The Hague Centre for Strategic Studies

STRONG in the 21st Century

Strategic Orientation and Navigation Guidance under Deep Uncertainty

The Hague Centre for Strategic Studies N° 04 | 07 | 10

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The Hague Centre for Strategic Studies (HCSS)

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The Hague Centre for Strategic Studies (HCSS) seeks to advance international security in an era defined by geopolitical, technological and doctrinal transformation and new security risks. HCSS provides strategic analysis and offers concrete policy solutions to decision makers. HCSS serves as a strategic planning partner to governments, international organisations and the business community.

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1 Strategy under Deep Uncertainty

Our fascination with the future is only surpassed by the difficulty we experience in preparing for it. 'Strategy' is supposed to straddle these two important elements. It is about anticipating the future and defining some desired future state. At the same time, it is also about creating a plan and a course of action for getting there.[1] This traditional view of strategy assumes 1) that one can make confident predictions about the future and about which strategies will be successful in the future and 2) that one can make strategic commitments that will result in sustainable competitive advantage. Both private and public actors invest billions of Euros on the back of these assumptions every day. But both assumptions are highly – and increasingly – questionable.[2] This has pushed the The Hague Centre for Strategic Studies (HCSS) towards a new, more modest, more honest, but ultimately also more robust and 'strong' approach to strategy.

We respect that *the future* is not single but plural, complex and constantly accelerating. Most decision-makers do not like plural, complex and dynamic views of the future. They often prefer the assumed certainties of 'expert prediction' or of a small number of 'stable' point scenarios over acknowledging the deep uncertainty of an increasingly tightly coupled, truly *complex* world. To counter this, in our view, overly simplistic view of the future, HCSS has built up a unique 'Metafore'[3]-database that allows us to position such uni- or oligo-scenaric views of the future within the broader bandwidth of views about the most important issues of the day. The HCSS Metafore-database contains the most

1 Chandler, Strategy and Structure, 13.

2 Beinhocker, The origin of wealth, 324.

3 'Metafore' has a double meaning: it refers to 'meta'-foresight (summarizing the main insights from the broader foresight community) and to the Greek etymological root μετα-φερω, meaning 'carrying (the debate on foresight) to a higher level'. In this last sense, we also see our Metafore-approach as a metaphor for a new '3.0' approach towards foresight. The database currently contains over 3000 serious foresight studies on a variety of different topics.

'serious' foresight studies from across the globe in a number of key policy areas. It also connects to a broader scanning mechanism we call 'Semadyson'[4] that permanently scans a variety of different online sources for foresight-related insights that are fed into the Metafore-database on a daily basis. A combination of manual and semi-automated analytical methods allows us to identify emerging strategic issues from these various sources and to synthesise and present the bandwidth of views on these issues in a visually intuitive way. This provides strategic planners with more *strategic sensitivity* and also allows them to test their planning assumptions against a much richer range of futures in search of more robust strategies.

With respect to the second ingredient of strategy – the '*what to do*' part – HCSS advocates an agile mix of purposive and adaptive strategic planning methods. There clearly remain islands of relative certainties for which the true and tested techniques of traditional purposive strategic planning remain as valid today as they have been for the past half century. But these islands of relative certainty increasingly risk being inundated by the rising turbulent waters of uncertainty. Early cartographers tried to map the globe as accurately as possible – often with significant mistakes – but marked unknown areas with the Latin term '*Hic sunt dracones*' (Here be dragons!). As we try to map the future, we may also have to cover increasingly large parts of this map with the expression '*Hic sunt cygni attrati*' (Here be Black Swans!). It is for these areas that HCSS has formulated a number of principles for strategic agility that are culled from a variety of different academic disciplines and may assist organisations in dealing with uncertainty.

4 'Dyson™' refers to the brand of innovative vacuum cleaners – as the system constantly 'sucks in' new insight from various online sources; 'sema' stands for semantic – as the system is based on textmining tools that are based on neural network analysis algorithms.

Figure 1. HERE BE DRAGONS – WHERE BE THE BLACK SWANS?

A more modest (and in our view more honest) approach to the future therefore does not imply that strategic planning is doomed to morph into an exercise of futility. It does, however, imply that strategy needs to be built on a different set of principles in which agility becomes at least as important as purposiveness. HCSS calls this approach to strategy 'STRONG' – Strategic Orientation and Navigation Guidance – combining two ongoing and interlinked processes:

- Strategic Orientation – the process of perceiving, analysing and understanding the environment one operates in; and
- Strategic Navigation – the process of steering an organisation through the turbulent currents in its environment while managing risks and uncertainty and reaping opportunities.

What does STRONG look like? More specifically, what is the *appropriate mindset* and what constitutes the *necessary toolbox* for successful strategic orientation and navigation in the 21st century? For this birthday publication, HCSS decided

to extract and summarise some of the key trends that currently dominate the foresight community. These trends are widely acknowledged by some of the key global foresight studies as 'robust' drivers of the future. We have looked especially at recent foresight studies by a number of global actors that have invested significant time and effort to paint a 'global picture' in their own quests to orient themselves strategically.[5] After identifying more than 300 individual trends described in these publications, we analysed the most frequently named trends and combined these with insights drawn from the broader HCSS *Metafore Database*.[6]

The following chapter provides a rough synthesis of these supposedly 'robust' trends. It is organised around six themes, seeking to describe the principal dimensions of human existence. These themes are:

- our natural environment (ecology);
- the size, distribution and shape of the world population (people and demographics);
- the tools and knowledge we use (science and technology);
- our system of production and exchange (economy);
- the dynamics of the security environment (geopolitics and security);
- the way we live together (society and culture).

Readers of this publication will not be surprised by these trends. They are frequently mentioned in both the popular and the specialised press. But in our extensive work with foresight studies, we have become increasingly struck by a number of pathologies that seem endemic to this field. We will explain these in some more detail in another section of this publication. But to illustrate the transient and faddish nature of much foresight work we already want to present a few recent examples whereby (perceived) 'cues' from the present are used to forge one particular 'consensus' view of the future, thereby ignoring or even suppressing alternative or outlier views .

5 The Appendix provides an overview of some of the foresight studies that were included in the meta-analysis.

6 The HCSS Metafore database contains over 3,000 foresights in five different languages, published in the period 1995-2010.

- Only yesterday, China seemed riddled with internal contradictions that were likely to lead to some form of implosion; today China is seen to be on an ineluctable course towards world dominance;
- Not so long ago, nanotechnology was supposed to change every part of our future; today the public debate seems to have largely forgotten about it;
- Just a few years ago, liberal democracies represented the 'end of history'; today the emerging consensus is that history has rebooted itself in the guise of 'managed democracies' (or even autocracies) that are viewed by many as a serious challenge to liberal democracies in terms of efficiency and attractiveness.

To provide some broader perspective on some of these issues, the body of this publication sets out to do three things. We will start by summarising the 'conventional wisdom' about the future of some key global themes. We will then proceed with a number of important counterarguments that are sometimes given short shrift in the quest of a 'consensus', a shared narrative about the future. By doing so, we hope to puncture some holes in the 'conventional wisdom'. It is not our intention to claim that the prevailing narrative about the future is necessarily wrong. But we do want to emphasise that the 'wisdom du jour', in its quest for a unique future, often underestimates important and countervailing trends or arguments that may be as plausible as the prevailing ones. Finally, we also want to illustrate the often underestimated extent to which various issues are interconnected. The rise (or decline) of China may be determined as much by domestic demographic shifts – which have been a long time coming – as by its ability to sow and reap the technological fruits of the much awaited, but yet far from certain, outcomes of the green revolution and excel in the emerging global economy.

The ability to analyse current and future developments from a truly systemic point of view, and to identify the causal cross-linkages between trends over the entire spectrum of human activities, is invaluable in the ever more closely interconnected world of the 21st century. This is neither fully an art nor entirely a science, but requires a combination of subject and system matter expertise complemented with a healthy dose of modesty, creativity and methodological versatility.

2 Future Narratives

2.1 Ecology

Under the double-weight of an increasing world population and a rapidly expanding global economy, growing stress on the ecological system of the planet constitutes one of the most daunting challenges to humanity in the 21st century. Experts fear that increasing environmental pressure from human activity might even result in the collapse of key ecosystems (e.g. the Arctic, the Great Lakes region, coral reefs and rainforests) with unpredictable consequences for man and nature, including the massive loss of biodiversity, increased vulnerability to natural disasters, soil erosion, desertification and dead zones in oceans. Global environmental degradation has serious and increasing consequences for the livelihoods of people around the globe and for those of poor people in developing countries in particular. Environmental factors are expected to have a profound impact on health, poverty reduction, migration streams and conflict and security in different parts of the world. Increasing sustainability, protecting and improving the management of shared ecosystems and mitigating the negative effects of environmental change therefore stand high on the global policy agenda. Key ecological trends noted in the surveyed publications are:

Global climate change

Climate change is expected to result in increased ecological distress, especially due to an increasing frequency of extreme weather events, rising sea levels and changing regional weather patterns. While experts disagree on the scale, speed and effects of climate change, there is a growing consensus that it will continue and that its impact will become increasingly apparent. Densely populated delta areas and coastal urban centres around the world are thought to be particularly vulnerable to the negative effects of climate change. In certain cases, including Bangladesh and Maldives, complete submersion under water might occur as the consequence of rising sea-levels. Climate change may also negatively impact global agricultural production with potentially severe consequences, especially for subsistence farmers in developing countries.

