

TOUCHING THE FUTURE

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It was the nature of the field itself that first appealed to my elemental nature. My fascination with volcanoes, islands, mountain building, plate tectonics, and climate. That was one personal context that led me to the Alternative Futures masters program in Political Science at the University of Hawaii at Manoa. I began graduate school in 1980 and have been involved both with the department and futures studies ever since. My mentor for both my Masters and PhD dissertation was the distinguished futurist Jim Dator, a parent of the field, who established one of the few existing futures studies programs in the world. I was fortunate to be exposed to the academic side of futures studies: ten years in the Hawaii system, three years on the faculty of the Studies of the Future Masters of Science Program at the University of Houston Clear Lake, involvement with the World Futures Studies Federation, and exposure to the emerging literature, leaders, and scholars in the field. I was able to work or collaborate with many of the leaders in the field over the last four decades. Thus, I am an academically trained futurist, with one of the first doctorates in futures studies.

But what is futures studies? Quite simply, it is the systematic and scholarly exploration of alternative futures. It comes in other rubrics as well: foresight, strategic foresight, futurology, prospective, and sometimes simply futures. There is dispute within futures studies regarding whether it is a discipline or not; but most futurists see it as a field of inquiry. Like most academic pursuits, futures studies has theories, methods, landmark texts and studies, and established figures – stretching all the way back to its inception in the aftermath of the Second World War.

There is a growing consensus within the field about some of the assumptions that we hold about the future and futurists. One key

assumption is that the future cannot be predicted. Other than the movements of the sun and stars, human futures are seen as unpredictable due to the complexities of driving forces and behaviour of humans and the environment. While some aspects of human behaviour can be predicted, counterintuitive or unanticipated consequences from technological, social, economic, and environmental events and developments are legion. Borrowing from the language of climatology and weather, good futurists may make forecasts, but they should never make predictions.

A second major and related assumption is that there is no singular future, but an array of alternative futures. Most academic futurists would grant that there is not a single future out there, but probable, possible, and preferred futures. One popular tool to illustrate the idea is the *futures cone* that graphically displays the range of possible and probable futures.

The notion of alternative futures, particularly preferred futures and the idea that we can realise those, was one of the ideas that attracted me to the Hawaii Masters program. The development of futures studies owes a great deal to the work of Fred Polak, another father of the field, who theorised the role of images in alternative futures. Polak argued that the future is largely a result of our individual and collective images of the future: a consequence of the collective images of the future that we have, and the actions that we take based on those images. Dator conceptualised four generic futures based on literature and popular media: Business As Usual, Stagnation and Collapse, Disciplined, and Transformational. But there were many more alternatives possible within the alternative futures universe. For example, the postnormal times theory has three generic futures: extended present, familiar futures, and unthought futures. My dissertation included deep ecology, radical feminist, and spiritual transformation alternative futures.

While futures studies has theories, it has no single theoretical framework. The field has a range of ideological perspectives and borrows freely from other disciplines. However, it's fair to say that the theory environment of the Political Science Department and the Alternative Futures Program was more disposed to critical theory; many contemporary tools and approaches in future studies have been informed by both postmodernism and structuralism, emerging from neo-Marxism, radical feminism, and deep ecology. Poststructuralism has clearly left its

mark on futures studies as well as the humanities and social sciences in higher education in the United States.

Students in the Hawaii program were encouraged to engage in critical thinking and analysis, to become aware of our own biases and assumptions, and consider the Big Picture. My graduate school cohort was influenced by visitors to the university including Emmanuel Wallerstein, William Irwin Thompson, Johan Galtung, and other global thought leaders. Our critical outlook was informed by Dator's instruction to us that in order to understand the next ten years, we needed a good understanding of the past hundred years. Many of us were influenced by historical dialectics, by hegemonic studies, long-wave economic cycles, and deep structures of power such as patriarchy. My worldview was informed by the broad sweep of space and time in science fiction and by popular culture images of the future. Hawaii offered a unique standpoint between East and West, the cultures of Oceania, and a Pacific Shift worldview.

