions and reactions, and of forces beyond their control. These consequences can only occur in the future. Thus, people try to know not only what is happening now, but also what might happen, what could happen or what will happen in the future given certain conditions. Using such conjectural knowledge, people orientate themselves in the present and navigate through time, physical space and social space.

A new field of social inquiry has been created whose purpose is the systematic study of the future. It is sometimes called 'futures studies', 'the futures field', 'futures research', 'futuristics', 'prospective', or 'prognostics', and its practitioners are known as 'futurists'. Futurists aim to discover or invent, propose, examine and evaluate possible, probable, and preferable futures. They explore alternative futures in order to assist people in choosing and creating their most desirable future. My purpose in this essay is to describe some fundamental features of this new field.

The universality of time perspectives

Conceptions of time and the future exist in every known society. They can be seen, for example, in the practice of divination, which is aimed at discovering the unknown. Divination has been carried out by a variety of methods, from watching cheese coagulate, to observing animal shoulder blades cracking in a fire, to examining the entrails of small animals.

References to the future can also be seen in *rites de passage* in which ceremonial activities recognise transitions to future social roles, such as those involved at birth, coming of age, marriage, and death. They can be seen in religious rituals that are aimed at controlling the future, such as appeals for plentiful supplies of game, large crop yields, or the fertility of tribeswomen. They can also be seen in the individual development of each person. The ability to anticipate the future begins soon after birth as children learn that their behaviour brings reactions from other people. As children get older, they expand their time horizon, both into the past and into the future. As they learn language, they also learn the time perspectives that are dominant in their culture.

Finally, conceptions of the future can be seen in the history of the development of calendars and clocks.

For example, the Gregorian calendar (constructed in 1582) was a culmination of a long human concern with the movement of astral bodies, which have long been used as a universal measurement of time. The calendar is still in use (with an error rate of only half a minute a year) while today advances in the measurement of time have led to the development of extraordinarily precise instruments such as the atomic clock (based on radiation of the caesium-133 atom) and, beyond that, to the even more accurate sapphire-crystal technology that loses only one-100 000 millionths of a second per year. This is not to say that there are no variations in the meaning and importance of time (and its precise measurement) in everyday life. They may vary among societies and sometimes between one section of the same society and another. Nevertheless, conceptions of time and the future exist and have always existed in human consciousness.

The shift from space to time in utopian thought

Although there were precursors, Thomas More's *Utopia*, published in 1516, was a watershed.¹ By the end of the sixteenth century, the term 'utopia' (coined by More and literally meaning 'no place') referred both to an entire genre of fiction and a conception of an ideal place. Until the end of the eighteenth century, utopias tended to be located geographically distant from, but contemporaneously with, existing societies. For example, More's utopia was situated in the present, but well beyond the farthest known place from Europe.

The typical plot in utopian writings is based upon a fictional traveller who arrives, often by shipwreck, at a distant place inhabited by strange people. He lives there for a time, and then returns to Europe to tell his fellow countrymen about the people, society, and culture.² In so doing, the traveller critically evaluates his own society by contrasting the inadequate 'what is' of contemporary life with the perfect 'what might be' or 'what could be' of the utopian society.

At the end of the eighteenth century, a significant shift from space to time took place in utopian writing. The typical setting of the ideal society (or its opposite, dystopia) radically changed from a different place at the same time to the same place at a different time, for example, Condorcet, aristocrat and supporter of the French Revolution, accurately described many aspects of the coming future society using the social science of his day. Sebastien Mercier placed his fictional utopia in the year 2440. Thousands of writers have since followed their examples and placed the 'other', preferable or undesirable society, in the future.³

Along with this shift from space to time as the location of the 'other' came additional changes in utopian thought. One was that the perfect world could actually occur within a real society in this life on Earth. Another was that change toward a perfect world could be designed and directly brought about by human action. For More, only God could create perfection, and therefore it was not an earthly possibility. For Condorcet, humans could create a better world by their own actions here and now on Earth.

Recent origins of Futures Studies

Emergence of the modern futures field

The modern futures field was clearly visible by the 1960s. The translation and publication of *The Image of the Future* by F L Polak in English in 1961 was a major signpost, and *The Art of Conjecture* by Bertrand de Jouvenel was another.⁴ Polak used the concept of 'image of the future' to analyse the rise and fall of civilisations, while de Jouvenel brought many of the principles of futures studies together in the same work for the first time.

Other signs of the new field included the creation of professional societies. In 1966, for example, the World Future Society was established by E Cornish and others. It has since become one of the largest of the many futures organisations in the world today. In 1967, an international group that was to become the World Futures Studies Federation held its first meeting in Oslo, Norway. By 1977, when the World

Future Society published *The Study of the Future*, Cornish was able to report on a considerable amount of futures research and to identify a growing community of futurists.⁵

Trends and technology assessment

Many different paths of development have led to contemporary futures studies. One path is found in the work of W F Ogburn and his associates which analyses social trends and the role of technology in social change.⁶ Among other things, Ogburn was a co-founder and the first president of the Society for the Study of Technology, a precursor to the modern-day profession of 'technology assessment'. Ogburn's theory of social change emphasised the role of invention. For him, change in the modern world typically followed a causal sequence beginning with some technological invention or innovation. The new technology, in turn, produced changes in economic organisation, which then transformed social institutions such as the family or government. Finally, according to Ogburn, changing social institutions affected people's social philosophy, ie. their beliefs, attitudes, and values. In some cases the process was more circular, with social philosophies altering the demand for certain types of inventions, thus leading to technological change and starting the causal sequence again. Ogburn's idea that a society should produce a quantitative picture of itself as a way of knowing where it had been, where it was going, and how to make sound decisions about social policy grew into the social indicators movement¹ of the 1960s. The idea has never died, but during World War II it was largely suspended as nearly all activities were mobilised for the war effort. After the war, the idea that the state of society needs to be monitored using a variety of social indicators - from population, labor force participation, and technological change to crime, education, and health - took hold again.⁷

S C GilFillan, a disciple of Ogburn, should receive some mention as well because he also made some contributions of his own. GilFillan wrote an essay for his Master's degree at Columbia University in 1920 which evaluated the predictions of four writers from the eighteenth century, and concluded that they were reasonably accurate. Condorcet, for example, got the highest score for accuracy: 76.4 percent. GilFillan aimed to show that social prophecy 'has already been *proved* possible by its successes in the past'.⁸ He also proposed the term, 'mellontologist', for a student of the future. GilFillan continued his interest in the future and social change throughout his career and, among other things, wrote *The Sociology of Invention: An Essay in the Social Causes of Technic Invention and Some of its Social Results*.⁹

National planning

Another path to the modern futures movement was through national planning. Beginning with the national mobilisations of World War I, the ad hoc nature of planning at the time was replaced by full-time bureaucracies charged with planning for the future. Futures thinking through national planning continued during the Great Depression of the 1930s; was promoted by Communist Russia, Fascist Italy, and Nazi Germany; expanded with the military and economic mobilisations of World War II; spread to Eastern Europe after the war; and finally, diffused to Third World countries.

