The Future: A Very Short Introduction

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Publisher: Oxford University Press
Print ISBN-13: 9780198735281
DOI: 10.1093/actrade/9780198735281.001.0001

Print Publication Date: Mar 2017
Published online: Mar 2017

2. The future multiplied

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https://doi-org.libproxy.newschool.edu/10.1093/actrade/9780198735281.003.0003 <https://doi-org.libproxy.newschool.edu/10.1093/actrade/9780198735281.003.0003>

Published in print: 23 March 2017

Published online: 23 March 2017

Abstract

What if there is not one future that can be colonized and controlled, but many possible futures that can be imagined, designed, and created collaboratively? In everyday language we speak of a singular future, which has both conceptual and political implications. ‘The future multiplied’ outlines early future research —influenced by scientific positivism—with its predictive-empirical approach, then discusses pluralism in

> the social sciences and the shift to multiple futures thinking. Pluralizing the future opens it up for envisioning and creating alternative futures to the status quo. The chapter concludes with a variety of methods used in multiple futures research approaches, including the four-step Swinburne methodology used in strategic foresight applications.

The urge to predict the future

Some who know my work in futures studies may wonder at the singular word ‘future’ in the title rather than the plural form of ‘futures’. Because of my enduring interest in encouraging diverse cultural groups, including young people, to envisage and create their preferred alternative futures, it was initially a challenge for me to accept the publisher’s suggestion to use the singular form: future. On reflection, I took the challenge as it enables me to clarify how the concept of a singular future is inherently power-laden. It also encourages me to articulate the emergence of the concept of multiple futures in the 1960s and to explain why pluralism is important for the democratization of the future.

While in everyday language we may speak of the future as if it were singular, this has both conceptual and political implications. The pluralization of the future opens it up for envisioning and creating alternative futures to the status quo. It creates the conceptual space for an exploration of how the theory and practice of futures studies plays out in different geographical regions today and how the field is diversely represented by scholars, practitioners, and researchers, globally.

p. 45 ↲ Historian Jenny Andersson places the quest to domesticate the future, and bring it under control through a general theory of prediction, within the early Cold War period and up to the 1950s and 1960s. She refers to the RAND Corporation’s specialization in trying to perfect the science of prediction through developing ‘a diverse range of predictive techniques, mainly based on mathematical methods and relying on the newly acquired computer power’. In the introduction to her 2015 book with Egle Rindzeviciute, *Midwives of the Future*, Andersson describes this as follows:

> RAND built an epistemic Cold War arsenal: these techniques were used to know an enemy whose future behaviour was to be revealed through forms of virtual experimentation and ‘synthetic fact’ in the absence of conventional knowledge.

German-American philosopher and mathematician Nicholas Rescher, who himself worked with RAND in the 1950s, published *Predicting the Future* in 1998. Rescher opened his book with the claim that ‘prediction is our only cognitive pathway into the future’ suggesting that the quest to predict the future was alive and well almost a decade after the Cold War ended. He describes the book as an attempt to develop a general theory of prediction, which he paraphrases as a theory of forecasting. Rescher clearly regards the terms prediction and forecasting to be synonymous, although some futurists would distinguish between them. Jorgen Randers, co-author of *Limits to Growth* with Dennis and Donella Meadows, avoids the word prediction in his recent book *A Global Forecast for the Next 40 Years: 2052*, referring to a forecast as ‘an educated guess’.

Future prediction and scientific positivism

Early future research, particularly in the USA, was influenced by the scientific theory of positivism, and relied
p. 46 heavily on empirical ↲ methods, based on classical Newtonian physics, with its mechanistic—and thus predictable—view of human nature. Wendell Bell captures a central principle of positivism as 'the belief that science involves the idea of the unity of science, that there is, underlying the various scientific disciplines, basically one science about one real world'.

The idea of 'the one predictable future' is tied to this central tenet of scientific positivism. Another key feature of positivism is that its claims are testable and verifiable through empirical observation of reality. Empiricism is the primary method of positivism and the terms are sometimes used interchangeably. Because empiricism was regarded as the only proper way to study and know about the world in the early 20th century it is understandable that the early futurists used empirical methods to 'predict the future'. They were trying to establish the study of the future as science.