My theory of social change was based on communication theory, in terms of how people accept change. Given that the current era is characterised by rapid change driven by a number of factors, the question of change seemed to be focused on the individual and adaptation to change, along the lines of Alvin Toffler's *Future Shock*. But there are many kinds of change, and one kind of positive social change appeared to be the improvement of human rights over time, and social justice and equality. Over time, my view of social change has been tempered to the extent that every change appears to have impacts, winners and losers, and that the underlying dynamic of progress or growth may itself be problematic. The scope of change is also a key factor, the temporal context, from minutes to eons means that change needs to be seen contextually in terms of impacts over time. For millions of years our human ancestors likely existed on this planet with very little significant change other than the ebb and flow of village life as hunter-gatherers. We are now living in times of accelerating change, but that appears to be atypical compared to the broad sweep of our species' history. I am increasingly convinced that conflict is a leading driver of change: Dator taught us that as the world becomes increasingly globalised, technologically powerful, and diverse culturally, socially, and politically, it will see increased conflict. More recently, postnormal times theory helps better explain the acceleration of change,

the uncertainty, and the impacts of complexity, chaos, and contradiction on politics and daily life.

Methodologies

Two basic methods in the field are trend and emerging issues analysis, seen as essential elements of strategic planning, strategic foresight, and futures studies frameworks. Scholars and practitioners have a variety of frameworks and trends and emerging issues belong in the formative stages of exploring the fabric of the future. For example, Wendy Schultz, an elemental force in futures studies, identifies five critical activities in foresight: identifying and monitoring change, critiquing the impacts of change, imagining alternative futures, envisioning preferred futures, and then planning, teambuilding, and implementing desirable features. Sohail Inayatullah, who pioneered the methodology of causal layered analysis (CLA), identifies the six pillars model of futures studies: mapping tools, anticipating, timing, deepening the future, creating alternatives, and transforming. Both see trend analysis as iterative and integral to the foresight process. Schultz sees it as a fundamental and recursive process and Inayatullah situates trends and emerging issues in the *anticipating* pillar and as the Litany layer in CLA.

Futures studies is a mixed methods phenomenon, a discipline or field characterised by both quantitative and qualitative methodologies and tools. While we may not be able to predict the future, futures methodologies have helped better explain and understand the topography of the future and the evolving present. Arguably, futures studies represents the first global effort to consider and better anticipate changes wrought by technology, society, and globalisation. Examples of quantitative futures work include straight trend extrapolation, Mic-Mac modeling, and the Delphi process. Qualitative tools are extensive: scenario building, visioning, and emerging issues analysis. Quantitative and qualitative tools are often combined, and mixed methods approaches are seen in academic futures journals. Overall, foresight and futures studies have made their impact on planning at the international level, particularly with regard to climate change, but planning at the city, regional, and national level that includes some futures studies methodologies and components do give

hope that we are beginning to steer our way into our collective futures, rather than bumble our way into the future.

My research and scholarly work has been primarily qualitative, although much of the work I have done is also informed by quantitative concerns, such as the litany of the global *problematique*: species extinction, sea level rise, global warming, and other metrics of human impact on the environment. There are metrics for positive indicators, as well, such as the success of the battle against smallpox, reduction in human starvation and warfare, and rise of a large middle class in the developing world (recognising that all of these will have their own unanticipated consequences). My futures research work has primarily used qualitative trend analysis, emerging issues analysis, wildcards, scenario development, and visioning methodologies. Ultimately, to my mind, this all has to do with sense making, with finding meaning in the data collection, analysis, and synthesis of the changing world around us. While it often occurs in proprietary (corporate) and defence intellectual space, the domain of governments, intergovernmental organisations, and NGOs, the futures enterprise should also be an aspect of basic citizenship, something that schoolchildren, teens, and adults should all participate in, within organisations in their communities and polities.

So, why are trends ‘grist for the mill’? Trends, by definition, are the general direction that some phenomenon is changing or developing. In an industrial society, trends have significant consequences for planning ahead. Resource extraction, manufacturing, and energy use, among many things, are measured and the changes in those phenomena have impacts in a chain of causality on other systems, developments, and the social and political responses to those changes. Trends can be local or global, can measure goods and services, but also attitudes, opinions, and cultural patterns. Some trends are hard to quantify, while others are more precise.

Trends can also be categorised, in the aggregate, as for example, *Megatrends*. Robust strategic planning processes usually include social, technological, economic, environmental, and political (STEEP) trends to contextualise the analysis and decision-making at the corporate or governmental level. Dator’s tsunamis take the trends to their next level: the need to consider the consequences of these global driving forces as they impact our lives at all levels of analysis. Where do trends lurk?