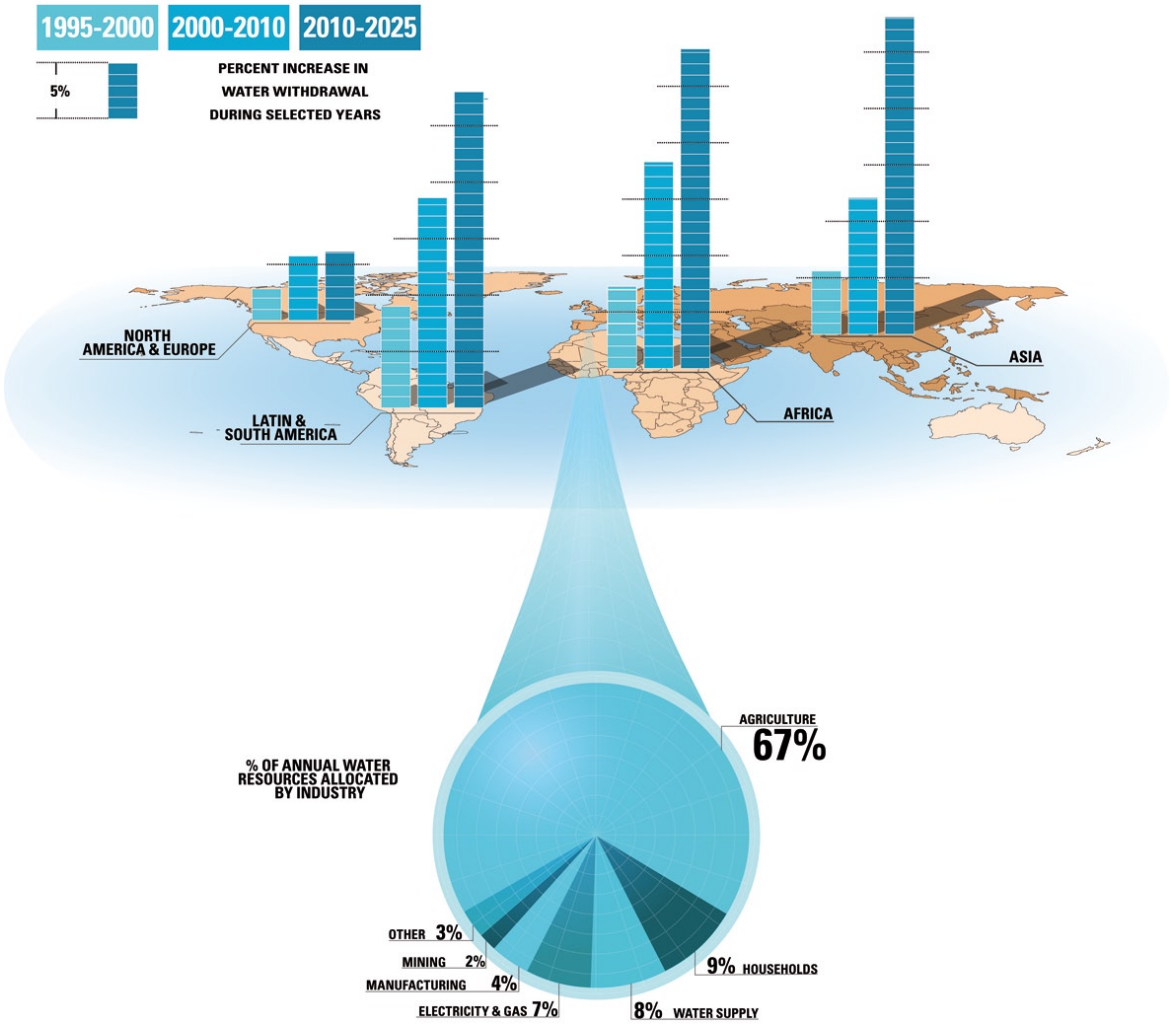

Figure 2. WATER WITHDRAWAL AND WATER USE DISTRIBUTION 1995-2025

Increased water stress

In the coming decades, acute water shortages are expected to affect substantial fractions of the world's population, particularly in Africa, the Middle East and Central Asia. On the one hand, water shortages in these areas may result from a decline in fresh water reserves due to their consumption and their increasing pollution and salinisation.

On the other hand, water scarcity is also expected to be aggravated by rapidly increasing demand due to population growth and increasing per-capita consumption especially for wasteful agricultural usage. Water management issues in these regions may increasingly come to the centre stage of policymaking and act as a driving factor for population movements and escalating conflicts.

Rapid environmental degradation in urbanising and industrialising countries

Environmental degradation will be particularly severe in mega-cities in the Global South and the major industrial centres of emerging market economies. Rapidly expanding urban and industrial metropoles in these regions have limited capacities to mitigate the environmental consequences of their explosive growth, and in most cases, economic development is likely to be prioritised over ecological concerns.

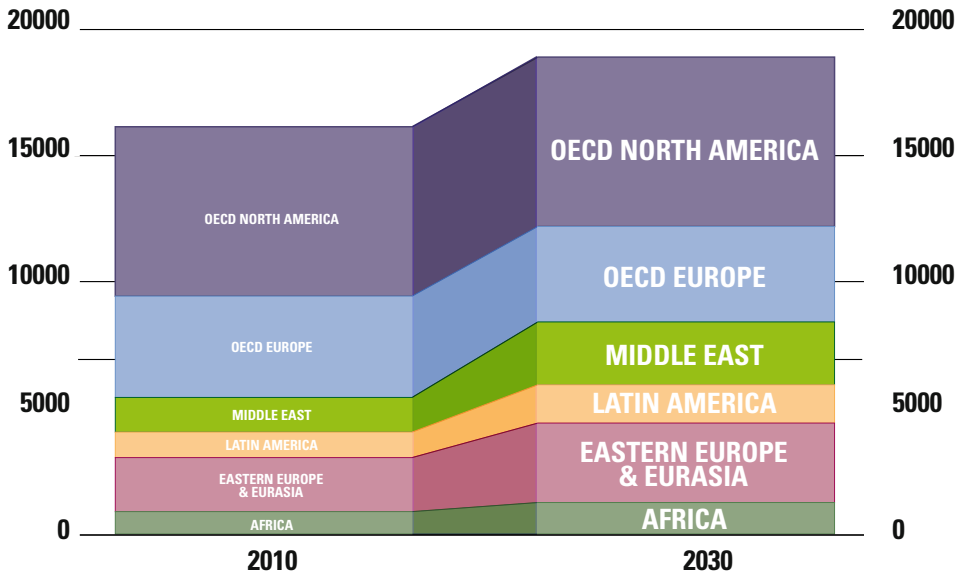

Figure 3. CO^2 EMISSION IN MILLION TONNES BY REGION 2010-2030

The environmental impact of these new urban and industrial centres in terms of pollution, waste and resource consumption is increasingly going to be felt globally and is likely to create growing international concern and pressure to control ecological damages.

Figure 4. INDUSTRIAL WASTE GROUND

Counterfutures

Rapid population growth and expanding economic activity are undoubtedly going to increase pressure on already heavily stressed ecosystems. How resilient these global ecosystems ultimately prove to be, what the precise consequences of their breakdown would be and how far they are able to recover from periods of extreme stress, remains highly uncertain.

The combination of market incentives and human ingenuity has historically provided a potent vaccine against various pessimistic futures. But can we assume that this *deus ex machine* will continue to pop up just before some tipping point throws us into some potential environmental cascade?

It is also unclear whether economic and social pressures for more sustainable technologies, lifestyles and ecosystems management will increase to a level that triggers radical change towards a more sustainable path of development, as people around the world are becoming increasingly aware of the disastrous effects of unchecked ecological degradation both globally and locally. With increasing scarcity and changing institutions, commercial incentives for 'greening' technologies, limiting resource use and recycling could become much more powerful; and profitable markets for mitigating and reversing negative environmental consequences of economic growth may emerge. Simultaneously, climate change may open up new, previously unlocked, sea lanes. Over the next few decades, for instance, the Arctic passage may become navigable for certain periods of the year.

Furthermore, political pressure and action may grow to reign in ecological decay as societies and national elites around the world increasingly value environmental quality and global governance mechanisms improve.

Figure 5. THE ARCTIC PASSAGE?

2.2 Population & Demographics

The size and composition of the global population will keep changing dramatically over the coming decades, creating pressure on societies to adjust. Ongoing population growth will put an additional strain on natural resources and the ecology of our planet. Growing demographic imbalances, ongoing migration and urbanisation also pose vexing policy challenges and demand a fundamental rethinking of social and economic institutions around the world – including patterns of work, education, leisure and labour, social security and healthcare systems, as well as immigration, conceptions of citizenship and generational justice. Key demographic trends noted in the surveyed publications are:

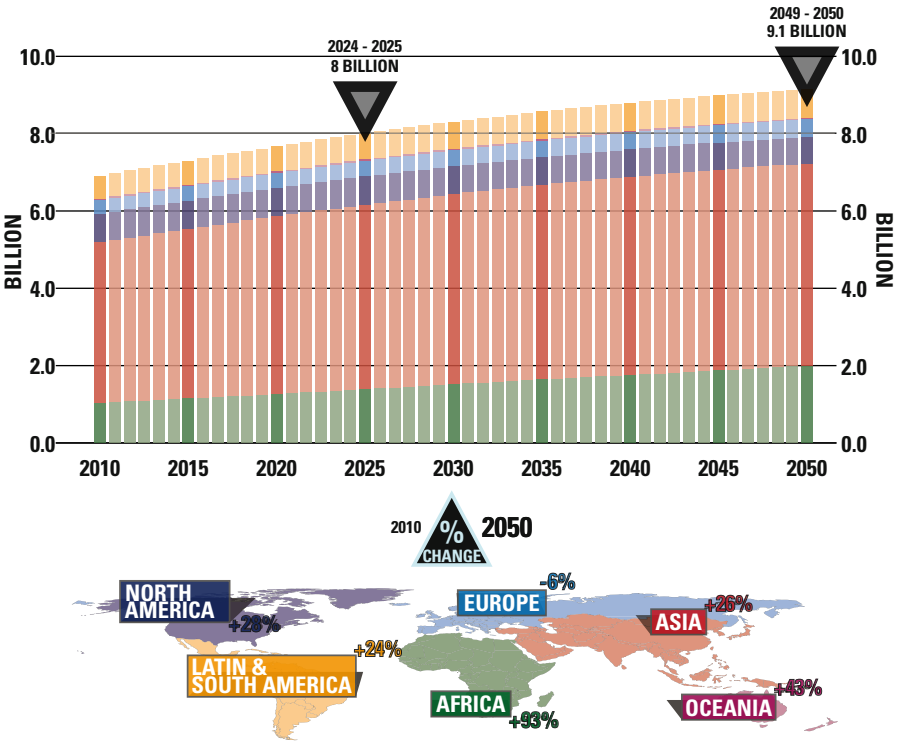

Figure 6. WORLD POPULATION BY REGION 2010-2050

Rapid, uneven world population growth

While precise estimates vary, there is a broad consensus that humanity will continue to grow – albeit at a slowing pace – and pass the 8 billion mark somewhere over the coming two decades.

The vast majority of this growth will be concentrated in urban centres in sub-Saharan Africa, the Middle East and South Asia. With declining or very low fertility rates, population growth in other regions will begin to stagnate and may even be reversed in some regions, including Japan, Russia and the European Union.