Of course, like futures thinking, planning itself is as old as human society. Even tribal groups engage in some community projects, both ceremonial and utilitarian; some hunting and fishing activities are cooperative, requiring the coordination of future human effort; and both agriculture and herding require that some things be done in the present with the intention of reaping future benefits. As the complexity of society increased (or sometimes decreased), so did the potential for an increase in the scope of the flow and ebb of planning. Collecting taxes, managing estates, irrigating the land, and waging wars required futures thinking.

Before 1914, organisations or groups drawing up large-scale, comprehensive, collective social goals and ways of achieving them were most likely to be military general staffs. They planned the character and movement of armed forces; however, by then warfare depended on an industrial base for material, supplies, transportation and communication. Consequently, the military was also obliged to plan for key aspects of the entire economy and society. The national mobilisations of World War I also brought

nonmilitary national leaders into the picture. Among other things, the war demonstrated that the means available to the nation-state were insufficient to deal with the national emergency produced by the war. National levels of health and education, for example, were below what many leaders thought were needed. It was also thought that economic and social reforms should be introduced.¹⁰ Furthermore, mass mobilisation required complex planning for the future by civilian as well as military leaders, from the allocation of material and personnel in industry, to the distribution of food and clothing to the civilian population. Thus, the mobilisation brought on by World War I enlarged the organisational capabilities of the nation-state, and was a fillip to the establishment of futures thinking in the institutional structures of modern societies.

During the inter-war years, the Great Depression contributed to the belief that something had gone wrong with the economy, and that something should be done about it through governmental intervention. Then current socialist thinking, along with the economic ideas involved in national accounting and Keynesian theory, encouraged the idea that the economy should be regulated or controlled, at least to alleviate such negative effects as unemployment, high inflation, and lack of capital investment.¹¹ In the United States under Franklin D Roosevelt, the New Deal ushered in a period of economic and social engineering by the federal government, including the massive planned development of the Tennessee Valley.

Responses to the Great Depression called forth many of the elements that are now commonly understood to be part of modern futures studies: analysis and interpretation of the recent past and the present; projections of future developments; description of possible alternative actions and the different futures each will lead to; evaluation of alternative futures; and selection of specific policies to achieve a given desirable future.

Communist Russia was, in part, another experiment in futures thinking and action. The Bolshevik visions of the future began taking shape in concrete plans and actions from 1917 onwards. Amid war and civil war, an invasion by Poland, the chaos of rapid change and bloody turmoil, and boundless revolutionary hope, the Bolsheviks seized the state bank and nationalised nearly all industry and land. By March 1920, they had created one of the first planning organisations, GOELRO (State Commission for the Electrification of Russia). In February 1921, they formed the State Planning Commission, or 'Gosplan'.¹² By 1926, the new ruling group was politically committed to planning. Their goal was to create a self-sufficient industrial economy a project with a long gestation period. Before the end of 1928, Gosplan had presented two versions of the first five-year plan which was to run for the period 1928-33. In April 1929, the Sixteenth Party Congress unrealistically accepted the most optimistic variant of the plan, 'the maximum possible achievement'.¹³

Drafting the first five-year plan took four years (almost as long as the plan was intended to cover) and, of course, there were changes in midstream. The authorities worked out the 'principles of planning ... by trial and error. There was no theory; practice came first'. For them, planning 'was a complex and pioneering experiment'.¹⁴ During the early years, their views changed from the idea of planning as preparing actions necessary to cope with immediate situations, to the idea of planning as setting future goals beyond the horizon of the present, and specifying the means for achieving these goals.¹⁵ Eventually, they developed a system of long-range planning (ten or more years), medium-range planning (five years), and short-range, operational planning (yearly or quarterly). They also had to give up the idea that revolution would soon occur in more economically advanced countries, and that the working classes there would help them solve Russia's economic problems.

Both the voluntarist elements of Marxism stressed by Lenin and the idea of the divorce of the future from the past through action permeated Bolshevik thinking. Lenin developed the notion that a conscious socialist minority could seize power: revolutionaries did not have to wait for the time when the economic and social situation was, according to Marxist theory, ripe for revolution.¹⁶ Furthermore, in drawing up the first five-year plan, the planners shifted away from the 'genetical' school that based planning on past data projected into the future (ie. extrapolation). Rather, they shifted toward a 'teleological' school which argued that 'the Russian proletariat had, with the Social Revolution, already

leapt from the bondage of necessity into freedom ... It was not necessary to pay much attention to the past. They should set themselves a great purpose and then seek the means to accomplish it'.¹⁷

Considering the first and second five-year plans together (1928-37), we see the creation of a command economy, centralised and enforced with state power. The Soviet Union transformed itself into an industrial nation and a great power, nearly catching up with the advanced capitalist economies. These astonishing achievements captivated the imagination of foreign observers. For others, the generally low standard of living, the squalor experienced by the majority of the peasantry, the large and inefficient agricultural sector and, most of all, the use of terror as an economic weapon, destroyed any possibility of enchantment.¹⁸ Every school child now knows or ought to know that this experiment failed.

The Fascists came to power in Italy in 1922 and ruled until 1945. During this time, Italy became, at least on paper, a state-controlled society. The Institute for Industrial Reconstruction (begun in 1931 as an attempt to turn around the economy) became the central agency controlling major financial institutions and most heavy industry. A central governmental bureaucracy exercised control 'over both labor unions and employers associations'. The Fascists pursued images of future national military and economic power, territorial expansion, and brave, new centralised controls over national resources. One basic Fascist tenet, the supremacy of the technical expert over the politician, foreshadowed what was to become a main feature of the societies many futurists were later to envision developing near the end of the twentieth century: the pre-eminence of the professional and technical class, with a technology base focused on information and knowledge.