Governments and the UN are a primary source of trend data, as well as trade industry reports, and increasingly available as Big Data on the Internet. Google Ngrams, for example, are a way to measure trending ideas. Data centres are popping up across the developing world to make public data more accessible to both decision-makers and the public.

Emerging issues are those nascent trends that are just beginning to be seen. Given that all trends begin as emerging issues, by the 1960s think tanks and government planners began focusing attention on what is known as environmental scanning or horizon scanning to help identify emerging issues in their infancy and developed strategies to monitor and assess the significance and impact of emerging issues. Put simply, horizon scanning requires reading and monitoring all available literature on a particular subject. The metaphor of the automobile is used as a metaphor for horizon scanning: one does not drive into the future by looking through the rear-view mirror, but by scanning the oncoming environment for potential threats or opportunities.

My first research project at University of Hawaii was as a team member for a Mexico City think tank doing a content analysis of major US periodicals. We were provided with newspaper clippings on Mexico from selected US markets, and a rubric to assess whether the content was positive, negative, or neutral in its tone or politics. We tracked the column inches. The results were proprietary, but I learned a lot about reading between the lines, about cultural assumptions, and about working at a distance with an overseas think tank.

Later, I gained much research experience as an early intern at the Institute for Alternative Futures (IAF), a Washington DC area think tank headed by Clement Bezold. One of my very first tasks was to help reorganise the organisation's library overflowing a large closet. The library contained a large number of books that represented the field at the time, and off prints, photocopies, mimeograph copies of research reports from RAND Corporation, SRI international, and UN agencies. There were topical file organisers across a wide range of topics. The library also had journals and newsletters from the field, international development journals, and a growing subsection on healthcare and pharmaceuticals. (In recent years, IAF research has focused on healthcare and social welfare

futures.) I learned much from absorbing some of the content of the library while I was there, but also about typology and categorisation.

One section of the library focused on trends and trend assessment, and there were a number of recent publications from the Office of Technology Assessment (OTA) and the Congressional Clearinghouse for the Future, both of which had been recently established by Congress. OTA started with a staff in the hundreds, with significant funding, but was later abolished by Newt Gingrich (who claimed to be a futurist) when he became Speaker of the House.

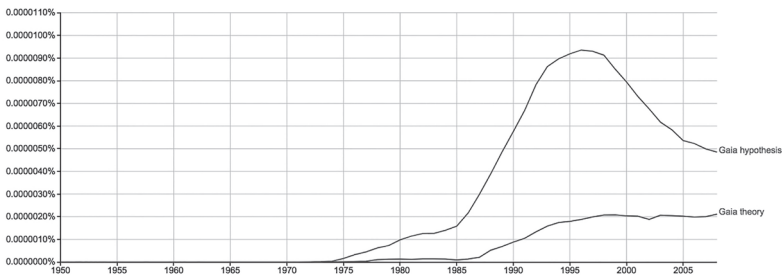
My job as a researcher on a contract for the US Geological Survey (USGS) was to explore emerging issues for inland waters. It had to survey the literature and research and identify the key driving forces and emerging issues related to US water ways. It was my first major effort in developing and using a global typography, and to see the distinction between what was emerging - weak signals - and more robust, developed trends. Data collection involved a systematic search through the IAF library, and trips to the local library in Alexandria and the Library of Congress. I collected reports and publications from government agencies, the USGS itself, the NOAA, NASA, environmental advocacy groups, and DC think tanks. I scanned newspapers, journals, and science periodicals, such as *Science News* to which IAF subscribed. After collecting all this data, reading or skimming it, I summarised and/or captured the trends, issues, and developments related to inland waters, typed them up (high technology then was the Selectric typewriter). I then, using scissors, cutting the page into strips of paper, separated each of the issues and trends, and began to organise them, using rubber cement to fix them to a large piece of newsprint. I organised the trends into clusters or categories, around the central theme of emerging issues in inland waterways, sub themes emerged: competing uses, pollution, agriculture, health and disease, litigation and politics, ecology, and others. After review and some reorganisation with the project team, the trends and emerging issues fell into place on our emerging map.