Changing age structures and increasing global median age

As access to sanitation and basic healthcare spread further and medical technology keeps advancing, life expectancies continue to climb, both in developing and in developed countries. The result will be a rapid increase of the average age of the world population over the coming decades.

Figure 7. GRAYING SOCIETIES IN EUROPE VERSUS YOUTH BULGES IN AFRICA

The aging of societies is expected to be particularly dramatic in advanced economies with restrictive immigration policies, such as Europe or Japan, where increasing healthcare expenditures, a growing proportion of seniors and a declining active labour force, may result in serious economic problems. In contrast to this, destabilising 'youth bulges' may continue to occur in several developing countries where birth rates still remain relatively high.

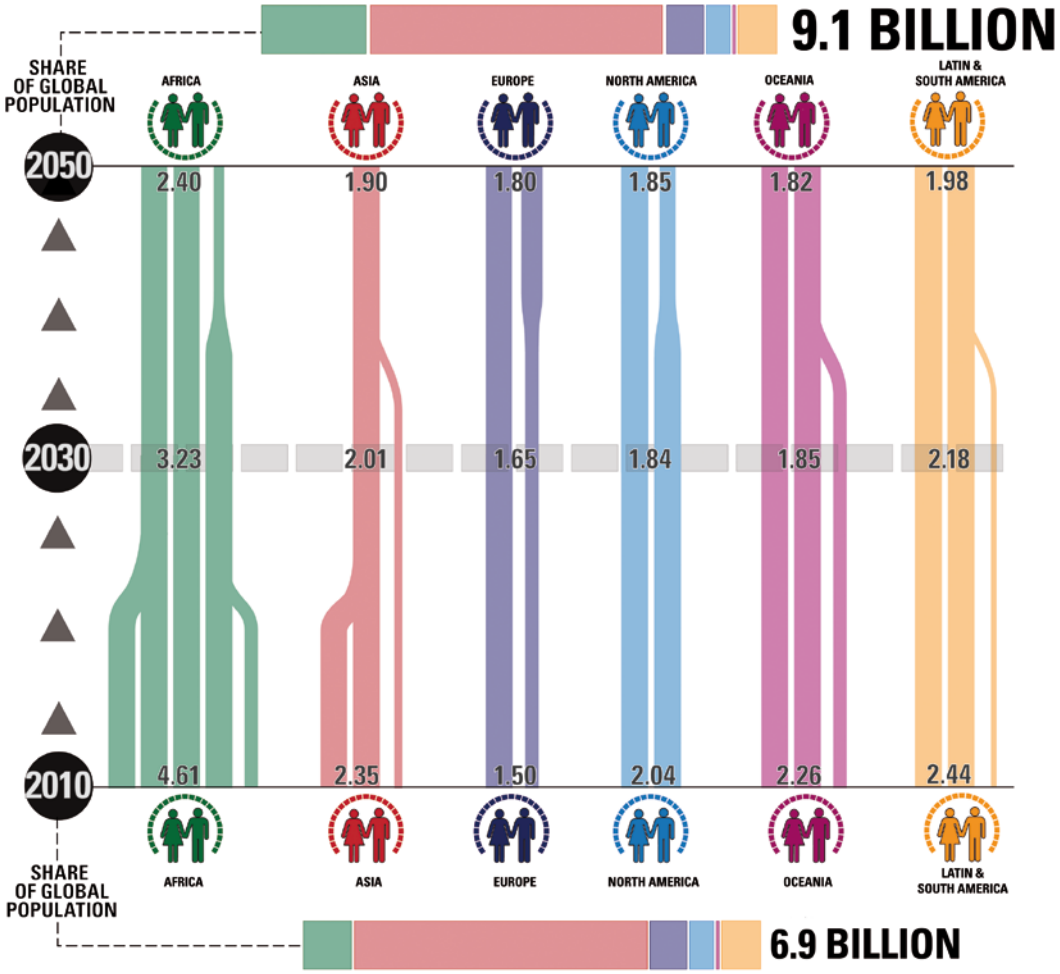

Figure 8. FERTILITY RATE BY REGION 2010-2050

Ongoing urbanisation and emergence of megacities in the global south

The rapid growth of cities in the Global South and the ongoing migration from rural to urban settings will keep fuelling the urbanisation of humanity. As a result, the number of 'megacities' in developing countries with more than 10 million inhabitants is expected to grow considerably over the coming decades.

Figure 9. MEGACITIES WORLDWIDE IN 2025

In both developed and developing countries, ongoing urbanisation will create issues of governance and will increase the costs of maintaining infrastructure and public order. Most cities in developing countries are currently ill-equipped to deal with the consequences of their explosive growth and the proliferation of informal settlements, in which the provision of sanitation, clean water, law enforcement and other public services is lacking, will pose an enormous challenge.

Large Migration Flows

In response to economic and environmental pressures, the coming two decades will witness continued, large flows of both forced and voluntary migration. Next to affluent Western countries, the Persian Gulf States, certain East and South East Asian nations – but also countries like South Africa – are likely to be increasingly the target of global migration flows. The control of migration, the rights of immigrants and their integration and assimilation into host-cultures are likely to remain controversial and contested issues in receiving countries. Heightened ethnic and religious tensions between growing immigrant communities and host populations may be the result.

Counterfutures

Population growth, the aging of societies and ongoing migratory movements are certainly going to shape the decades ahead. However, how societies will react to these challenges is much more uncertain. Countries will have to reconsider issues such as retirement age, immigration policies, family planning, healthcare, social security systems and urban planning. The different solutions that are developed to these problems are in turn likely to exert great influence on the way demographic trends will enfold.

As the development of technology makes people ever more independent of their physical location in terms of their work and social contacts, cities may become increasingly less attractive, a trend that possibly could be supported by subsidising rural populations. Aging societies may find new ways of sharing the social burden and new models of work while social incentives for rearing children may increase considerably. Societies also may begin to compete more and more for valuable migrant labour and fundamentally revise immigration policies.

2.3 Science & Technology

Advances in science and technology over the next decades are a key source of uncertainty about our future but will certainly have a profound influence on the global economy and societies in the years ahead. Driven by ongoing public and private investments into R&D, the world is likely to witness rapid development – and perhaps even major breakthroughs – in a wide range of sciences and technologies, including biotechnology, renewable energies, nanotechnology, materials science, space technologies, ICT, robotics, artificial intelligence and neuroscience. What exactly these technologies will allow us to do, or how people around the world are going to use them, is extremely difficult to predict.

However, societies will undoubtedly face an enormous challenge in controlling these powerful new technologies and devising ways on how to regulate their usage and access to them. Key technology trends noted in the surveyed publications are:

Nanotechnology is likely to underpin many major breakthroughs in science but also pose great risks of abuse

Nanotechnology is likely to be behind some of the greatest advances in a range of sciences, health and technologies, whether it is in radically transforming the way products are assembled and manufactured, increasing energy efficiency, finding cures for diseases like cancer or vastly accelerating computer processing speeds. At the same time, nanotechnologies are thought to carry profound risks for abuse through new surveillance methods.

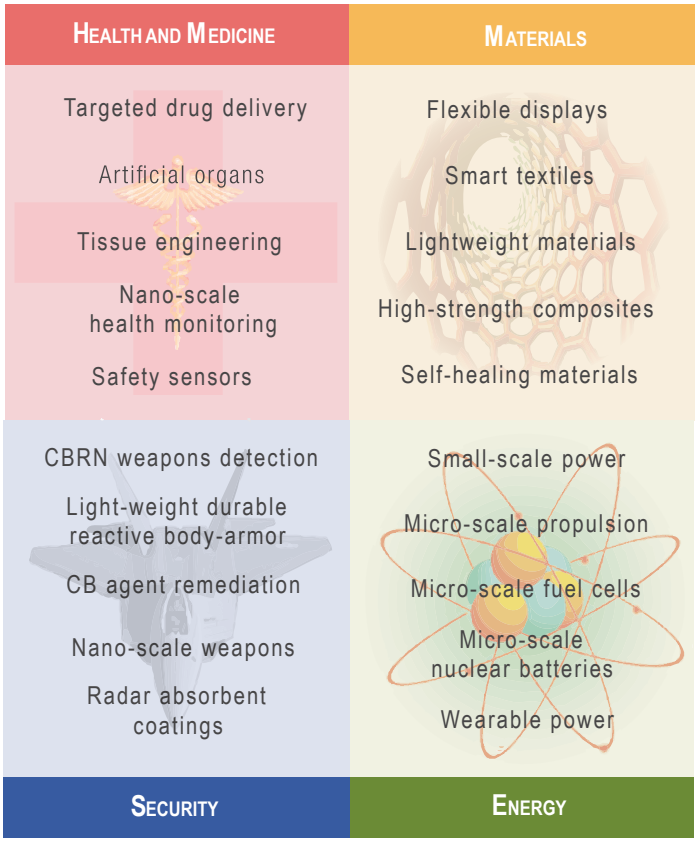

Figure 10. THE MANY USES OF NANOTECHNOLOGY

Biotechnology will keep advancing rapidly

Advancing biotechnology will remain primarily aimed at extending and improving the quality of human life through the development of new and customised drugs and vaccines; the development of artificial sensors capable of monitoring physical and psychological parameters; the increased use of animal transplants, bionic implants and 'smart' prosthetics; and the creation of novel forms of tissue treatment through stem cell research and tissue engineering. It is also likely to be extensively applied in agriculture to genetically modify crops (e.g. to produce higher yields). The use of biometrics for security and surveillance purposes is also likely to intensify.

Cognitive and neurosciences will be the focus of major breakthroughs in science and health in the decades to come

The brain will increasingly become a new frontier for science and will be pursued urgently as the incidence of neurodegenerative diseases increases as populations rapidly age. Most of the advances in this field are expected to come through interdisciplinary cooperation (e.g. genetics, imaging and behavioural science). Efforts over the coming decades are likely to focus on the detailed mapping of cognitive processes and attempts to create artificial intelligence.