In Germany, the National Socialist German Workers (Nazi) party came to power in March 1933, under the leadership of Adolf Hitler. The lightning territorial expansion of the Nazi state is well known: Germany held most of the European continent before the end of 1940. At the same time, the economic crisis that helped bring the National Socialists to power was overcome. Almost the entire nation was mobilised into a unified, dynamic, spiritual community (not quite the *entire* nation, of course, because dissenters, recalcitrants, Jews and others who did not fit the image of the blond Aryan, or who were not enthusiastic believers of the Nazi ideology, were intimidated into silent conformity, forced to flee, imprisoned or murdered). Yet for the great bulk of the population, the early years of National Socialism brought the promise of national power and international respect, full employment, increased productivity, new roads and buildings, consumer goods, and an end to hyper-inflation (in November 1923, one US dollar equalled 4.2 billion marks).¹⁹ The early years also introduced the process of *Gleichschaltung*, by which all German political, economic, and social life was to be brought 'in step with Nazi thought'.²⁰

Although it 'would be misleading to speak of the economic policies of the Third Reich as a smoothly functioning system of planning and controls', as Bracher says, it would be equally misleading not to recognise the important lessons of planning and futures thinking that the rest of the world learned and often feared as they watched the rise of Nazi Germany.²¹ The Nazis created a complicated and dynamic system of 'super-agencies' and planning councils, as well as other control and guidance mechanisms for the economy and the society. Contrary to the view of some admirers at the time, however, these controls did not prevent 'waste, jurisdictional conflict, corruption, or faulty planning'.²² But they did create a largely unified, mobilised society in which, for a brief period, the total energies of the people were multiplied and focused on collective goals. This occurred despite the fact that these goals sometimes seemed impossible, given the economic and social chaos of post-World War I Germany out of which the Third Reich had grown. It is no accident that Albert Speer (an architect skilled in creating plans and building small-scale models in the present for what often became life-sized realities in the future) ended up running most of the German economy. Yet it was not until after the German defeat at Stalingrad in 1943 that the German economy was totally nationalised.²³ By then, the beginning of the end had been reached. In 1945, the adventure was over: Germany surrendered, unconditionally.

In sum, futures thinking and acting with foresight, like any other type of thinking and acting, can serve many purposes and values. Regrettably, in Communist Russia, Fascist Italy and Nazi Germany, they

ended up serving the values of national power and social exclusion, while violating other values such as justice, freedom and human dignity. Perhaps if their leaders had foreseen the future consequences of their actions more accurately, they would have behaved differently.

During World War II, on the military and home fronts and on both sides of the conflict, the requirements of massive planned change toward the greater organisation of economic and social life forced leaders and their functionaries to make both short- and long-term plans. Imagine the magnitude of the managerial tasks involved in inducting, training, transporting, clothing, housing and feeding millions of men and women as they poured into the various military services. Imagine reorganising entire industries for the war effort; predicting how much of what material and equipment, manpower and food should be produced, and when and where such things should be transported. Imagine even a relatively minor task of planning a gasoline rationing system to get enough fuel when and where it was needed for industrial and military purposes, while keeping enough fuel available to allow the national workforce to get to and from work. Such tasks characterised the conduct of the war, the economy, and even much recreation and entertainment. In the United States, for example, planning for economic recovery from the Depression gave way to planning for war.

Beyond that, there were larger questions that the war forced leaders to face, even while the war was raging; questions that probed farther into the future, and farther into socioeconomic and political issues that were to shape the coming postwar world. The Marshall Plan for the recovery of Europe, for example, was one important result, as was the political and social transformation of Japan under the command of General Douglas MacArthur. Rebuilding countries, rebuilding cities, rebuilding political, economic, and social institutions after the mass destruction in Europe, and after nuclear annihilation in Japan, raised the question of what kind of country, city, or institutions ought to be built. Both the war effort and demobilising for peace (eg. switching from planes and tanks to automobiles and refrigerators) required futures thinking on a scale seldom, if ever, demanded before in human history.

World War II helped shape many of the men and women who were to become the pioneers of the new field of futures studies. They learned the lessons of destruction and rebirth, as well as the lessons of death and the dreams of future human unity. They were to remember the past while they laid the foundations of the futures field, organising for the future and preparing for its inevitable contradictions and uncertainties.

After World War II, national planning blossomed nearly everywhere. Wartime economic controls over such things as consumer goods, raw materials, and foreign exchange gave a new respectability to the idea of planning in private enterprise-driven economies. Now, public expenditures were reviewed and policies formulated several years ahead, usually to raise the rate of economic growth. The plan was not only to set goals concerning the desirable direction and amount of economic development for a particular country, but also to create specified policies for achieving them and a standard of appraising actual performance (by comparing later results with earlier goals) sometime in the future.²⁴ Britain had begun national planning during the war. Norway and the Netherlands soon followed with France joining the bandwagon in 1946.²⁵

France is of particular interest, both because 'it has given attention to long-term planning to a greater extent than has the rest of western Europe', and also because futures research and planning appear to have developed more conjointly there than anywhere else.²⁶ Additionally, joint roots can be readily found in the positivism of Auguste Comte, and before that in the *École Polytechnique* established in Paris after the French Revolution.²⁷ The French *philosophe*, Condorcet, may be an even better candidate than Comte for the title of 'the father of futures studies'. The utopian socialist ideas of Henri Saint Simon, for whom the young Auguste Comte at one time worked as a secretary, remain influential in the *grandes écoles* where many of France's top civil servants are educated.

By the 1950s, France was clearly an incubator of the modern futures movement. In 1957, for example, Gaston Berger, acting on his growing interest in the study of the future, founded the Centre International de Prospective in Paris. In the following year he published a journal dealing with the future entitled

Prospective. Sadly, Berger was killed in an automobile accident in 1960.²⁸ Berger's work and the Prospectives group were continued with Pierre Masse, then general commissioner of the French plan, playing a large role. Masse as High Commissioner of the Plan, among others, promoted interaction and integration of the growing futurist ideas with the practical planning concerns faced by the technocrats. For example, in 1963, Masse appointed a committee to consider the future French economy and society in the year 1985.²⁹

Also in France, Bertrand de Jouvenel had long been concerned with the future consequences of present action. He published a book entitled *L'economie dirigee: le programme de la nouvelle generation* ('The planned economy: The program for the new generation') as early as 1928 in which he proposed a 'directed' economy.³⁰ In 1960, he and his wife, Helene, founded the Association Internationale de Futuribles, which still functions today as an international futures studies clearing house. It also publishes a journal, *Futuribles*, under the editorship of de Jouvenel's son, Hughes de Jouvenel.

Nationalisation of large-scale industry, banking, and foreign trade occurred rapidly after World War II in Czechoslovakia, Poland, and Yugoslavia. By 1946, it was largely completed. In East Germany, Hungary, Romania, and Bulgaria, nationalisation occurred in 1947 and 1948. Local industry and retail trade moved under state management between 1949 and 1951, followed by the farming sector in the late 1950s. In contrast, the Yugoslavian administration was considerably decentralised through such institutions as Workers Councils. Nevertheless, the principal problem faced by their central planners concerned 'preparing an internally coherent set of balanced estimates for materials and equipment'.³¹ In a planned economy, the tasks of predicting future needs (where everything must be coordinated with everything else and is to some extent dependent on everything else) are enormous. Although the laboriousness has been reduced with the use of computers, dealing with the complex uncertainties and interrelationships of various parts of an emergent future remains a formidable intellectual task, yet it is indispensable if informed decisions are to be made.

Thus, national planners, both in Western capitalist and Eastern communist countries, became involved in the nuts and bolts of forecasting and, more generally, in futures thinking seen as a necessary part of the planning and decision-making process. Setting goals, making projections into the future, selecting policies, monitoring results, making new projections, altering policies, and re-assessing goals became part of national planning. Even though the Western democracies had less direct control over the economy and society than the Eastern dictatorships (and often had to negotiate or induce cooperative relations with private investors, owners, and managers rather than enforcing control), the intellectual tasks of national planning in both cases encouraged the rise of futures studies.