German physicist, economist, and sociologist Rolf Kreibich co-founded the Institute for Futures Studies and Technology Assessment (IZT) in Berlin with Flechtheim, and led it from 1981 to 2012. Kreibich describes the singular future approach in *All Tomorrow's Crises* as follows:

> Conceptions of the future increasingly focused on one single path, that of the scientific-technological-industrial expansion of all aspects of life. This tunnel vision of a future determined by science and technology affected agriculture, home economics, the production of goods and services, domestic security, military technology, consumption patterns, the health care system, and even leisure and culture.

The predictive-empirical approach to studying the future originated with the Research Committee on Social Trends in the USA led by Ogburn. Forecasters such as Kahn, Gordon, Helmer, and others from the RAND
p. 47 Corporation and the Institute for the Future extended the methods used. Futurists in the USA and ↲ USSR prior to the 1960s and throughout the Cold War continued to develop predictive methodologies using mathematics, modelling, simulation, and gaming. Both the Americans and the Soviets used what Andersson and Rindzeviciute call the RANDian techniques 'to make the Cold War more foreseeable and therefore manageable from both sides'.

Masini refers to this group of futurists as being 'technologically-oriented [in that they] pursue futures studies based on technological processes'. Peter Moll refers to this as the conformist, extrapolative approach, which 'emphasises prognosis, planning, technological and economic forecasting'. Slaughter uses the term 'empirical/analytic' for this approach.

One of the strengths of the predictive-empirical approach is its perceived objectivity and values neutrality. Its weaknesses include narrowness in focus and lack of contextual awareness. It also implies that trends are inevitable and this can be disempowering if the trends are negative.

In *L'Art de la conjecture* (1964) (translated as *The Art of Conjecture*, 1967) de Jouvenel distinguished between what he called 'historical prediction' and 'scientific prediction'. Scientific prediction for de Jouvenel is the core business of the methods appropriate to the physical sciences: 'the progress of science and technology thus amounts to a building up of our corpus of predictions'. The systematic practice of repeating laboratory experiments and controlling variables is to establish the proofs of our hypotheses and the predictability of our theories.

De Jouvenel went on to expand on the uncertainties even within scientific prediction, claiming that even when it comes to predicting the weather, we are at a loss to make safe predictions more than about one day out. While it is fair to say that meteorological prediction has improved since the 1960s, it is also true that in the 21st century
p. 48 hurricanes, tsunamis, and flash floods can still ↲ catch us unprepared. When it comes to long-term climate change we know a lot about the past. Based on this we can extrapolate with reasonable confidence that continued increases in carbon emissions will increase global warming and contribute to massive climate crisis. We can also estimate the kinds of damage this might do to the environment, particularly in relation to the damage to coastal environments from rising sea levels. However, we cannot predict with certainty whether the changing climate will increase or decrease rain or drought in particular areas. Although climate change is amenable to scientific study, the complexity of it makes it impossible to predict in detail. In the absence of clear prediction, and because of the enormity of the potential harm that can be caused by unmitigated climate crisis, we need to employ the precautionary principle. The precautionary principle is defined by the European Union as follows:

> When human activities may lead to morally unacceptable harm that is scientifically plausible but uncertain, actions shall be taken to avoid or diminish that harm.

De Jouvenel contrasts his scientific prediction with his historical prediction in relation to human behaviour. With respect to future events involving the complexity of human beings, he claims we have about as much chance of success using the methods of scientific prediction as we might have with ancient methods of divination. This is because of both the complexity of humans and their socio-cultural contexts and the additional uncertainty introduced by the changes of historicity. De Jouvenel challenges Comte's 19th-century claim that political science is a special kind of 'social physics' and can therefore be predicted. In de Jouvenel's view Comte was 'confusing scientific prediction and historical prediction—two very different things'.

Rescher, writing at the time of the translation into English of de Jouvenel's book, provides a useful description of
p. 49 predictive ↲ methodologies used in empirical futures research in *The Future as an Object of Research* (1967). After his qualifier that there is good reason for the 1960s rejection of the scientific methods of prediction, particularly with respect to social science, Rescher lists three predictive instruments in use at the time. The first two resemble de Jouvenel's two approaches.

> Basically three items of predictive methodology are at our disposal: the extrapolation of historical experience, the utilization of analytical models, and the use of experts as forecasters.