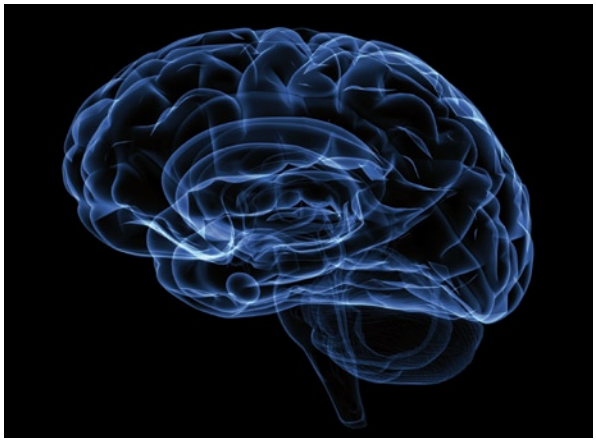

Figure 11. COGNITIVE MAPPING IS EXPECTED TO MAKE GREAT STRIDES IN THE COMING DECADES

Deeper and wider societal penetration of information and communication technologies

ICT will progressively permeate all segments of society and the fraction of people without access to these technologies will shrink. This will profoundly reshape economic and social institutions and the boundary between the virtual and the real will become increasingly blurred. Concerns over cyber security for both individuals and societies are likely to increase considerably and governments will seek to protect and regulate technologies like the internet as critical infrastructures.

Proliferation of robotics and unmanned technologies

Combining new technologies from information technology, cognitive science and nanotechnology, unmanned systems – remote controlled or autonomous – are likely to take over many more routine actions (e.g. in fields such as logistics). Over the next decade, many of the routine transactions that drive the movement of money and material in the global economy may be negotiated and executed by artificially intelligent agents or robots. Advances in autonomous systems, which promise to substantially reduce the physical reliance on, and risks to, human, will allow the wider exploration and exploitation of extreme or hazardous environments such as deep sea, underground and contaminated areas. Numerous state and non-state actors are likely to rely chiefly on unmanned technologies to increase the use of outer space for military and civilian purposes.

Counterfutures

Science and technology undoubtedly will keep making great strides, but it is very difficult to predict where progress is going to be fastest and what new technologies will or will not allow us to do. Also, it is highly uncertain how such new technologies are going to be used and who will have access to them. As emerging technologies keep fundamentally reshaping our life, debates on how to regulate technologies and scientific progress may intensify and steer the future development and implementation of technologies. Ethical and social boundaries to science may emerge where technology begins to recreate or manipulate elements which are seen as quintessentially human, such as consciousness or intelligence. Catastrophic accidents or breakdowns, or spectacular abuse of powerful new technologies, may also result in the proscription of certain technologies or branches of science. Finally, new technologies may turn out to be so costly or complex to use that only a privileged few are able to benefit from them.

2.4 Economy

The diverse social systems of production and exchange on our planet are likely to evolve rapidly over the coming decades and become more intertwined. Increasing connections notwithstanding, global economic development is bound to remain uneven. One of the key questions is how far large emerging market economies, such as China, India or Brazil, are able to sustain their unprecedented economic dynamism of the past decades, and if other emerging market economies are able to follow their path. The evolution of advanced industrialised economies in the Western world is also uncertain as the global centre of gravity appears to shift away from them and they struggle with stagnating labour forces and relatively high levels of debt.

Simultaneously, individual countries and the global community more generally face complex governance challenges in the economic domain. A central issue here is how effective and equitable global institutions and incentives can be developed in order to increase trade and respond to increasing global resource stress and the negative ecological consequences of world economic growth. Similarly, pressure grows for the transparent and effective governance of integrating global financial markets as transaction volumes keep increasing and the risks from unchecked systemic imbalances grows. Key economic trends noted in the surveyed publications are:

Continuing global economic growth and integration

Increasing productivity, trade, a growing world population and ongoing capital accumulation are likely to contribute to a further expansion of the world economy at high growth rates. Productivity is likely to be driven by ongoing technological advancement and global economic integration, with a deepening international division of labour and efficiency gains in global supply chains. Global economic growth will remain highly uneven with some emerging economies reaching even double digit rates, while in other developing countries, economic growth is unlikely to keep a pace even with population growth rates.

Multinational corporations and powerful state-owned enterprises are going to play an even bigger role in the evolving global economy

Multinational corporations will continue to drive processes of global economic integration and remain major vehicles for foreign direct investment. As BRIC countries (Brazil, Russia, India and China) surge and globalisation continues, Western-dominated MNCs are likely to compete more often with powerful global

companies with an emerging-economy background. Simultaneously, the comeback of state-owned enterprises is likely to continue, especially in the commodities and energy sector. This may have significant consequences for the regulation of foreign investments as countries may fear that investments from SOEs can be used to extend political influence.

Global economic imbalances are likely to continue to put stress on the global financial architecture

Ongoing global market integration and massive international trading and capital streams will keep creating substantial risks of volatility in the global economy, unless there is a successful overhaul of the global financial architecture and countries reduce global economic trade and currency imbalances. The possibility of further disruptive global financial and currency crises cannot be excluded with potentially important ramifications for the global supply of liquidity. Sovereign wealth funds and major state-owned banks may play an increasing role in financial markets, where they are likely to gain influence at the expense of powerful private players in financial markets.

Increasing pressure on natural resources like fossil fuels and crops

Demand for fossil fuels, food and fuel crops, minerals and water is likely to grow rapidly as population grow, living standards increase and major developing countries shift to Western-style consumption patterns. However, there are serious concerns about the ability of the global economy to keep generating matching growth rates on the supply side, with tight markets, price rallies and increasing risks of supply disruptions as possible consequences. This may lead to dangerous rivalries between major powers as they seek to increase control of major sources of supply and transport routes and may seriously destabilise many developing countries as well as put significant additional stress on the ecology of the planet.

While such scarcity is likely to increase pressure for a transition to renewable energy sources and more sustainable and efficient consumption patterns, most studies envision this process to be slow and hampered by limited global coordination.

Continued global income disparities

Though the global average income is expected to rise and absolute poverty internationally is expected to decrease, the global income distribution is

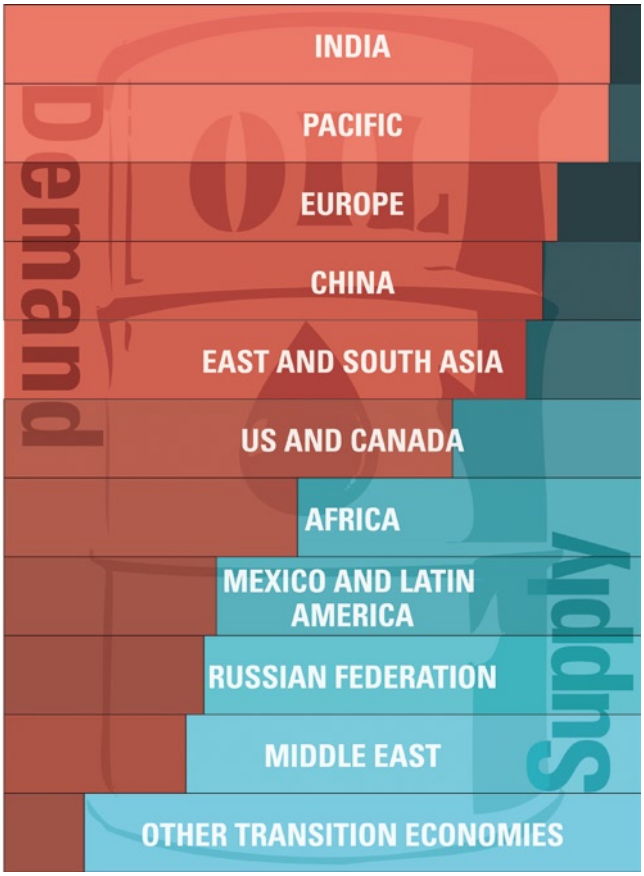

Figure 13. COMPARISON OF PROJECTED REGIONAL OIL PRODUCTION AND DEMAND 2030

expected to remain highly unequal over the coming decades. While the income gap between countries may decrease as emerging economies keep growing, many developing countries, especially in Sub-Saharan Africa, may fall further behind and income disparities within many fast-growing economies are likely be exacerlated. This may increase social instability around the world and lead to increased migration streams.

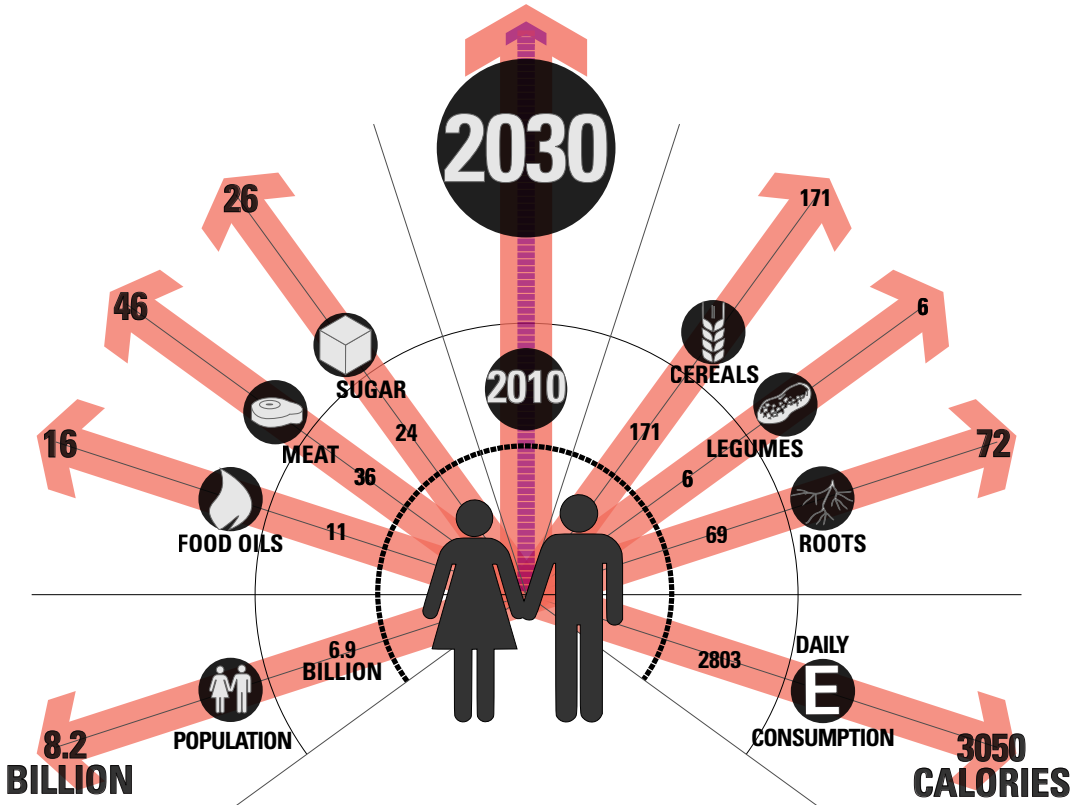

Figure 14. STATE OF NUTRITION 2010-2030

Counterfutures

The future of the global economic system is difficult to gauge. Significant uncertainty stems from the fact that the future of economic institutions both on the national and global level is highly uncertain. After nearly two decades of economic liberalisation around the globe, the future of economic regulation and state influence in the economy over the coming decades is

difficult to judge, as a wave of state intervention sweeps over the globe in the aftermath of the deepest global economic crisis in decades. Even more fundamental uncertainties stem from questions about the ability to further expand the global natural resource supply at a sufficiently high speed and the ability of countries to succesfully manage a transition to a more sustainable global economy. It is very difficult to predict the extent to which institutional deadlock, political instability, dangerous rivalries and resource scarcity will have an influence on global economic development or hamper growth over the coming years.