Nation-founding and nation-building

Another path of futures studies development was in the more than 100 new states that have been formed since the mid-1940s, mostly within the former European colonial territories in Africa, Asia, the Caribbean, and the Pacific, and most recently from the territories of the former Soviet Union and Yugoslavia. In each of these new states, new national citizenries were formed and new national leaders came to power. They faced the decisions of nationhood: those choices that had to be made in order to create a politically independent nation-state. At the most mundane level, flags had to be designed, national anthems written, and national trees, flowers, birds, and even national heroes chosen. More important, geographical boundaries often had to be drawn, and sometimes fought over (eg. between India and Pakistan); forms of government had to be decided upon, and constitutions had to be written and promulgated. New national histories were prepared in which the past was re-interpreted in order to construct an historical record worthy of the new nation-states. At the most subtle level, within each of the new states the psychological character, the economy, the society, and the culture of the newly independent people were often debated in terms of what they *ought* to become and why. These debates were both part of the struggle to be free of the past (colonial domination), and a search for distinctive nationalist images of tomorrow on which the future itself could be constructed.

In these new states, some aspects of Aldous Huxley's *Brave New World* became reality.³² In both

democratic and authoritarian states, in capitalist, socialist and mixed economies, in Asia, Africa, the Caribbean, and the Pacific and then in the former Soviet Union and Yugoslavia the future had become a realm for which self-conscious designs were made and deliberate historical actions were taken. Images of the future increasingly came to cause present action.

Operations research and think-tanks

Another strand in the development of futures studies was the growth of operations research and think-tanks. Near the beginning of World War II, a team of British scientists incorporated the then-new technology of radar into a system of air defence. In September 1938, the first British radar system called the 'Chain Home' went into full-time operation. Its tremendous success, along with other such military projects, led to the formation of other scientific teams to deal with the problems of war management. In 1945, General H H Arnold arranged for a Research and Development Unit to continue operating to keep such capabilities available to the US Army Air Corps. The RAND Corporation became one of the most influential of the many institutes, centres, and other 'thought research' organisations, which later became known as 'think-tanks'.³³

Most of what RAND produced was related to futures thinking in some way and included policy alternatives, designs, suggestions, warnings, long-range plans, predictions, and new ideas. By 1970, RAND had added nonmilitary projects to its agenda, and they accounted for about a third of its activities. RAND workers developed scenario-writing, computer simulations, technological forecasting, the Delphi technique, program budgeting, cost-effectiveness, and systems analysis. It was a school for futurists, including T J Gordon, Olaf Helmer, and Hermann Kahn. The corporation also spawned a number of other organisations, including the Institute for the Future, Kahn's Hudson Institute and Gordon's The Futures Group.

RAND also aided the development of the new futures field unintentionally. The negative reactions to the Corporation motivated some futurists to try to counter its presumed pernicious influence by moving into peace research and deliberately banning military topics and funding from their own work.³⁴ In 1967, Johan Galtung of the International Peace Research Institute (Oslo, Norway) among others, organised the 'First International Future Research Conference' in Oslo. Under the continuing leadership of people including Galtung, I Bestuzhev-Lada, de Jouvenel, Robert Jungk, and John McHale, and after other meetings in Kyoto in 1970 and Bucharest in 1972, the Oslo Conference eventually led to the official founding of the World Futures Studies Federation in Paris in 1973. Aware of the fact that almost all of the think-tank industry's work up to that time had been 'financed ... directly or indirectly by the armament effort' and therefore, 'served military and related industrial goals', the organisers dedicated the conference to peace and development. Participants focused their futures research efforts on 'such enemies as urban sprawl, hunger, lack of education and growing alienation'.³⁵

The Commission on the Year 2000

The Commission on the Year 2000 of the American Academy of Arts and Sciences was another strand in the development of futures studies. Chaired by D Bell, it met in 1965 and 1966. Although the Commission itself did not continue in operation, it gave an impetus to futures studies resulting in the publication of a special issue of *Daedalus*, 'Toward the year 2000: Work in progress', Kahn and Wiener's *The Year 2000*, and other futures work by its own members and others.³⁶ The Commission's work helped produce a network of people interested in futures thinking that went well beyond the concerns of US military researchers. Moreover, because Bell and other participants had ties with other futurists both in the United States and elsewhere (eg. de Jouvenel's Futuribles group in France), by the mid-1960s it was accurate to speak of an 'international futures research movement'.

The Commission's activities significantly contributed to the respectability of futures studies as a professional activity. The participants were a sample of influential, mainstream, establishment intellectuals. Prestigious US universities such as Brown, Chicago, Columbia, Harvard, Massachusetts Institute of Technology, Rockefeller, and Yale were represented. Foundations such as the Carnegie

Corporation of New York, Ford, and Russell Sage were also represented; so too, were Bell Telephone Laboratories, IBM, and Time, Inc. from the private sector; and the Department of State, the Department of Health, Education and Welfare, and the Department of Housing and Urban Development from the public sector. Additionally, several Commission participants went on to write their own futures articles and books, including D Bell himself whose *The Coming of Post-Industrial Society: A Venture in Social Forecasting* (first published in 1973) was to become one of the most influential books ever published.³⁷

The limits to growth and the club of Rome

Although Bell's *The Coming of Post-Industrial Society* became well-known and often cited, it never reached the worldwide fame that *The Limits to Growth* had already achieved, nor did it create the same public furore.³⁸ Even before *Limits* was published, media reports about its findings and recommendations had already stirred up public reaction.³⁹ After publication, it became a locus of international controversy and debate, selling over nine million copies in twenty-nine languages.⁴⁰ It was both acclaimed and condemned throughout the world, making its authors, D H Meadows, D L Meadows, J Randers, and W W Behrens III, instantly both famous and infamous. The sensational public exposure must have been not only a surprising experience, but also an awesome and unforgettable one for this group of academics.

The basic model used in *Limits* was an expanded version of the world model constructed by J W Forrester of the Massachusetts Institute of Technology.⁴¹ Using computer simulations and Forrester's system-dynamics perspective, the authors made a startling prediction for the time: 'We can thus say with some confidence that, under the assumption of no major change in the present system, population and industrial growth will certainly stop with the next century, at the latest'.⁴²

Despite the authors' later protests that they were not predicting, they obviously were. Some critics did not or chose not to understand that these predictions were clearly both contingent and corrigible: they were contingent or conditional upon the assumptions that 'there will be in the future no great changes in human values nor in the functioning of the global population-capital system as it has operated for the last one hundred years'.⁴³ It was also contingent, as are other predictions in *Limits*, on the assumptions that there will be no war, strikes, corruption or trade barriers. These assumptions may have made the results reported in *Limits* more optimistic than they otherwise would have been, since such problems can be expected to occur for some time into the future. Additionally, their prediction was corrigible in that more accurate and comprehensive data could have resulted in different, more accurate results.