Rescher expands briefly on the method of projection into the future of current trends and tendencies developed by Ogburn in the 1930s, claiming that everyone is well aware of both its usefulness and its drastic limitations. He argues that, in the light of rapid scientific and technological change and its social impact (this was the 1960s), the method of historical extrapolation is ineffective. This resembles de Jouvenel's historical prediction. Secondly, Rescher dismisses analytical prediction (resembling de Jouvenel's scientific prediction)—at least for complex social systems. While acknowledging that the analytical model of prediction works well for astronomy, meteorology, and even economics, Rescher is far more sceptical when it comes to 'the processes of scientific innovation, technological invention and diffusion, and the unfolding of patterns of social change'. So far the two are in agreement.

Rescher, however, proposed a third predictive method, 'the systematic (and preferably structured) utilisation of expert opinion and speculation'. He views it as being the most suitable and successful way of forecasting in the technological, scientific, and social domains. Rescher along with Olaf Helmer and Norman Dalkey invented the

Delphi method of forecasting. The Delphi is the method of choice for the global projects of the Millennium Project. Jerome Glenn, Theodore Gordon, and others publish their findings annually as *The State of the Future*.

p. 50 The predictive approach tries to arrive at the one and only future that empirical trends suggest, and is referred to as the probable future, in which 'trend is destiny'. The empirical-predictive approach still dominates the futures literature base, and the popular media view. The founding of the World Future Society in the USA in 1966 supported the establishment of predictive methods for broader, non-military purposes and also helped to popularize studying the future.

The urge to colonize, control, and domesticate the future through prediction and forecasting has not disappeared. It is still a powerful mode of trying to come to terms with uncertainty. Those working to develop more accurate means of prediction are attached to the idea that the future is singular and can be known scientifically, if only we can find methods that are robust enough. More novel ways to cheat future uncertainty appear in Philip Tetlock and Dan Gardner's 2015 book *Superforecasting: The Art and Science of Prediction*. The authors identify several apparently ordinary people that they call superforecasters. They discovered, through a crowd-sourced forecasting tournament process, that their superforecasters had much better success than average in the tournaments. Tetlock and Gardner admit that there is some luck involved in their approach, which, in the end, relies on probability.

Prediction, forecasting, and even superforecasting rely on there being a single future out there waiting to be predicted. Ironically, Rescher's well-argued thesis strengthens the case that, when it comes to the complexity of human affairs, our future is substantially intractable. He claims that we are effectively impotent in matters of shaping the future, because of the future's 'imperviousness to our control'.

The question we are left with here is this: 'If our lack of ability to *control the future* makes us impotent with respect
p. 51 to it, as Rescher claims, are there other options for us if we stop trying to control the future?' (See Box 1.)

Box 1 Arthur C. Clarke's Three Laws of Prediction

On a slightly lighter note, science fiction writer Arthur C. Clarke formulated three 'laws' of prediction:

Clarke's 1st Law: When a distinguished but elderly scientist states that something is possible, he is almost certainly right; when he states something is impossible, he is very probably wrong.

Clarke's 2nd Law: The only way of discovering the limits of the possible is to venture a little way past them into the impossible.

Clarke's 3rd Law: Any sufficiently advanced technology is indistinguishable from magic.

The crack in the future egg

What if there is not *one future* that can be colonized and controlled, but *many possible futures* that we can imagine, design, and create collaboratively? In the wake of two world wars and the Great Depression individuals committed to democratic, global futures sowed seeds for the pluralistic futures studies field. From the 1950s pioneers from systems science, sociology, peace research, journalism, theology, and media navigated futures studies away from the military-industrial complex towards more humanistic, peaceful, and egalitarian approaches.

Several significant developments occurred in quick succession. In 1954, Ludwig von Bertalanffy, Kenneth Boulding, and others founded The Society for General Systems Research at Stanford University and Robert Jungk published *Tomorrow is already Here*, a powerful critique of the US approach to what he called the colonization of the future. Polak published *The Image of the Future* (1955), which is viewed as a foundational text on imagining alternative futures, even today. Berger founded the Centre International de Prospective (1957)
p. 52 beginning the French activist ↲ approach to futures. Norwegian peace researcher Johan Galtung founded the Peace Research Institute (1959) in Oslo. French palaeontologist and theologian Pierre Teilhard de Chardin published *The Future of Man* (1959), an important text in the evolution of consciousness literature. Bertrand de Jouvenel and his wife Hélène founded the Association Internationale de Futuribles (1960) in Paris.