Another uncertainty is the extent to which humanity might, by design or by default, stumble onto new economic paradigms that could reverse some of the current trends – for better or for worse. The internet economy already differs in many ways from the traditional industrial economy. Will decentralised network economies outcompete traditional, more concentrated economies of scale or scope? Or do behemoths like Google or Microsoft foreshadow even stronger tendencies towards monopoly or oligopoly? Will new micro-manufacturing technologies push the manufacturing economy in the same direction as the internet economy?

2.5 Geopolitics & Security

As the world changes rapidly and unevenly, international relations and security will not remain untouched. The relatively stable post–Second World War order will keep further disintegrating as Western predominance slowly erodes due to the economic and technological dynamism of many emerging economies.

Simultaneously, security threats become increasingly diffuse and non-state actors will probably play an ever bigger role on the global stage than they do today. Confronted with many complex security threats in an amorphous and rapidly evolving international system, global powers are likely to have great difficulties in developing a stable security paradigm that is able to coordinate resources to effectively respond to emerging security crises. Increasing incidents of local security vacuums and dangerous rivalries between emerging and established powers may be the consequence. Key geopolitical and security trends noted in the surveyed publications are:

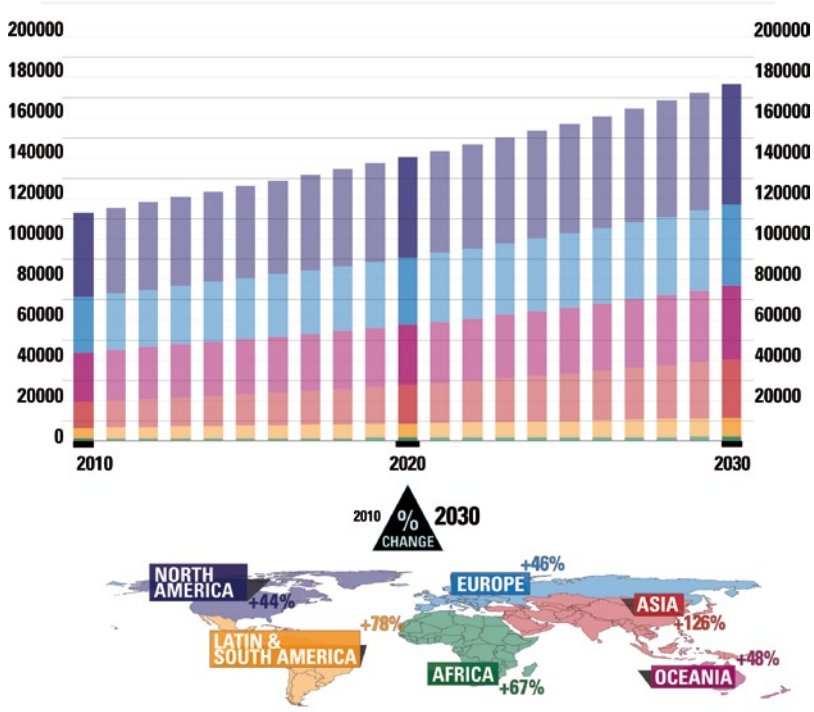

Figure 15. GDP PER CAPITA BY REGION 2010-2030

Increasing multipolarity and declining US (and 'Western') dominance

While most analysts agree that the relative power of the US (and the 'West') will decline, it appears unlikely that the global order will be challenged by a single rising power over the coming decades. Instead, the world is likely to witness a dilution of geopolitical power, where many of the emerging global actors will steer away from taking on a costly leadership role in dealing with global challenges such as terrorism, climate change or weapons proliferation. Instead of such central leadership, it is likely that issue-based global networks will proliferate, where a range of governmental and non-governmental actors come together to deal with shared concerns, such as environmental issues, resource management, financial markets or data security. However, several rising or resurgent powers, such as the BRIC countries are likely to seek to attain hegemony in their region, at the expense of the present US influence. The emerging multipolar world is also expected to become more heterogeneous as

these new powers will continue to seek alternatives to Western-dominated economic and social models. Global governance is likely to adjust accordingly in the decades ahead with regional organisations and trade blocs becoming more powerful.

Increasing power of non-state actors

Ongoing globalisation and fragmented governance structures will provide increasing power and opportunities to network-like non-state actors, including Non-Governmental Organisations (NGOs) but also criminal networks. Such actors will thrive particularly in 'black holes' or areas of limited state-governance, including large urban slums, failed states around the world but also cyber space. The state is expected to remain the major unit of international relations but its power is likely to be further eroded.

Rapidly evolving nature of violent conflicts

Because of increasing transnational bonds and economic interdependence, inter-state wars between major powers are seen as unlikely in the decades ahead although they cannot be excluded as states continue to prepare for large-scale conventional warfare. Conflict by other means (e.g. proxy-wars or trade wars) between such parties also belongs to the range of possibilities in addition to insurgencies and other low intensity conflicts such as civil wars or terrorist campaigns. These latter types of conflicts will become increasingly complex and unpredictable and are likely to spill over stateborders more frequently. Irregular warfare capabilities by both non-state and weak state actors will play a primary role in countering interventions of advanced militaries. Major states, in turn, are likely to respond with more ICT-enhanced precision weaponry and unmanned target and surveillance capabilities. Furthermore, information and communication networks will become an increasingly important means and target of violent conflicts, thus putting a growing emphasis on offensive and defensive cyber warfare capabilities.

The possible use of unconventional weapons to inflict mass casualties will remain a primary international security concern

The rapid diffusion of advanced technologies and knowledge, as well as falling costs, will enable a range of state and non-state actors to acquire chemical, biological, nuclear or other unconventional weapons. This increases the likelihood of unconventional weapons proliferation and will compound the risk that they will be used in the coming decades in a large-scale attack, especially

by terrorists groups that are unconcerned with the costs of retaliation. If deployed in densely populated urban areas, such an attack could inflict great casualties and have profound psychological effects. States are therefore likely to continue to put great effort and resources into preventing such incidents.

Counterfutures

The further evolution of international relations and global security remains very unpredictable. Major players may lose their pre-eminent role if they are overwhelmed by internal problems. Escalating socio-political tensions in China, demographically-induced stagnation in Japan and Europe, or accelerating debt growth and partisan deadlock in the US, may be examples of how major powers may become slowly paralysed in the geopolitical arena through domestic issues. Similarly, new economic powerhouses with a growing influence on the world scene may emerge if other developing countries are able to emulate the success of the BRIC countries.

Crucial to the future of geopolitics and security is the question of how effectively diverse powers in a multipolar world are able to cooperate on issues of global governance, such as trade, environmental and resource management, arms control and non-proliferation or peacekeeping operations. If relations between major powers are characterised by antagonism, competition and rivalries, this will also imply more room for non-state actors such as criminal networks, terrorist groups, private military companies, warlords and insurgencies, but also NGOs and other non-state actors to operate.

Is the 'decline of West and the rise of the rest' really as inevitable as the current consensus suggests? Should we exclude the 'discovery' of some under-appreciated strengths in the Western model? Just as the triumphalism of the 'end of history' was exaggerated, so too might the West's current defeatism. Much of the thinking on the rise of the BRIC countries is based on various forms of 'physical' technologies where these countries are quickly narrowing the gap. But the gap in 'social' technologies might prove more difficult to bridge and more consequential.

Is it conceivable that the currency of power might change? Or that power might not only shift from one part of the world to another, but might also start dissipating leading to fewer traditional 'steering' possibilities but maybe also more self-synchronisation of efforts?

2.6 Society & Culture

Rapid technological, economic and geopolitical changes are going to have a great influence on the way societies are organised, and governed, and how humans perceive themselves and the world around them. Although the world grows together, values and beliefs are going to continue to diverge significantly within societies and across societies. This will have a profound influence on how different people perceive and narrate the world around them, as well as the different meanings people will ascribe to the fundamental changes taking place globally. Ultimately, this will result in the persistence of competing ideas on how, for example, to organise and steer societies and economies, how to respond to common global threats, how to use and control science and emerging technologies and how to interact with our natural environment. Key socio-cultural trends noted in the surveyed publications are:

Changing regimes of governance

The literature predicts that the notion of citizenship and democracy in Western countries is likely to go through a renewal process in the decades ahead, as citizens begin to view their relationship to governments in increasingly consumerist terms. Aided by the growing role of ICT, a larger number of actors may participate in governance and information on government activities is likely to become more accessible. At the same time, there may be a growing frustration with the convoluted decision-making processes of democratic governments, if they are perceived to be slow in getting to decisive action in a changing global environment. The economic and geopolitical successes of some authoritarian governments in developing countries may also heighten the appeal of autocratic capitalism. Where democratic institutions in developing and transition economies fail to deliver prosperity and social stability, the temptation to revert to more authoritarian regimes may therefore become stronger.

While secularism may expand, religions will keep fulfilling a crucial role

With the growing incidence of multiple identities and cultural complexity, secularism is likely to keep expanding. However, at the same time, many individuals are expected to turn to spirituality and religion as a source of comfort and certainty in a rapidly changing world, especially where harsh socio-economic conditions persist. In addition, the role of religion in politics and conflicts may grow as it becomes increasingly prominent as a rallying point of collective identity. Some foresight studies also predict the emergence of a major new messianic religion.

Figure 16. AN AMERICAN SUPER CHURCH AND MECCA, SAUDI ARABIA DURING THE HAJJ

Further growth social and cultural influence of virtual networks

The impact of cyber technologies on people's social lives will continue to grow and expand to different aspects. While the current trend of emerging online social networks is largely a reflection of existing relationships, people are also likely to maintain more exclusively virtual relations and identities in the future.