Limits was the first commissioned study and, perhaps, the most influential single product of the Club of Rome, which is another important element in the recent development of futures studies. As intended, *Limits* affected the hearts and minds of millions of people.⁴⁴ The Club was founded in 1968 by the late A Peccei, an Italian industrialist, and some of his associates. The purpose of the Club was to alert the world to what they termed the 'global problematique' a cluster of interrelated world problems including hunger, environmental degradation, violence, overpopulation, and increasing alienation of the working classes. Their endeavours were pervaded by a sense of fear and urgency about such problems, and underlined the need to deal with them holistically over the long term. Industrialisation itself was considered to be part of the problem.⁴⁵ The founders of the Club intended *Limits* to be an intellectual catalyst, sparking interest and concern among other people and organisations, and thereby contributing to a worldwide effort to solve these problems.

Despite, or perhaps because of, some of the negative reactions to *Limits*, the Club of Rome influenced futures studies in many ways. Its emphasis on a holistic, global, and multidisciplinary approach has become characteristic of the field. It advanced environmental thinking and activism and gave both an intellectual grounding. It also advanced the methodology of simulation and modelling, and their use in futures studies. Its research and conception of the global problematique, including images of future overshoot and world collapse, were important correctives to the rosy views of the future put forward by cornucopian technocrats such as H Kahn.⁴⁶ Moreover, the 'private diplomacy of the Club worked much better after the publicity generated by *Limits*'.⁴⁷ People throughout the world, even top national leaders,

began paying attention.

H D Lasswell and the policy sciences

The late US political scientist, Harold D Lasswell, deserves to be listed among the pioneers of futures studies. For more than four decades beginning in the 1930s, Lasswell struggled to create what we now call futures studies. He contributed important insights, concepts, methodologies, and exemplars. Unfortunately, Lasswell did not live long enough to synthesise his futures studies work; this was partly left to others.⁴⁸ Also, his concerns with social policy and the possible indifference of most of his colleagues to his appeals for a new futures orientation to political science led him to merge his work on futures thinking with his efforts to invent the policy sciences.

Lasswell, D Lerner and others proposed the formation of the policy sciences in 1951. Their purposes were to study policy and decision-making processes, and to provide information to assist decision-makers. Lasswell was among the first scholars to see that decision-making and policy-making necessarily rely on future anticipations. He formulated the idea of the 'developmental construct', which is somewhat similar to the concept of an 'image of the future' or 'vision'. He called his method of futures research, developmental analysis¹. He used it to analyse social trends and future possibilities, including, for example, the rise of what he called 'the garrison state'.

Writing several years before George Orwell published his chilling image of 'Big Brother' in *Nineteen Eighty-Four*, Lasswell envisioned the erosion of democracy and the rise of dictatorship in the garrison state.⁴⁹ He saw the end of competitive elections and the coming of government by plebiscite; the spread of one-party or no-party states; the elimination of free speech and other civil liberties; the suppression of political opposition; the end of majority rule; the abandonment of legislative assemblies (except as a means for the ceremonial ratification of the decisions of a supreme authority), and the control of production by the state with priority given to military manufacturing as in the yet-to-be-written *Nineteen Eighty-Four*, the symbol, but not the substance, of democracy would be retained.

After a slow start, the policy sciences are now flourishing. Since the 1960s, they have progressed with dizzying speed, and they are now full-fledged professional activities. Policy analysts became part of the decision-making process in a wide variety of programs, including those dealing with promoting economic opportunity and combating poverty, fiscal policy, civil rights, crime and violence, education, national defence, population, energy, the environment, urban affairs, welfare and social security.⁵⁰ By the mid-1970s, the policy sciences were represented in university and institute centres, PhD degree programs (eg. at the RAND Corporation, Duke University, the University of Michigan, and Harvard University), as well as in professional journals and textbooks. The policy sciences also had access to new sources of funding such as the Ford and Alfred P Sloan Foundations. In 1983, G D Brewer and P deLeon published *The Foundations of Policy Analysis*.⁵¹ This work gave direction to the development of the policy sciences, and also confirmed that it had 'arrived' as a professional activity.

In the preface to his 1971 summary of the major ideas within the policy sciences, Lasswell said that in the twenty years since 'the term "policy sciences" was introduced [the] social sciences have "turned around" far enough to look toward the future. Physicists, biologists and their colleagues are concerned about the social consequences and policy implications of knowledge'.⁵² Lasswell's view that scientists look toward the future and are concerned about social consequences and policy implications was and still is overly optimistic. While this view exaggerates the facts, it also highlights the connections that exist between the policy sciences and futures studies.

Before leaving this discussion on the policy sciences, I must mention a related development: evaluation research. Today, evaluation research has become a part of the policy sciences. This form of research attempts to assess the consequences of various organised social actions. The origins of evaluation research date back to the 1930s, and especially to the evaluation of programs designed to deal with economic downturn. Today, it is a gigantic industry. The psychologist, D T Campbell, has likened the evaluation researcher to a person sitting on the stern of a ship looking backward and reporting to the

captain where he has been.

Evaluation research has been becoming more future oriented. The reason is that the 'evaluation of any particular project has its greatest implications for projects that will be put in place in the future'.⁵³ In the new view, program development is seen as a series of interactive cycles composed of: planning, implementation, evaluation with feedback to planners, more planning, changes in implementation, re-evaluation with more feedback, and so on. Thus, the evaluation researcher is becoming, contrary to Campbell's early view, more like a person sitting on the bow of a ship looking forward and reporting to the captain where he is going.

The policy sciences and futures studies

Until 1970, there remained considerable overlap between the policy sciences and futures studies. For example, as Marien points out, when the first issue of the journal, *Policy Sciences*, appeared in 1970, there were twenty-one people listed as editors or advisers, six of whom were prominent futurists.⁵⁴ By 1990, however, the two fields had grown apart.

Future historians will settle the question of whether futures studies will simply become a part of the policy sciences, or whether it will be able to carve out an intellectual niche of its own. In my judgment, there are good reasons for maintaining a distinct futures field. The principles of futures thinking emphasised by the policy sciences tend to be applied in governmental and civil sectors. This may be an arbitrary limitation that is not inherent to either field, since detailed and rigorous futures thinking is equally helpful to the private sector, both to large corporations and small businesses, and even to individuals in their everyday lives, however, it is a limiting tendency of policy sciences. One should also remember that some images of the future call for major changes in the distant future that seem politically impractical in the present. If so, then Rossi and Whyte believe that they are 'unlikely to be of interest to policy makers'.⁵⁵

DeLeon, after pointing out some similarities between policy research and futures studies, goes on to say that most policy studies are focused on the short term with some immediate policy in mind, while futures studies typically has a longer timeframe.⁵⁶ Another difference, he believes, is that policy scientists must concern themselves with implementation analysis, while futurists do not.