These individuals and the organizations they founded were philosophically and practically engaged in developing theories and methods of futures studies that were human-centred and differed dramatically from the state planning and RANDian predictive approaches with their primary emphasis on war scenarios.

Andersson claims in *The Great Future Debate* (2012) that by the end of the 1960s there were two movements of futures ideas competing for the future of the world itself. The empirical science of predicting (or forecasting) the future, supported by the military effort, was still dominant in North America. The more critical and sociological approach, emerging in Europe and elsewhere, was committed to making the powerful concepts and methods of futures thinking widely accessible.

Pluralism in the social sciences

Wendell Bell contrasts the positivist idea of one science to study one real world with the belief of post-positivists that ‘science does not constitute a unity … Rather, science is viewed as being composed of many different “knowledges” each relative to a particular topic and community of scientists.’ This idea of multiple knowledges is central to the shift in social science thinking to a pluralistic worldview.

Critiques of positivism and empiricism came from scientists, and social scientists, such as Thomas Kuhn, Karl
p. 53 Popper, Jürgen Habermas, and critical theorists of the Frankfurt School to name a ↲ few. By the end of the 1960s many theorists no longer considered positivism to be a plausible theory of knowledge, particularly in the social sciences. A central feature of post-positivism, broadly defined, is pluralism.

When futures studies was emerging as an academic field major changes were taking place in the way scientific research was conceived and practised. This shift within science paved the way for pluralism across the social sciences. Social scientists developed and worked with a diverse range of qualitative methods, better suited to social science research than quantitative methods.

German philosopher Habermas made important contributions to post-positivist methods. He distinguished three philosophical research interests: technical interests (through positivist methods for obtaining instrumental knowledge); practical interests (through interpretive/hermeneutic methods for obtaining practical knowledge); and emancipatory interests (through critical methods for obtaining emancipatory knowledge). Future prediction is aligned to Habermas’s technical interests.

The shift to multiple futures

The 1960s and early 1970s were exciting and prolific times globally for new ideas, radical scholar activism, and hope in transformational ideas and process.

The leading edge of science had moved on from the closed-system mechanical worldview where everything is predictable, to embrace the quantum and organic worlds of open possibilities, chaos and complexity, and self-adaptive organization.

Likewise the cutting edge of futures thinking in Europe was running parallel with the shift from positivistic science
p. 54 to the new pluralism of the social sciences thus challenging the predictive ↲ approach. The first step was to shift from the idea of a single future to multiple possible futures.

By the late 1960s futurists held the first world conferences on futures studies. The new pluralistic philosophy was emerging largely in Europe. The pioneers of this movement focused their research efforts on 'such enemies as urban sprawl, hunger, lack of education and growing alienation'. These were the goals of the First International Future Research Conference: Mankind 2000 (Oslo, 1967) initiated by Jungk, Galtung, James Wellesley-Wesley (1926–2007), and others. As Jungk stated in the published proceedings, *Mankind 2000* (Jungk's italics):

> It is in the power of the rich nations not only to search and research, but also to define and redefine the future and to propagate their images along the lines of world communication already so biased in their favour. And this is *power*: he who has insight into the future also controls some of the present.

German historian of the future Elke Seefried explores the late 1960s shift to reconceptualize the future in plural terms in her article *Steering the Future* (2014). Her evidence comes from two documents. The first was written in 1967 by Helmer of the RAND Corporation, in which Helmer refers to 'a multitude of possible futures'. The second is the first information brochure of the Berlin Centre for Futures Research (Zentrum Berlin für Zukunftsforschung), founded in 1968, which stated: 'One begins to realise that there is a wealth of possible futures and that these possibilities can be shaped in different ways.' Seefried notes that this shift from singular to plural futures arose through what she calls 'circulating knowledge' but does not explain how this came about. Moreover, she concludes that: 'the new meta-discipline of futures research was built on the assumption that a multitude of possible futures existed, which could be estimated, forecast and manipulated.' With this conclusion, Seefried uncritically adopts Helmer's predictive-empirical view.

p. 55 ↲ I want to build on Seefried's research by exploring how the circulating knowledge occurred and demonstrate that there are several approaches to multiple futures, which do not require that they be 'estimated, forecast and manipulated'.