This trend is not limited to social life, as the workplace becomes increasingly virtual as well, and people work together with colleagues on the other side of their town, country or the world. In turn, this development will change people's daily routines, identities and personal life.

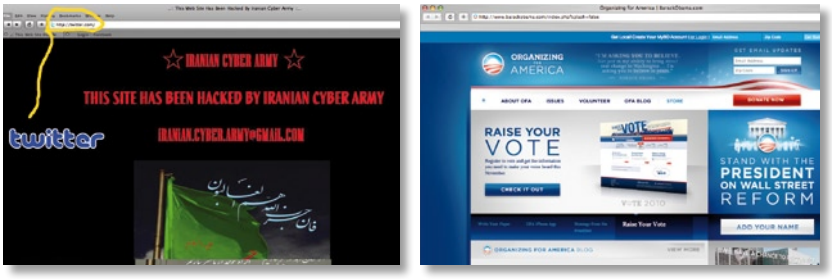

Figure 17. TWITTER PAGE DURING THE PROTESTS AFTER THE IRANIAN PRESIDENTIAL ELECTIONS AND THE CAMPAIGN WEBSITE OF BARACK OBAMA

Globalisation will become increasingly tinged with non-Western – and particularly East Asian – cultural values

Globalisation will 'look and feel' very different from its current Western-dominated form. With the political and economic ascendance of powers like India or Brazil and particularly China, their culture, values and lifestyles are likely to have a growing influence globally and in other developing countries especially.

Figure 18. THE EMERGENCE OF MULTIPLE LINGUA FRANCAS?

Counterfutures

Many political regimes are expected to remain unchanged over the coming decades, as elites seek to protect their power through sustaining the status quo. However, innovation and changes in forms of government are nonetheless likely to occur in rapid succession, where ossified and unsuccessful governance models succumb to growing socio-economic pressures. What such emerging societal models may look like, and how successful they will be, is very difficult to predict. Much of the further cultural development is also likely to depend on how change in other domains plays out. The experience of blurring boundaries between the virtual and the real, emerging technologies, changing geopolitics and major conflicts of the future are all likely to profoundly affect the direction of change in cultures.

3 Foresight Pathologies

Apart from providing a summary of major global challenges to humanity, a number of key themes emerge from the short synthesis of several major foresight studies that was presented in the previous chapter. All surveyed foresight studies point to several powerful trends that are expected to fundamentally alter the societies we live in over the coming decades. In the same way as the internet has reshaped our lives in a quarter century, developments like the aging of the world population, the ascendancy of the BRICs, biotechnologies or the growth of megacities in the Global South, are likely to make the world a profoundly different place a few decades from now.

There is an extremely robust consensus view that our environment, technologies, economies and societies will change dramatically in a generation's time. Yet the literature simultaneously points to deep uncertainty about which course the world will take, with predictions ranging from a dark future to a bright new era. At the one extreme, scarcity, conflict and environmental and institutional collapse dominate; and disasters, new diseases, wars and weapons inflict suffering on a previously unimaginable scale. At the other extreme, knowledge diffusion, technological innovation, cultural change, and effective global governance, lead the way to sustainable livelihoods, with rapid poverty reduction, health, freedom and peace and security. Between these two extremes lie various plausible intermediate futures but it seems impossible to attach probabilities to any one of those.

Our effort to weave together some of the most important themes from a collection of serious foresight exercises conducted around the world exposes thus both the deep uncertainty surrounding the future course of history and the deep – and not fully understood – interconnectedness that exists amongst its various drivers. More importantly, however, it first and foremost highlights the fact that in dealing with the future, we seek to create a series of supposedly coherent narratives about the future. A key distinguishing and quintessentially

human characteristic is our ability to perceive and understand the world within a series of narratives. Rather than being principally *Homo Ludens*, at our core, we are all *Homo Narrans*. We forget, however, that the narratives we form about the past, present and future, are shaped by the current *Zeit Geist*, informed by defective datasets and driven by a herd mentality which has low tolerance for modern Cassandras, yet systematically favours pessimists over optimists.

There have been remarkably few efforts to validate the reliability of past foresight efforts with respect to their predictive accuracy. The few efforts that exist generally paint a sobering picture. Phil Tetlock,[7] for instance, checked some 82,000 predictions from about 300 of the top American political and economic experts and came to some stunning conclusions. He found that experts are embarassingly bad forecasters: they barely beat what he calls the 'chimp' strategy of random guessing. Tetlock convincingly shows that experts make overconfident predictions about controversial questions and that actual error rates are much higher than they themselves acknowledge. To the dismay of the expert community, he also found that the more reputable an expert is, the lower is his *ex post* prediction accuracy. Finally, his study also established that 'Foxes' (with a flexible, adaptive, tentative cognitive style) significantly outperform 'Hedgehogs' (those who 'know one thing and know it well' and focus on a single, coherent theoretical framework in their analyses and predictions). The fact that the foresight community has largely missed the ball on all key recent shocks to the international system (the collapse of the Soviet Union, the advent of global terrorism, the financial economic crisis) should certainly give us cause to pause. In our own meta-foresight work, HCSS has been struck by a number of often recurring pathologies in the field.[8] These can be seen as imperfections in the market for foresight that seriously jeopardise the role traditional foresight plays in strategy formation, which include:

- **Presentism and lack of imagination.** Foresight is much more driven by the present than by the future. Many 'innovations' in foresight studies can be immediately linked to some 'new' (but already observed) trends that are

7 Tetlock, Expert political judgment. Tetlock is Professor of organisational behavior at the Haas Business School at the University of California-Berkeley.

8 Since this publication focuses primarily on foresight work, these pathologies are described from the point of view of strategic orientation. But the authors want to point out that many of these pathologies equally apply to the strategic navigation part of STRONG.

then extrapolated as fundamental basic drivers of the future. There are very few examples (barring science fiction and some technology foresight) of genuinely creative foresight irrespective of whether it ultimately proves to be accurate or not.

- **Herd mentality.** The foresight community is extremely – and increasingly – sensitive to various 'hypes', what is known in the literature as 'information cascades' that contain very little actual information and can lead to dangerous choices.

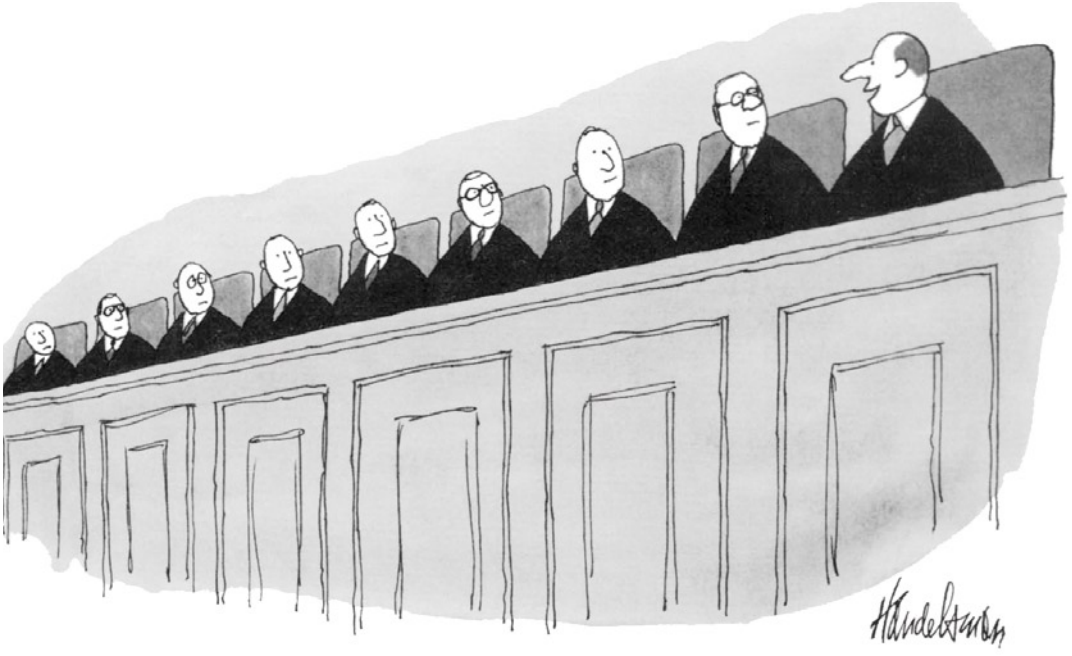

Figure 19. GROUPTHINK – CARTOON THE NEW YORKER MAGAZINE 1972
© J.B. HANDELSMAN/THE NEW YORKER COLLECTION/
WWW.CARTOONBANK.COM

- **Overconfidence in datasets.** Most experts who create datasets are acutely aware of the built-in (often untested) assumptions and weaknesses in their attempts to 'capture' empirical reality. Subsequent 'users' of these datasets – none more than the forecasting community – tend to ignore those caveats and to extol the datasets to standards of fidelity that were never intended by their makers. Interestingly enough, many of us seem to prefer being precisely wrong over being roughly right, as seen in the examples of the quantitative (but Gaussian) models used in financial risk assessment, the macro-economic forecasting efforts that in all countries are being revised dramatically before our very eyes on an almost weekly basis, or the modelling efforts used in defence planning in some of the larger countries of the world.

- **Underestimating 'framing' effects.** There is a large body of literature on the importance of how various issues are framed. The same framing dangers are also inherent in much foresight work even though their importance is often ignored. To give some recent examples: the important phenomenon of 'social networking' is currently predominantly being framed as a recreational and economic issue, thereby ignoring that it can have profound implications on issues as far-ranging as societal cohesiveness or even security. Migration is increasingly framed as a negative security issue, thus underestimating both the positive security effects, and the economic, social and even identity dimensions of the phenomenon.

- **Underappreciating systems effects.** Profound change typically occurs simultaneously in many different domains interacting in complex ways that may defy prediction. This is all the more true in periods, like the current one, of epochal transition. We cannot currently claim to have a model that captures all the key parameters of the system in which we live, let alone the interactions between them. In the absence of such a model – and many complexity theorists tell us that such a deterministic model is impossible for as complex a system the world we're living in – all we can do is describe some of the plausible interlinkages.

- **Dubious timing.** The timing of the emergence of a new foresight issue is often much more arbitrary than is generally acknowledged. The faddishness of much foresight reinforces this problem, some issue suddenly emerges and then quickly gets propagated (and sometimes inflated) by the foresight community to such an extent that policy and decisionmakers can no longer ignore it.

Various 'scares' in the security realm clearly illustrate this point (from missile gaps to more recent intelligence failures).