Also, the overriding concern with the present-focused decision-making of the policy scientist tends to focus attention on the details of particular cases and on practical solutions to the problems they present. Minutiae, which of course have their rightful place in decision-making, may get in the way of 'big' futures thinking on a grand, imaginative scale. What may be shoved aside, against the exhortations of Lasswell, Brewer and deLeon, are the sweeping, large-scale, idealistic images of the future that have the power to change the course of entire civilisations.⁵⁷

Finally, there is a possible source of conflict in orientation between policy scientists and futurists on one crucial point. Futurists aim to open up the future; ie. to make a virtue out of uncertainty in order to empower people to achieve a future that is better than the past and present. Futurists aim to teach people that the future is an open horizon that can be creatively explored. This means that for an active person, the future is actually another dimension of freedom. In contrast, policy scientists often aim to de-futurize¹ the future by increasing security. Policy scientists hope to secure the future through technology, law, policy and insurance, thus annulling our feelings of uncertainty. This may partially explain why the policy sciences have prospered more than the futures field. Security is comforting. Change, even desirable change, has its costs because it often causes both uncertainty and stress.

A new field of inquiry

The above review of some of the origins of the modern futures field is by no means complete. Many other precursors or sources of influence could be mentioned, such as the science fiction of Jules Verne and various writings of H G Wells; the counter-culture, the anti-Vietnam War movement and the Black

Power protests of the 1960s; the environmental movement of the 1970s; and hundreds of individual authors, such as H Kato and Y Hayashi of Japan, H B Lee and T Kim of Korea, L Qin of China, R Thapar and A Nandy of India, E B Masini and F Ferrarotti of Italy, A Sicinski of Poland, and R Henshel of Canada who has done pioneering work on self-altering prophecies, to name only a few.⁵⁸ Soon after 1970, of course, when A Toffler's best-selling *Future Shock* was published, concern with the future became fashionable.⁵⁹

The futures field is still young and developing, and some writers fear that it is too fragmented even to be called a 'field' at all.⁶⁰ Admittedly, it is diverse in terms of its subject matter and in the background of its various practitioners. The latter ranges from aeronautical engineering and physics, to journalism and management consulting, and increasingly to political science, sociology, and other social sciences. Calling futures studies a 'multi-field', perhaps, or a field with a 'transdisciplinary matrix' might be more appropriate.⁶¹

Yet today, futurists have formed themselves into loose communities of full-time scholars and professionals. Their activities have been institutionalised within hundreds of organisations such as companies, government agencies, centres, institutes, universities, and professional societies. There are many of such societies throughout the world, from the Association Internationale Futuribles (France) and the Instituto Nevas Alternativas (Mexico), to the Japan Society of Futurology and the Chinese Future Society.

Abstracts of nearly 10 000 futures-related books, reports, and articles appeared in the volumes of *Future Survey Annual* between 1979 and 1989 and this does not include futures materials in languages other than English. Of the 324 futures-relevant journals published in 1986, ninety-one percent were started after the end of World War II, and seventy percent were started after 1970.⁶² This is not to say that growth of the field has been steady. Rather, there have been ups and downs, as illustrated by the membership of the World Future Society: it grew rapidly from its inception in 1966, reaching a peak of nearly 60 000 members in 1979, sliding to 22 500 in 1985, and rebounding again to about 30 000 in 1994. In 1980, over 5 500 people from more than thirty countries attended the 'First Global Conference on the Future' in Toronto amid a sense of excitement and ascendancy. But by 1986, the futures field had entered a new phase in the United States. According to some futurists, this phase was one of reflection, decline and a search for more solid foundations.⁶³ Even so, there were signs of the continued spread and development of futures studies in China, Japan, Eastern Europe, Russia and other territories of the former Soviet Union.

Because it is new and has diverse origins, the boundaries of futures studies remain unclear. The field has a core of full-time professional futurists, and a relatively distant periphery of planners, economic forecasters, evaluation researchers, policy analysts, special interest activists, and others who may not fully identify themselves as futurists. Yet, taking all of the evidence of professional growth into account, we can have little doubt today that futures studies has become a new field of inquiry.⁶⁴

Purposes of futures studies

The major purpose of futurists is to maintain or improve the welfare of humankind and the life-sustaining capacities of the Earth itself. Futurists carry out this purpose by systematically exploring alternative futures. They engage in *prospective thinking*. They try to create 'new, alternative images of the future - visionary explorations of the possible, systematic investigation of the probable, and moral evaluation of the preferable'.⁶⁵ The possible, the probable and the preferable - these are what futurists seek to know. Moreover, futurists' distinctive obligation to the future invites them to speak for the freedom and wellbeing of future generations - the as-yet-unborn people of the future who have no voice of their own in the present.⁶⁶

To meet these goals, futurists also seek to know what causes change, ie. the nature of the dynamic processes that underlie technological developments on the one hand, and changes in the political, economic, social, and cultural realms, on the other. Futurists seek to determine what anticipated

developments may have to be accepted because they are beyond human control, and what can be brought under human control. Also, they seek to discover the unanticipated, unintended, and unrecognised consequences of social action.⁶⁷ Thus, futurists attempt to clarify goals and values, describe trends, explain conditions, formulate alternative images of the future, and invent, evaluate, and select policy alternatives.⁶⁸ They also study images of the future held by various groups such as national leaders or slum dwellers.⁶⁹ Finally, they analyse the dominant societal images of the future and their implications for the rise and fall of entire civilisations.⁷⁰

Of course, there is a division of labor among futurists, just as in any other profession. Some futurists are primarily analysts, focusing their efforts on methods, theories, and other scholarly issues. Other futurists are primarily activists, dedicating their efforts to shaping the future itself. An example of the latter is the late Robert Jungk who was often actively involved at the grassroots level, working to increase the participation of ordinary people in the decisions affecting their lives.⁷¹

Other activists work to disseminate alternative images of the future or even to advocate an image of some particular future. A successful example of disseminating such images (underpinned by the desire to increase popular participation in shaping them) took place in Honolulu in 1982. Professors J Dator and T Becker of the University of Hawaii organised the first Honolulu Electronic Town Meeting (ETM). It was composed of several different parts. There was a scientific information-gathering part through the Hawaii Televote in which seven hundred persons (selected by random digit dialling) were invited to be interviewed about economic and social policies affecting the future of Hawaii. There was also a dissemination and discussion part. Two daily newspapers, three commercial radio stations, public radio, a commercial and public television station, and the island's largest cable television station all participated. Most of this activity was in the form of phone-in programs, so that the public was both informed about the issues and able to participate in the discussion. Finally, there was the judgment part. Before the end of the ETM, ballots were published in a major newspaper and everyone was invited to vote on the issues discussed. The culmination of the exercise was a final hour-long television program with Dator, Becker, and the Lt governor of Hawaii in which viewers called in to ask questions or make comments.⁷²

Other purposes of futures studies involve the present. First, the action that takes place in the present is what shapes the future. Thus, present conditions must be studied, because futures thinking is largely about what to do now, ie. what action to take to create a future that will be as desirable as possible, given present conditions and hopes for the future. Second, futures thinking plays an orientational role by informing people where they are in the present. Often, the rapidity of change results in confusion about what is happening in the present, and what has happened in the immediate past. Unless people have some perspective on where they have been, where they are going, and where they want to go, the present itself is largely unintelligible. For example, if you want to know if a glass is half full or half empty, it helps to know that it was full a week ago, two-thirds full yesterday, half empty today, and possibly will be totally empty the day after tomorrow.