De Jouvenel introduced the idea of plural futures with his term futuribles in 1960. He stated that: 'Futuribles … means possible futures, with an emphasis on the plural.' Jungk highlighted the fact that de Jouvenel's pioneering and creative work played a crucial role in the circulating knowledge referred to by Seefried. In his preface to the book *Mankind 2000*, proceedings from the First International Futures Conference, Oslo, 1967, Jungk made three statements that when taken together establish the Mankind 2000 Conference as a key to the pluralization of futures.

First, Jungk quoted Helmer, a Mankind 2000 participant, who reported the conference as a sign of the emergence of 'a new breed of modern-day constructive utopians, who will invent not only better futures, but the social instrumentalities of attaining them'. Secondly, Jungk makes the point that 'In the Federal Republic of Germany, where futures research had not yet existed, participants of the First International Future Research Conference [Mankind 2000] founded the … Zentrum Berlin für Zukunftsfragen.' Thirdly, Jungk referred to the founding of new

journals in Europe that ‘will group around the oldest and most important publication of this kind (“Analyse et Prevision”) founded and headed by Bertrand de Jouvenel’ whom Jungk goes on to call the dean of the futurist movement in Europe.

Finally, I discovered in a 1976 *Futuribles* article on the Futures Centre in Berlin (Zentrum Berlin für Zukunftsforschung, ZBZ) that Jungk himself was a founder of the Centre in 1968, after returning from the Conference in Oslo, having met and discussed ideas with Helmer, de Jouvenel, and other participants. Without a doubt, the Oslo meeting played a vital role in Seefried’s ‘circulating knowledge’.

p. 56 ↲ In summary, Mankind 2000 and subsequent events that spun from it marked the birth of the post-positivist turn in futures studies: the how, when, and why ‘the future’ became ‘a multitude of futures’. This was also the moment when Jungk, Galtung, and others initiated the discussion about creating ‘a world federation’ for futures studies leading to the founding of the World Futures Studies Federation (WFSF) in 1973. De Jouvenel was the Founding President of the World Futures Studies Federation (1973–4) and Galtung was its second President (1974–7). The idea of multiple possible futures evolved as futurists developed more nuanced perspectives.

Democratizing futures in civil society

Post-war historians of the future are inclined to view the forty-five-year period between the end of the Second World War and the end of the Cold War as being the most interesting and worthy of research. Seefried notes the loss of confidence in systems analysis and large-scale modelling projects from the 1970s, along with what she calls the greening of futures research after the landmark Club of Rome report *Limits to Growth* (1972). This greening involved ‘an orientation towards ecology and human beings, their needs and values, rejecting a “cool” techno-scientific and “material”-based understanding of progress’.

Korean sociologist Hyeonju Son’s history of Western futures studies from the 1990s seems more American- than European-influenced. He refers to the ‘neoliberal view and a fragmentation of the futures field that began in the 1990s with the end of the Cold War’. Although Son acknowledges the rise of critical futures studies and small local participatory projects, he concludes that futures studies has been overcome by the neoliberal project, and dominated by a foresight approach beholden to the economic imperative. Son claims:

> The practical utility of foresight tends to marginalize futures studies in relation to the moral commitment confronting humankind, a vision of a humane future, and the future of others.

p. 57 ↲ Andersson brushes off the 1990s and 2000s as being a period when futures studies became a consultancy-based practice, claiming that ‘professionalisation and organisation was, in the end, more important than epistemological shape’. Andersson refers to the history of futures studies as being uncharted territory but numerous histories of futures studies have been overlooked. While Seefried describes the demise of government forecasting, and Andersson and Son bemoan the growth of neoliberal, consultancy-based foresight practice, they are all looking in a narrowly Anglo-European direction. What is missing from these histories is the rise of futures studies in global civil society and the realization that its centre of gravity had shifted.

The USA led the development of the predictive approach in the 1950s and 1960s, with Europe taking its pluralistic stand in the 1960s and 1970s. Bell claims that by the 1970s it was ‘a social movement [that] encouraged the self-identification of participants as futurists’. Futurists were disseminating and exchanging new ideas, concepts, and methods through the 1980s’ geographic diversification.