- **Systematic bias in favour of gloom and doom.** In many realms, alarmism 'sells' better than thinking up. This is especially the case in foreign and security foresight, where most governments' foresight efforts almost exclusively try to identify (and thwart) 'threats' and spend nowhere near the same amount of energy in identifying (and stimulating) 'opportunities.'

The HCSS approach to foresight presents two workarounds to assist strategic decision-makers in avoiding these pathologies. The first one is to map the broader range of opinions on the future of any issue and to take outlier views more seriously. The second one is to be more sensitive and pay more attention not just to what we know (or claim to know) but also to what we do not (or even cannot) know.

3.1 HCSS Workaround 1 – Map the entire foresight discourse

One of the interesting findings of the literature that examines the reliability of foresight efforts (at least in the field of economics) is that consensus forecasts (robustly) tend to be more reliable than the majority of individual forecast.[9] This is especially the case when a diverse set of foresights are combined whereby different perspectives can be integrated.[10] Traditionally this was done by what we at HCSS call 'Foresight 2.0' – in an analogy to Web 2.0: bringing together diverse experts that can be polled on their views on various topics. Some of the most reputable foresight organisations have thus built networks of 'remarkable people' (in the words of the Global Business Network). One of the boldest incarnations of this idea was the Institute for the Future's recent 'Superstruct' exercise that tried to evolve different forecasts of the future through a massive multi-player forecasting game.[11] HCSS tries to push this concept of combining forecasts a step further through what we call 'Foresight 3.0' – again an analogy to the Web 3.0 (or 'Semantic web') idea. Rather than bringing together a network of foresight

9 Zarnowitz and Braun, 'Twenty-two years of the NBER-ASA quarterly economic outlook surveys.' See also Surowiecki, The wisdom of crowds.

10 Harvey and Harries, 'Effects of judges' forecasting on their later combination of forecasts for the same outcomes'; De Menezes, W. Bunn, and Taylor, 'Review of guidelines for the use of combined forecasts.'

11 For more information on the Superstruct Exercise: http://www.superstructgame.org/.

experts, HCSS (as a part of the Dutch Research and Technology Organisations TNO's ecosystem) is developing ways to tap into the collective knowledge about the future by using state-of-the-art textmining tools to extract the most important semantic concepts and their inter-linkages from hundreds of thousands of documents that deal with the future. As part of a government-wide strategic foresight exercise we conducted for the Netherlands government, HCSS textmined over 2,000 serious foresight studies which yielded an overview of the most important trends and drivers and the inter-linkages between them. In our attempt to map known knowns and unknown knowns, and go beyond singular, mono-cultural future narratives, HCSS is training Metafore teams in both the Western and the Eastern Hemisphere who, using such modern tools, assist us in mapping the various foresight discourses worldwide.

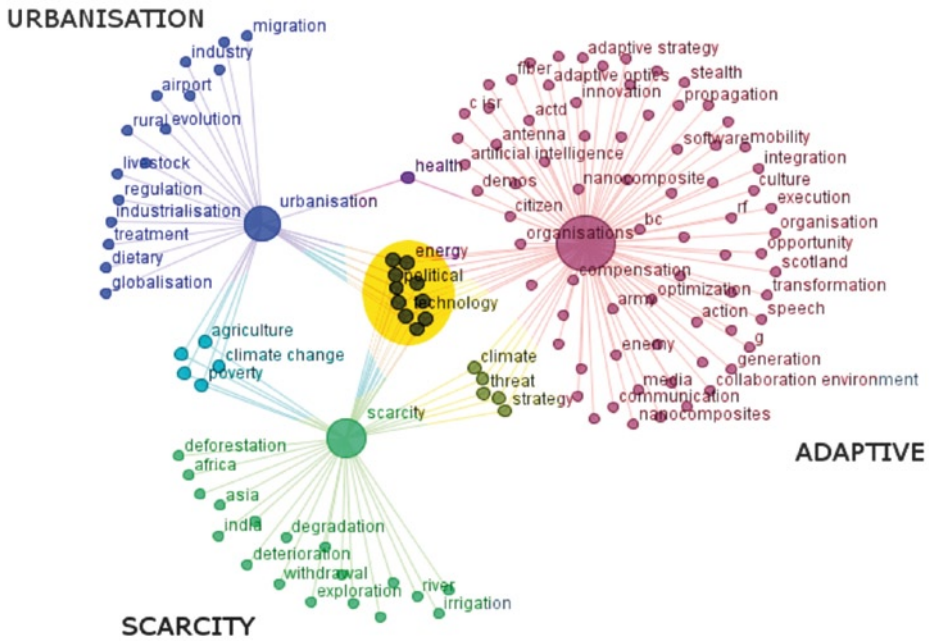

Figure 20. VISUALISATION OF THE INTER-LINKAGES BETWEEN 'URBANISATION', 'SCARCITY' AND 'ADAPTIVE' DERIVED FROM AN AUTOMATIC ANALYSIS OF OVER 2.000 SERIOUS FORESIGHT EXERCISES

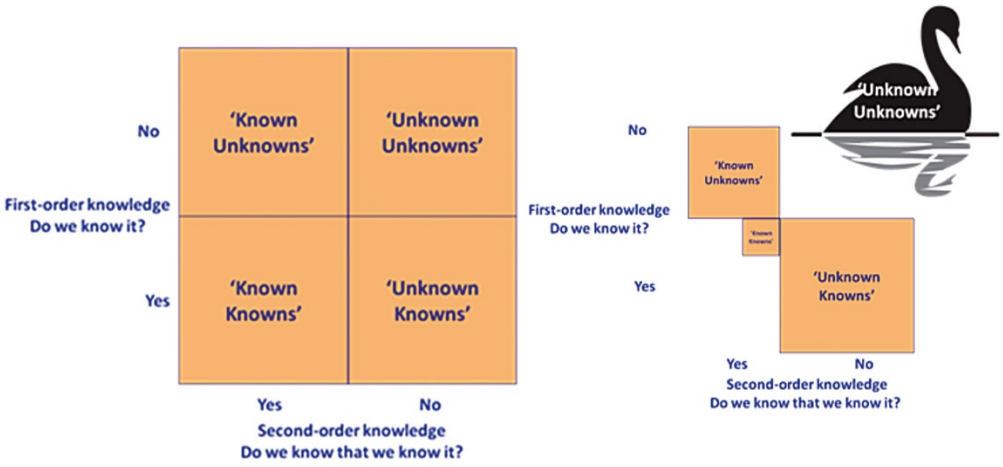

Figure 21. RUMSFELDIAN UNCERTAINTY MATRIX – IDEAL TYPICAL (LEFT) VS. REALITY (RIGHT)

3.2 HCSS Workaround 2 – Pay more attention to what we do not (or even cannot) know

One of the key underlying weaknesses behind all foresight pathologies is the hubris of the foresight community. They prefer (and are often encouraged) to make predictions instead of admitting that they do not know. It may be useful here to refer to Donald Rumsfeld's famous dictum about what he called the 'unknown unknowns',[12] which suggests a two-by-two diagram plotting two different dimensions of uncertainty:

- **'First-order un/certainty'**: whether we 'know' things or not (e.g. the future of China or Russia, the consequences of climate change, etc.) – these are the two main categories we usually use in thinking about the future and as we have seen, the foresight community has a tendency to exaggerate what it actually knows;
- **'Second order un/certainty'**: whether we know that we know those things. This addition reflects a greater sense of humility in our ability to discern what we actually know and what we do not. Strategic planners who are sensitive to

12 '...as we know, there are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns - the ones we don't know we don't know. And if one looks throughout the history of our country and other free countries, it is the latter category that tend to be the difficult ones.' DefenseLink News Transcript: DoD News Briefing - Secretary Rumsfeld and Gen. Myers.

this 'second-order' form of uncertainty will also tend be more circumspect in developing their strategic plans.

Thinking about this 2-by-2 matrix may lead some to believe that the four quadrants are – in the worst case – about the same size (see Figure 20, left hand side). Many decision-makers continue to think that the 'known knowns' (the things we know and realise – or at least think – that we know) represent the largest quadrant in this matrix. In a truly complex adaptive environment, however, this is a decidedly dangerous assumption. HCSS feels that the diagram on the right hand side of Figure 20 more accurately depicts our grasp of the future. In a deeply uncertain world, the most familiar and explored bottom left quadrant of the matrix (the 'known knowns') is almost by definition the smallest one. The top-left quadrant (the 'known unknowns' – the things we know we do not know) is significantly larger, even though it is not typically reflected in foresight studies, which still overwhelmingly focus on areas of assumed certainties (trends and drivers). The financial-economic crisis provides many good examples of this category: we should have known that we did not understand the risk models on which major parts of the economy were critically dependent.[13]

The bottom right quadrant is potentially the more promising one as it contains the 'unknown knowns': things we actually DO know, but without fully realising it. Given the enormous amount of data and knowledge that our governments and private actors currently have access to (and the overwhelming evidence that they both remain relatively inept at 'connecting the dots'), this would plead for a much larger effort to mine this vast pool of knowledge for the sake of better foresight – and insight. Many investigative commissions after terrorist attacks have demonstrated that governments had collected most of the relevant information but that they had not 'connected the dots': they had the information, but they did not realise they knew it.

Finally, the top right corner remains the most ominous and – again especially in complex adaptive systems with a scale-free network topology – potentially the largest one. Those are the things we do not know, and we do not even realise we

13 Scott Patterson, The Quants : how a small band of maths wizards took over Wall Street and nearly destroyed it (London: Random House Business, 2010).

do not know (for instance because they fall outside of the categories we currently know – just like the 'black swans' fell outside of the taxonomies known to the European explorers who first came into contact with a black version of a bird which in their definition could only be white).

After Nassim Taleb's influential book, the foresight community, as well as the strategic planning community, has recently started devoting more attention to the 'black swan'-quadrant (the 'unknown unknowns') of this matrix.[14] HCSS concurs that strategic planners have to be much more consciously aware of 'black swans' and have to spend more time in developing 'black swan repellents'.[15] As we just argued, planning communities should also make a larger effort to respect the unknown knowns. This requires two additional efforts: 1) making sure that the 'knowns' continue to get generated; but, in our view more importantly, 2) resisting the urge to discard various 'knowns' in the process of their aggregation for top-leaders. This requires safeguarding the integrity of the foresight process (including the intelligence generation process within governments) by protecting it from outside pressures – especially political ones.