Third, the results of futures research help people to balance the demands of the present against those of the future. For example, people can deprive themselves in the present so as to profit from future payoffs that may never come. But the opposite is also possible: people can borrow from the future to the extent that they mortgage it beyond its limits. If they do, then when the future arrives, it may be hell, like a Faustian pact with the devil coming due.⁷³

Futurists' assumptions

In every field of inquiry, many assumptions are made so that investigation can continue. Some of these assumptions are explicitly stated, but many are not. Most are simply taken for granted. Yet it is important that every field examines its core assumptions from time to time to re-evaluate their cogency. There are many assumptions underlying futures studies, some of the most central of which I will try to outline here.

First, there are some general assumptions, at least partially shared by members of many other fields. Two examples are provided below.

1 People are project-pursuers. They are acting, purposeful and goal-directed beings. They create projects for themselves and set about trying to implement them.

2 Society consists of persistent patterns of repetitive social interaction. It is also composed of emergent routines of human behaviour that are organised by time, space, memories, decisions, expectations, hopes and fears for the future. Society is constructed and reconstructed on a daily basis as people act, react, and interact.

Second, there are a number of specific futures assumptions that, although some may be shared by other fields, are, taken together, a distinctive part of the futures perspective, as below.

1. Time moves unidirectionally and irreversibly from the past (seen in terms of a continuous momentary present) toward the future. There are a number of different arguments that support this assumption, such as: the second law of thermodynamics (entropy always goes in one direction); biological development (people grow older with time, never younger); wave motion (radio waves, for example, are never received before they are sent); the history of the universe (residual black-body radiation supports the idea that time has a beginning, sequence, duration, and direction); and traces of the past ('footprints in the sand' remain in the present as evidence of the past).
2. Not everything that will exist has existed before or does exist now. Thus, the future may contain things that have never existed before. These may invite new thoughts, new understandings, and new reactions.
3. Futures thinking is essential for human action. Reaction might be possible without futures thinking, but not action, because to act requires anticipation. Thus, images of the future (goals, objectives, intentions, hopes, fears, aspirations) are part of the causes of present action.
4. The future is not totally predetermined.⁷⁴ This assumption explicitly recognises the fact that the future does not already exist: ie. the future is 'open'.
5. To some extent, future outcomes can be influenced by individual and collective action, and by the choices people make.
6. Global interdependence invites a holistic perspective and a multidisciplinary approach. Futurists view the world as so interrelated that no system or unit can be viewed as totally isolated. Rather, they argue that every unit that is the focus of futures research should be considered to be an open system.

Further, some futures are better than others. This is obvious, and is often simply taken for granted in other fields, although such lack of scrutiny has resulted in a mish-mash of implicit and unjustified value judgments. For futurists, this is a salient assumption because they explicitly explore preferable futures as well as possible and probable futures. People judge the consequences of their own and others' acts as more or less desirable. Values are part of the steering mechanisms used by both individuals and groups as they make their way in the world. Thus, part of the futurist's job is to study, explicate, evaluate, and even formulate the criteria people use to evaluate alternative futures.

In addition, when they describe, criticise, or propose preferable futures, futurists need some methods by which to assess the values they use to make such judgements, and to justify them to other people.⁷⁵ Futurists have appealed to values such as the quantity and quality of human life (both considerations of freedom and wellbeing), perceived life satisfaction, and happiness on the individual level, social harmony, sustainability, effectiveness, efficiency, equity, and the life-sustaining capacities of the Earth itself. Other candidates for worthy (and possibly universal) values include the desirability of sufficient wealth, knowledge, affection, opportunities for sex and family life, respect for authority, loyalty, courage, perseverance, cooperation, honesty, generosity, helpfulness, friendliness, trust and self-realisation.⁷⁶

In making one's way in the world, the only really useful knowledge is knowledge of the future. This

in making one's way in the world, the only really useful knowledge is knowledge of the future. This assumption follows from the fact that the past no longer exists: it is closed. Although we can learn more about the past as we dig up more facts, and although we can reinterpret the past and change our thoughts about it, we cannot change the past itself. But the future is different, because it has not yet happened. The future might still be bent to human will. Even imminent events beyond human control may be adapted to successfully, if they can be anticipated.

People must speculate about the future in order to manage their daily lives intelligently and effectively. Consciously or subconsciously, they make contingent and corrigible predictions and act on them: in general, the better their predictions, the more effective their actions will be. They organise their lives by train, bus, and aeroplane schedules; by the ebb and flow of the tide; by when a football game or newscast is scheduled on radio or television; by the opening and closing times of business establishments; by the schedules of schools and universities; and by the announced timing of civic events such as concerts or parades.

People act on their expectations about the future behaviour of the weather, the stock market, the cost of housing, and interest rates. They organise their own actions according to their anticipations of the day the garbage gets picked up, when church services will be held, and the chances of getting into medical or law school after college. For sensible action, even driving a car requires predictions about other vehicles. Hopes and fears, expectations for the future, estimates of future consequences of present behaviour, and predictions of the behaviour of other people and phenomena beyond human control help govern our perceptions of the options for action and the choices that may be made among them.

Under some circumstances, lessons of the past can be used to help guide the future: ie. knowledge of the past is one way to learn something about future possibilities, but this learning must be creatively transformed if it is to be useful. This transformation seems natural to people because they casually change their knowledge of the past into expectations in their daily lives. This transformation also involves a speculative leap that may or may not be warranted. The past cannot be accepted uncritically, in its raw and unadulterated form, as a reliable guide to the future because, contrary to the well-known aphorism, history seldom if ever repeats itself. A lesson of history must be relevant and appropriate to the new present and the coming future. The criteria used to assess its relevance need to be examined. The speculative leap involved in transforming hindsight to foresight must be made explicit and questioned in terms of cogency. To fail to project past knowledge adequately into the future results in preparing for yesterday rather than tomorrow.