In Mexico, the Fundación Javier Barros Sierra was founded in 1975 as an organization exclusively devoted to futures studies. Futures conferences, courses, and projects were emerging in hot spots around the globe. For the next thirty years WFSF, often with the support of UNESCO, held conferences in such diverse places as Paris (1974), Berlin (1975), Dubrovnik (1976), Warsaw (1977), Cairo (1978), Stockholm (1982), San José, Costa Rica (1984), Honolulu (1986), Beijing (1988), Barcelona (1991), Turku (1993), Nairobi (1995), Brisbane (1997), Philippines (1999), Brasov (2001), Kure, Japan (2002), and Budapest (2005). As well as world conferences, WFSF held regional meetings and introductory futures courses in dozens of countries, including Indonesia, Mexico, the Netherlands, Switzerland, Bulgaria, Russia, Iceland, France, former Yugoslavia, Italy, Thailand, and Malaysia.

p. 58 ↲ The move of the WFSF Secretariat to Australia in 1993 was an indicator of what Wendy Schultz calls the Pacific Shift. Schultz also points to new futures programmes and journals and 'the explosive growth of interest in futures practice in [Taiwan], Singapore and South Korea, in India and Thailand and Pakistan' as indicators of geographic and cultural diversification beyond the USA and Europe.

> The Pacific Shift is not only a shift towards deeper understanding of the hidden social and cultural determinants of our futures, but also a shift from the formalization of futures thinking in Europe and the USA to vibrant communities of futures practice throughout the Pacific Basin and Asia.

Continuing this commitment to diversity, WFSF partnered with the UNESCO Participation Program (2012–15) to run introductory futures programmes and workshops for disenfranchised women and young people in such diverse locations as Cairo, Penang, DR Congo, Mexico City, Haiti, and the Philippines. These programmes continue the democratic and human-centred futures tradition initiated by the Mankind 2000 founders, thus consolidating the establishment of plural futures.

From personal to global futures

When researchers or practitioners work with future images with their client groups it is important that they specify a spatial range. The range of potential spheres of interest can include personal, local, regional, national, or global/planetary futures. Personal futures work is an approach developed by North American futurist Verne Wheelwright. He describes personal futures as involving explorations of the future of one individual, and the futures that directly involve that individual and their family. Wheelwright's approach consists of building a framework of information about a person's life; exploring their plausible futures with scenarios; developing a vision
p. 59 of their future and strategies to achieve their ↲ vision with action plans. At the end of this process, the individual should have an overview and a vision of their life, specific plans for the next stage of life, and contingency plans to deal with changes.

Some futurists work within the scope of their local community or neighbourhood, engaging members of a school, a business, or a local council in visioning and scenario building for their locality. A good example of this work is Merrill Findlay's workshop Imagine the Future Inc., which was operating in inner suburban Melbourne in the late 1980s. Others work more from a national or regional perspective. Finland is an example of a strongly futures-oriented nation. The Finland Futures Research Centre is a university-based research institute offering Masters and Ph.D.s; the Finnish Society for Futures Studies is an association of most of the higher education institutions in Finland. There is also a Parliamentary Committee on Futures Studies within the Finnish government. In France