I learned a great deal about trend and issue analysis, working in a team, and the results of the study were well received by the client. One surprising lesson for me was on typology and our lengthy discussions about the appropriate categories to use to organise our trends and issues

mapping. The categories sometimes seemed to do violence to the ideas, when trends or issues did not neatly fit into one, or overlapped two. We discussed whether it was best to follow the classic STEEP categories, or use the themes that seemed to emerge organically. The mandate of the client was to focus only on US waters, but it was obvious that some issues related to water, things like acid rain/precipitation, were cross-border issues. There were a number of emerging issues/trends that were identified as technically beyond the scope of the project because they originated in Canada. I found that frustrating, but the silver lining was that I was beginning to see things more systemically, and began to understand that systems thinking was part of the solution to many of the problems that seem to be facing the planet.

My biggest internship takeaway was the power of emerging issues analysis, and the relationship between emergent issues or events and longer-term trends that they may or may not evolve into. That has continued to inform my personal and professional life and my commitment to environmental scanning, the identification of weak signals, and how those feed into alternative futures possibilities.

The decade that followed included the completion of my Masters on the alternative futures of space development, and then a PhD that explored the myth and politics of the Gaia hypothesis - both of which used emerging issues, trends, and wildcards to generate alternative scenarios of possible and preferred futures.



A Google Books Ngram (figure) shows that the phrases 'Gaia hypothesis' and 'Gaia theory' emerged in the late 1970s, and the former peaked in the mid-1990s, while the latter has plateaued. What was emergent, has become a trend.

Dator was highly influential in my thinking and training, and was a role model for environmental scanning in the pre-computer era. Multiple times during the year, Dator would close his office door (routinely, always open when he was not in class) and spend the day in Hamilton Library skimming and scanning periodicals. He told us to do the same, and to make the search for emerging issues an ongoing monitoring process in our personal futures. Emerging issues are often found on the fringes. In the pre-Internet era, trends inhabited traditional publishing, trade journals, government statistics, and science journals. Emerging trends were more likely to be found first in newspaper reporting rather than scholarly journals, and also in popular magazines before becoming academic subjects. In the policy area, emerging issues could be found in state legislation before reaching federal attention (particularly harbingers like California), and in new legislative bills before they become law. In many states, bills are reintroduced year after year before they finally get enough support for adoption. Bills early in this cycle would be emerging issues, by definition.

Given the proliferation of technology and social media, the task of environmental scanning, and identifying emerging issues has become both easier, technically, but more complicated given the proliferation of technologies and growing diversity in social and cultural space. Consulting groups, such as the Herman Group and Shaping Tomorrow offer environmental scanning services and newsletters, and arguably any organisation should maintain its own trend and emerging issues monitoring and analysis program. *Fast Company*, *Wired*, *MIT Review* and other periodicals continue to be rich sources of both trends and emerging issues in technology. Web-based services, such as Futurism, also monitor and report on science and technology innovations and impacts on our images of the future.

Even with the proliferation of Internet news and information sources, especially the spread of Creative Commons scientific research and publication, periodicals are still a rich source of technological, cultural, and social emerging issues. One technique adapted from Dator's library scanning we have used in numerous workshops to train students to do emerging issues analysis, is to collect a large number of current magazines, purchased at a bookstore, across a wide range of genre and categories. In the workshop, participants choose from among these, and skim tables of

contents and articles for anything that looks new or novel. That is the first criteria for identifying an emerging issue. At the University of Houston, Schultz developed a workshop tool to assess emerging issues, assessing the item's perceived: novelty, significance, and likely impact. In these workshops, we also asked other questions, for example about alignment of the trend with specific alternative futures. And given that trends do not develop in a vacuum: what are contingent factors or trends that could enhance or temper the emerging change or issue?

During the decade, I was involved as a researcher in another dozen or so projects involving high technology, telecommunications, sea level rise, solid waste, the futures of bureaucracy, the courts, and Antarctica, and climate change. Virtually all of the foresight projects that went through the Hawaii Research Center for Future Studies (HRCFS) contained some form of environmental scanning, often with brainstorming exercises to explore secondary and tertiary impacts of emerging trends. Collaborative qualitative research for the Hawaii Judiciary, managed by Inayatullah, explored a number of emerging issues and trends, such as the rights of robots, digital courts, and high technology and the courts.