There is no knowledge of the future: this is the paradox of futures research.⁷⁷ Although there are past facts, present options, and future possibilities, there are no past possibilities and no future facts. It is this paradox that futurists aim to resolve: the need to know before the fact what is, in some sense, largely unknowable until after the fact. It is this gap that futurists attempt to fill with conjectural or surrogate knowledge. Futurists make contingent, corrigible, and approximate assertions about the future: eg. 'This may happen if you do nothing' or 'That might happen if you do x, y, or z'. Futurists attempt to ground such assertions in fact and logic in an attempt to make them 'presumptively true'.

But futurists know that such assertions may not turn out to be 'terminally true' when the future becomes the present, because the future is uncertain. It cannot be observed. Reichenbach expresses an extreme version of this view: 'A statement about the future cannot be uttered with the claim that it is true; we can always imagine that the contrary will happen, and we have no guarantee that future experience will not present to us as real what is imagination today'.⁷⁸ Thus, futurists must face the paradox of the need for information about the future to provide people with the tools to act intelligently, and the impossibility of obtaining certain future knowledge.

But all is not lost. At the level of knowledge theory, Musgrave has shown that conjectural knowledge (ie. justified belief in a proposition) is possible.⁷⁹ Moreover, within what he calls a 'critical realist theory of knowledge', justifying beliefs about the past and the present is not fundamentally different from justifying beliefs about the future. Everything depends on making serious efforts to refute propositions, and then tentatively accepting those that are not refuted. In sum, we can objectively and rationally justify

and men tentatively accepting those that are not refuted. In sum, we can objectively and rationally justify our belief in a proposition, even if we cannot justify the truth of the proposition itself. If such a justified belief in a proposition about the past, present or future turns out to be wrong, we say, 'Yes, the proposition is wrong, but we weren't wrong to believe it.'

At the level of practical techniques, futurists have adapted or invented a variety of methods to justify the reasons for their belief in particular assertions about the future. People can act on such justified beliefs *as if* they were true, even though they are provisional, contingent and conditional. Therefore, the futurist's task is to assess clearly just how warranted such assertions are. Many standard methods of research are used in futures studies, from sampling techniques and statistical analysis to data-gathering, surveys and participant observation. It is important to have an accurate and detailed description and analysis of past trends and initial conditions of the present to use as a basis for both forecasting and designing the future. All such methods may be of use in specifying 'what was' and 'what is' in preparation for proposing 'what will be', 'what might be', 'what could be', or 'what ought to be'.

Moreover, there are many aspects of past and present realities that have some bearing on the future and these, too, can be studied using the standard methods of science and social science. They include people's:

1. present images of alternative possible futures;
2. expectations of the most probable future;
3. goals, values, attitudes and preferences among perceived alternative futures;
4. present intentions to act in particular ways, such as how they intend to vote, to invest, or to buy;
5. obligations and commitments to others (because they define expected behaviour and are often reinforced by social norms);
6. history, traditions, and experience, including past decisions on given phenomena (not only because they are baselines, but also because they contain prescriptions and proscriptions for future behaviour); and they include
7. trend analysis of time series data; and
8. present possibilities for the future.

In the last case, such possibilities are real and can be studied. Science, for instance, is full of examples of the study of possibilities, or 'dispositionals' as they have been termed.⁸⁰ For example, a fragile glass may never be broken, but there is a real (present) possibility that it could be broken: it really *is* breakable. Studying such possibilities results in an empirical basis for warranted assertions about possible futures.

Also, futurists use the technique of restating explanations as predictions. Futurists can make predictions based upon explicit assumptions which are then critically examined for their plausibility. Then, by restating causal knowledge based on past evidence, they are able to make contingent predictions. A scientific explanation has the same logical structure as a scientific prediction, except for one feature: the time perspective. Statements such as 'If, and only if, x, then y with some probability p under certain conditions c' summarising past evidence can be used to make assertions about the future through changing the time orientation from past to future. This requires that such statements be evaluated for their appropriateness, just as any knowledge of the past must be so evaluated if it is used to make assertions about the future.⁸¹ Thus, futurists have developed their methods, either by adapting existing methods or creating new ones to achieve their special purposes.⁸²

Conclusion

Futurists and others pursuing futures-related research have created a diverse and extensive literature. Taken as a whole, it contains discussions and evaluations of the dominant images of the future for our time. Whether they are likely or unlikely, desirable or undesirable, small- or large-scale, these images constitute a rich tapestry of possibilities, probabilities, and preferences. These are then used to inform the thinking, choosing, and acting, both of ordinary people and leaders, as they attempt to steer themselves and their groups, organisations, and even entire societies toward what they regard as the best possible

and their groups, organisations, and even entire societies toward what they regard as the best possible future.

Futurists have many different substantive concerns, and each one carries implications for alternative and competing images of the future. There is, for example, the important topic of population growth. Already, the Earth's population has reached six billion. Are we headed for an Earth of ten or eleven billion people before the end of the twenty-first century? Can all those additional people be accommodated without violent conflict? If not, can population growth be slowed? What is the optimal total human population for the Earth that will maximise the chances of a long and satisfying life for every living person? How can such a target population and the means to achieve it be agreed upon among the diverse peoples of the Earth?

Population growth is related to several possible future dualities such as abundant food for all or mass starvation, depletion or preservation of natural resources, environmental damage or protection (from air pollution and acid rain to ozone depletion, the Greenhouse Effect and the flooding of coastal areas), a thriving and prosperous economy versus a depressed economy, and a world spending its wealth on weapons or on human wellbeing.⁸³ The question is: Can we create sustainable human societies?

What will the future bring? Futurists claim that it largely depends on the choices that people make and the actions that they take today. Futurists try to contribute to informed and wise choices by systematically studying possible, probable and preferable futures. This activity is buttressed by information dissemination, planning, and participation in public discussions on what constitutes the most desirable future, and the best ways to create it. Futurists aim to challenge popular thinking by encouraging a critical examination of people's current behavioural routines; considering alternatives; searching for overlooked possibilities; analysing goals and values; becoming more conscious of the future and the control they may have over it; as well as caring about the freedom and the wellbeing of future generations. Clearly, futures education is needed to make people aware of alternative images of the future.⁸⁴

Whether or not the futurist's message will be heeded in the years to come remains to be seen. What is without doubt is that the future is now being prepared, largely by human actions that have already been taken, that are being taken, and that will be taken. Although we do not know our destiny, some kind of future is coming, whether we like it or not. Spaceship and Time Machine Earth travels inexorably on and on, and we humans will share a common fate of our own making. Will the human experiment end in the hate, violence and destruction that now threaten us, or can we seize our opportunities and write a chapter of compassion, peace, cooperation and justice in the book of time?

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About the author

Wendell Bell, Professor Emeritus of Sociology at Yale University, has been a futurist since about 1960. He introduced futures studies courses at Yale beginning in 1967. Soon after, he completed co-authoring *The Sociology of the Future*. He is the author of many papers on FS and two classic works of futures scholarship: *Foundations of Futures Studies: Human Science for a New Era* vols 1 & 2 2003/4 (1996), Transaction Pubs, New Brunswick, USA.

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