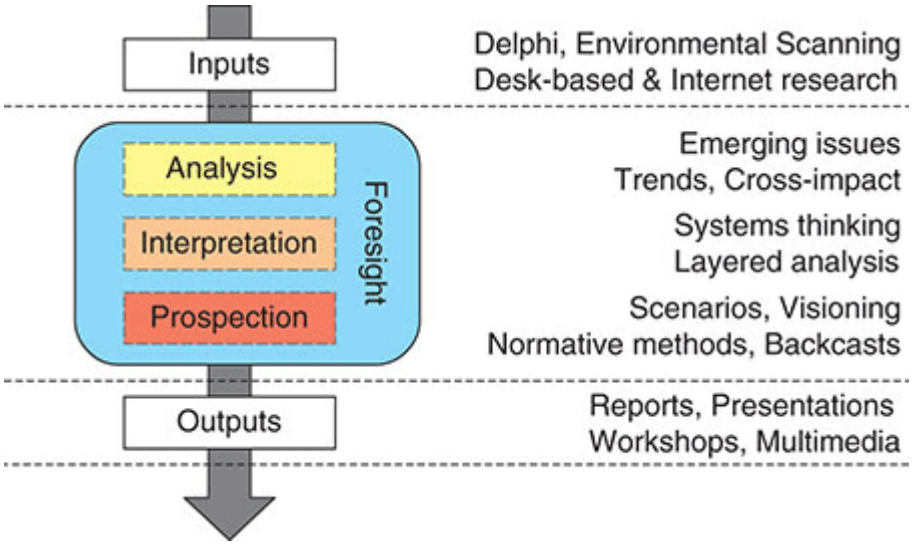
this is called territorial futures. Extending beyond the nation-state, some futures research links with regional planning and urban studies. The WFSF Ibero-American Chapter is very active in the Latin American region. Other groups are active in Europe, South-East Asia, and so on.

The democratization of social participation through the Internet and mobile devices has created new concepts of space. These emerging future spaces include ‘g/localization’, which is adaptation of a product or service specifically to each locality, and ‘glonacal’, an integration of global, national, and local space. Language-based groups of futurists publish in their own language, the most prolific being Spanish, French, German, Hungarian, Finnish, Arabic, and Farsi. As the planet grows smaller, more futurists are taking a global, or planetary, perspective.

Multiple futures methods

There are a few simple techniques to open up thinking into the future space. These can be compared with ice-
p. 60 breakers in other ↲ settings. These introductory techniques are simple to use, have a relatively limited focus, are predominantly task oriented, and are not restricted to a futures orientation. They include futures time-lines, mind maps, futures wheels (a variant of mind maps), and flow-scapes.

Slaughter developed a four-step methodological approach to use in strategic foresight applications. Joseph Voros adapted this and I call it the Swinburne approach as it was developed in parallel with the Masters of Strategic Foresight course at Swinburne University in Australia, founded by Slaughter in 2000. The four steps include many of the futures methods that can be found in other collections. Useful features of this approach are that there is choice and flexibility within each major step and that the methods are integrated into a process that foresight practitioners can use in the context of a generic foresight application (see Figure 5).



5. Futures methods as part of Generic Foresight Process.

Input methods are essentially about gathering information. This can be achieved through workshops, online questionnaires, and organizational interviews. Typical methods for obtaining information prior to analysis or
p. 61 strategy development are ↲ environmental or horizon scanning, the futurescan method, the Delphi method,

surveys, and technology assessment.

Analytic methods are primarily concerned with meaning-making. One of the characteristics of analysis from a futures lens is that it provides new perspectives on received wisdom by unpacking the present view of things. Analytic methods can include emerging issues analysis, trend analysis and extrapolation, cross-impact analysis, pattern recognition, discourse and text analysis, and dialogue.

Slaughter's third cluster is paradigmatic methods, which Voros calls interpretive or depth methods. Through interpretive methods we gain deeper insights into the information that has already been gathered and analysed. Interpretive methods that arise from futures research include Galtung's macrohistory and Inayatullah's causal layered analysis. Beyond futures studies we find systems thinking, hermeneutics, and mixed methods such as bricolage, which can all be used to deepen futures understanding. Wilber's integral methodological approach (integral operating system) is used in the integral futures approach. Ethnography, media critique, and study of cultural artefacts can also be incorporated into futures work.

The fourth cluster of iterative and exploratory methods is, according to Voros, aligned to prospective methods that seek to produce future images. Masini's utopian/visionary perspective aspires to 'transform the present by a *vision* of the future'. Some obvious exploratory/prospective methods include visioning (both individual and collaborative), imagination and creativity, scenario planning, and backcasting, which is reverse planning from the future vision back to the present. Prospective methods include an activism component, like Boulding's 'vision-action nexis'. In this light I include three futures methods that are often overlooked: action research, action learning, and participatory futures workshops.

p. 62 ↲ Before leaving the methods discussion I want to mention the notions of wild cards and black swans that grew out of the upheavals that chaos and complexity theories introduced into prediction and forecasting. 'Wild cards' and 'black swans' are two different terms that futurists use to characterize unexpected future events that are highly improbable but would have significant effects were they to occur.