Wildcards and the PNT Menagerie

Wildcards are low probability, high impact events or developments. Now more popularly known as Black Swan events, wildcards have been an important part of the discussion about alternative futures, because they have the potential for disruptive change. Wildcards have been called 'blue sky events' as well, because they seemingly come out of nowhere – at least in some cases. Although there were some observers and experts that forecast trouble for the former Soviet Union, few experts anticipated the rapid dissolution of the Soviet Empire and the end of the Iron Curtain. For most people, this was a wildcard event. The aeroplane attack on the World Trade Center on 9/11 was a similar wildcard event, although fiction writer Tom Clancy imagined an aeroplane suicide attack on the US Capitol in 1994.

Other events and developments may have surprising effects like wildcards, what Ziauddin Sardar and colleagues describe as black elephants and black jellyfish – to join the black swan in a post-normal times

menagerie. A black elephant is a highly probable and widely forecast event or development that is ignored or downplayed by the dominant culture or political ideology. An example of the black elephant is global warming, because despite the scientific consensus, climate change deniers create uncertainty about dramatic action to reverse climate change. Black Jellyfish are low probability, high impact events or developments driven by positive feedback loops and convergent trends. The menagerie become a useful and important part of the toolbox to understand the changing dynamics on a global scale. That speaks to the underlying task of competent emerging issues analysis and trend analysis to relate it to alternative futures scenarios, integral futures, and causal layered analysis to provide the context for those emerging issues and trends.

Alternative futures scenario-building, back-casting, and in-casting exercises are necessary to help crystallise the often contradictory, competing, and converging trends. Also, recognising the oversized role of global driving forces, that is macro trends, is also critical to understand the changing dynamics of trends given that none developed in a vacuum. The emergence of post-normal times theory, for example, requires that the context or paradigm for change at the largest scales is changing, which may complicate technology assessment, for example, when the scientific paradigms, political environment, and culture are increasingly characterised by chaos, complexity, and contradiction.

An important feature to appreciate is timing: we need to keep in mind that changes and events occur over different levels and scales of time. Human timescales are measured in decades in terms of longevity, gestation changes occur over nine months, and our heart rate can change in less than a minute. Defence systems are designed to last for twenty or more years. The stock market updates in less than a second. Quarterly reports and election cycles suggest changes over months and years. Planetary systems, however, evolved in tens of thousands and hundreds of thousands of years. The geochemical carbon cycle is millions of years long. Which brings us to the Gaia theory, a Big Picture view of planetary evolution, as an idea, a meme, but also as a theoretical standpoint to understand long scale change.

Many trends are cyclical, such as periods of growth and recession in stock markets, as are geological cycles, ice ages, and even cosmic cycles. I took an interest in ice ages in my early twenties, and was fascinated to see

that our challenge with anthropomorphic global warming coincided with the end stage of the current interglacial period. During my undergraduate years, it was well-established that the last 2 million years or so were characterised by ice cycles that last roughly 100,000 years, but that are separated by warmer ‘interglacial’ periods that typically last 12 to 20,000 years. The regularity of these periods was intriguing, and research led to the work of Milutin Milankovitch, a Serbian mathematician who proposed that orbital forcing due to a wobble of the Earth’s tilt on its axis was the likely culprit for glaciations. The Milankovitch effect has become a popular explanation for this apparent resetting of the planet’s thermostat every hundred millennia or so. Shortly after learning of this likely solution to understanding ice cycles, I read Lovelock’s first book.

Lovelock has continued to deepen and refine the theory, and has crafted strong arguments with his critics. The basic idea is that Earth has a planetary regulatory system, called Gaia, that took shape not long after life evolved on the planet, but has nevertheless managed to maintain ‘optimal conditions’ for life on earth. Gaia has maintained a fairly narrow temperature range, and oxygen and atmospheric balance for hundreds of millions of years. What makes this remarkable is the fact that over the course of life on the planet, solar insolation – that is the total radiant energy output of our sun – has increased, according to astronomers, by 30 per cent. And yet, life on planet Earth has managed to maintain a fairly constant temperature. Moreover, without some greenhouse effect, life would not exist. However, that temperature has changed, it has been both warmer and cooler over the last 3 billion years, but has managed to adapt to solar and cosmic (dust) change. What Lovelock believed that should alarm us now is that Gaia may be resetting to a higher state of thermodynamic equilibrium, similar to or higher than the Carboniferous Period, more than 300 million years ago, when the planet’s average temperature was 6°C warmer. Climate scientists have warned of the catastrophic consequences to human civilisation of even 2°C average warming.

Some large-scale trends may be ‘baked in’ – significant trends that will likely create ever more chaos and contradiction. Our species’ insatiable appetite for fossil fuels, growing energy needs and baked in trends, such as the sixth extinction cycle (emerging issue: insect apocalypse), carbon dioxide and greenhouse gas emission growth, and accelerated warming that

will likely continue to generate more frequent and more severe weather events, sea level rise, and drought. The ripple effects of the coming climate catastrophes will reverberate within the economy, with ever-greater potential for conflict over water and resources, due to coastal migration and infrastructure collapse, and ultimately to politics and government.

However, there are also numerous positive trends, social movements, and global connectivity, networking, and consciousness. Globalisation, while having weaknesses and challenges, is also a unifying force and the notion of a global village is a meme. Visioning preferred futures, work on sustainable construction, energy, and agriculture, de-growth, post-anthropocene workshops, and post normal studies, and participatory futures work in general do offer some paths away from Apocalypse. Technological innovation may supply some answers, but may just as easily contribute to the greater complexity and chaos in the technosphere. Solar energy, renewables, and alternatives to fossil fuels are making headway.

Civilisations and societies both come and go over the long haul of history, and we would do well to show some humility as a species, as a global society, and recall how fragile human structures of myth and fiction can be. Most of the alternative futures floating around the planet are Enlightenment futures, based on the current scientific paradigm that dominates science, technology, and much of popular culture across the planet. Within the West there is a deeper discourse about the tension between scientism and other epistemologies, and as the West continues to decline as a dominant global culture, we need to look to Islamic, Confucian, Buddhist, Taoist, and indigenous epistemologies to inform positive futures narratives.

Back to the Elements

A question I constantly ask my doctoral students: so what? What is the meaning of trend analysis and emerging issues research? What is the significance of horizon scanning, foresight, and these specific tools? The beauty of causal layered analysis is that it allows us to step back and look at all the details, all the litany, and try to see them in a bigger context. The trends and emerging issues are sometimes just ‘factoids’ that fill the airwaves that demand attention from our consciousness, but may obscure the

underlying forces of change or serious challenges that would better deserve our attention. At one level, trends are a game of Trivial Pursuit, where someone can have most of the answers but still not see the Big Picture.

Put another way, trends and emerging issues and wildcards are but pieces of the puzzle, where context is everything. Other methodologies, such as scenario building, visioning preferred futures and CLA are required to round out the role of trends in the broader global context, that Big Picture. We also need to keep some humility as the dominant species on the planet, to be more fully aware of our timescales in terms of our species, planetary, and cosmic evolution. Historian Yuval Noah Harari has made a compelling case that *Homo sapiens* became the dominant species on the planet due to our ability to create myths that allow strangers to cooperate. But he also argues that the million years or more of our existence as hunter gatherers/scavengers was the true golden age, that agriculture and civilisation have degraded human health, longevity, and apparently the size of our brains. Hunter-gatherers may have been smarter, but I do not think that we are likely to revert to Stone Age economics and a hunter-gatherer society. We might recognise some of our wandering ways in contemporary human behaviour (Elon Musk's plan to die on Mars, one in ten Americans moves every year).

The long-term trend of our technological society may be harmful in other ways. One answer to the Fermi paradox, of why humans do not appear to have contacted intelligent alien civilisations, maybe because, as science fiction author Liu Cixin argued, nascent technological civilisations tend to be extinguished by more advanced civilisations (the dark forest metaphor). There are certainly other black swan existential threats, as I have noted elsewhere. But, it should be clear to the reader that I am persuaded that physical reality, our natural environment particularly, will be the most important long-term driver of technology, economics, and politics. It is our elemental futures that will force us to come to terms with the damage that our technology and economic ideas are doing to ourselves and planet.

The vast preponderance of evidence, the trends, and emerging issues in ecology and environment suggests serious troubles ahead for individuals, communities, and nation-states in coping with accelerating warming. Ironically, the million plus years that our species spent in hunter-gatherer

phase coincides with the generally (geologically speaking) cooler ice age, characterised by glacial periods of roughly 100,000 years. We appear to be on the cusp of a new epoch. Will we fail, as have countless complex societies during the historical period? Are we Gaia's solution to a problem (global cooling) and a catalyst for hot times? Will we succeed in being the masters of our planet and evolution? The trends cannot answer those questions, but they will be part of the response.