But HCSS also feels the biggest potential 'wins' lie in the category of the known unknowns. Foresight communities have incentives to ignore or downplay known uncertainties. Whereas in statistics, for instance, we typically specify the statistical margins of error, there is no such tradition in the foresight field, even though most (honest) specialists, when prodded, would acknowledge that the margins of error are incomparably larger than in standard statistical datasets. This tendency to hide 'known unknowns' in the 'known knowns' category makes us think that we know more than we actually do, with dangerous consequences for decision-makers who will then potentially base their decisions on nothing but quicksand. The solution to this quadrant lies in putting more effort in honestly, and modestly, delineating the areas of the future we do NOT know. Once again, this implies a more 'modest' approach to foresight that shields the process against internal and external pressures for simplification.

14 Taleb, The black swan

15 Ibid.

4 STRONG in the 21st Century

Strategic Agility under Deep Uncertainty

4.1 From Strategic Sensitivity to Strategic Agility

How do our workarounds help our clients from the public and private sector? How do we translate foresight into actionable insight? How do we go from sense to respond? In an environment where change and uncertainty predominate, the ability to act flexibly and adaptively is of particularly high value. Whereas in a stable environment seeking the optimal and most efficient solution to a problem is the natural response, in unstable and uncertain environments, flexible and adaptive solutions are preferable. Modular structures, in which organisational components can be quickly recombined as external pressures change, and resource fluidity, where limited resources within organisations can quickly flow to combating new threats and reaping new opportunities, are key to this agility. In uncertain environments such as those we are facing today, strategies that can be rapidly implemented, avoid lock-in effects, and seek solutions that can be quickly up- or down-scaled are likely to be more successful than others.

Traditional expertise has limited value for strategic assessments if not harnessed in the appropriate manner and combined with a system view that does not ignore the key element of continuous change. Today, subject-matter experts are mainly accustomed to partial assessment under the assumption of a static environment with broadly fixed parameters. Such an approach will typically tend to overlook and discount shifts and trending in environmental parameters, disruptive events, externalities, feedback and spillover effects. Strategic choice that is informed by this type of expertise is bound to result in ineffective, unsustainable and fragile strategies. Instead, traditional expertise needs to be augmented by a mindset and toolbox that confronts uncertainty head-on.

As part of this approach, HCSS has formulated a number of principles for strategic agility under uncertainty that include the following tenets:

Emerge your strategy

- Build an organisation where doctrine, planning, strategy and the organisation's overall nature are not set in stone and changes are embraced to adapt as the environment becomes more certain;
- Allow strategy to 'emerge' rather than merely imposing it purposively;
- Encourage the development of organisational capacity (or 'flexible configuration strategies') for strategic thinking and learning capabilities;
- Stimulate and facilitate bottom-up initiatives;
- Grow flexible organisational structures in which the strategy process does not preconceive strategies, but recognises promising initiatives and intervenes in cases when they threaten internal efficiency;
- Allow periods of continuity to be occasionally interspersed with periods of disruptions and divergence.

Develop real options

- Acknowledge that in periods of deep uncertainty, irreversible decisions represent big gambles;
- Lie awake over white elephants;
- Wait to make irreversible decisions until more reliable information is available;
- Think in terms of 'options' instead of 'decisions';
- Invest (modestly) in a portfolio of multiple options;
- Be ready, but wait and adapt opportunistically to emerging circumstances;
- Remain constantly strategically sensitive to the changing context and to the changing 'value' of your options portfolio;
- Be willing to constantly oversee and change the options portfolio based on their changing value over time: invest or divest as changing circumstances dictate;
- Develop valuation methods for (future) activities to be able to value options as a basis for portfolio management.

Power to the edge

- Stimulate self-synchronisation rather than relying on a vertical chain of command in order to improve or fluidity across departments, response time;
- Share data and information according to a network approach;
- Develop broad skill-sets and train the workforce in the use and dissemination of information;
- Think in terms of organisational cells of changing compositions and modular units rather than stovepipes;

- For the managerial level: set constraints, rather than make the plan;
- Collaborate, rather than dictate;
- Foster a culture of responsibility within the organisation;
- Allocate resources dynamically, rather than setting fixed budgets;
- Encourage specific information 'pull' rather than 'push' unspecific information.

Develop open ecosystems around you - 'don't be star, be a galaxy'

- Acknowledge that in uncertain times, you will never be able to deal with everything yourself;
- Develop an ecosystem around you and think like one;
- Mobilise and be open to your partners;
- Think of your functions as service-oriented units;
- Systematically identify organisations with which your future is intertwined;
- Determine dependencies on others and make sure those operate under healthy conditions.

Think modular and late/loose coupling not early/tight coupling

- Always think in 'plug 'n play' building blocks as part of a genuinely modular approach;
- Think of individual units as stand-alone entities that produce services in such a way that they can be put together late in the game (service-oriented architectures);
- Allow loose coupled modules to interact towards achieving a joined objective, and avoid traditional, tightly-coupled component designs that require intensive managerial coordination;
- Put building blocks together depending on need, not organisational jurisdiction or historical proximity, thereby enhancing flexibility;
- Recognise that any building block is subject to change over time thereby easing or even reducing the effects of these evolutionary and sudden changes in time.

Stimulate collective commitment

- A networked organisation has the tendency to operate in a dispersed manner: collective commitment to achieve the overall objective is therefore necessary;
- A collective commitment emerges when there is a focus on corporate rather than business-unit issues and the organisation fosters mutual dependency among top-level team members. This also means that the weight on shared

corporate incentives should be increased. It means fighting intellectual and managerial stovepipes;
- This process should be supported by having a corporate-wide agenda that makes executives focus on common challenges and opportunities instead of specific sub-unit agendas. Mutual dependency enhances the willingness to make collective commitments and fight against 'management divergence';
- More transparency about the goals of individual business units. This could be enforced by a practice that supports open discussions about these goals and the personal goals of top-level team members so colleagues can comment and add their perspectives;
- In order to facilitate more collective commitment, an organisation should build overlapping areas of expertise. Constructive dialogues are easier if top team members have an experience-based view on each other's responsibility areas;
- Occasional changes in the allocation of responsibility among the top-level team are also key managerial mechanisms to improve collective commitments. It creates mutual dependency and collaborative work relationships as to create more awareness of each other's responsibilities and expertise.

An integrated approach, scenario exercises, dynamic modeling, capability-based planning and real options analysis are examples of tools that help to deal with uncertainty and complexity confronting us today. HCSS continuously works on developing and improving such tools.

4.2 Supporting Clients in Strategic Orientation and Navigation: Our Products

Strategic orientation and navigation cannot easily be outsourced, but they can be effectively supported. Situational awareness and strategic decision-making stands at the heart of leadership and must be part of the organisational culture in order to become successful. Instead of taking over strategic orientation and navigation for them, HCSS therefore acts as a knowledge broker and works in close, and often continuous, partnerships to support its clients in this process and to develop capacities and tools in this field.

For a diverse set of customers from the private, public and civil society sector, HCSS provides a portfolio of products at distinct stages of the strategic decision-making process, from broad, future oriented 'horizon-scans', all the way to the lessons-learned from evaluating the strengths and weaknesses of implemented strategies.

Figure 22 demonstrates this strategic cycle and the different dimensions of STRONG – Strategic Orientation and Navigation Guidance, while some of our STRONG products are explored in more detail below.

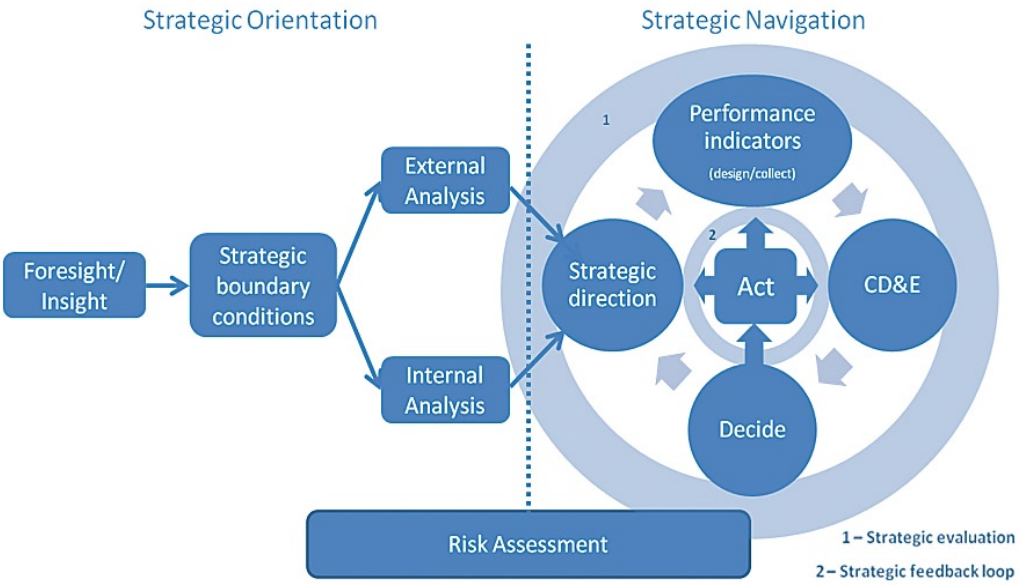

Figure 22. STRATEGIC ORIENTATION AND NAVIGATION

Strategic Orientation: State of the Future & Future Issues

States of the Future provide a broad overview of key trends that are likely to affect the client organisation and map out major threats and opportunities in the short-, medium and long-term. Horizon scans can be customised to focus on specific dimensions of the organisations environment (e.g. environmental, cultural or security trends) or a specific level of analysis or a specific time horizon (e.g. trends at the global or national level). HCSS scans the strategic environment with the help of its Metafore protocol, the continuously updated HCSS Foresight database, and regular consultations with a broad range of experts. HCSS regularly carries out foresight exercises for various Ministries in the Netherlands, including the Ministry of Defence, the Ministry of Justice, the

Ministry of Education, Culture and Science and the Ministry of the Interior & Kingdom Relations. It has also participated in various foresight and scenario exercises for NATO.

Future Issues provide an in-depth analysis of the development of a specific issue at the clients' choosing. Using the Metafore protocol and drawing on extensive expert interviews, key parameters and underlying drivers of change are mapped, the predictions of the foresight literature are presented and different scenarios for the future are developed. Within the Security Foresight programme, sponsored by a small number of corporate members, HCSS has published in-depth analysis on the future of a wide variety of issues, such as maritime piracy, nanotechnology, Russia, scarcity, space based warfare, urbanisation, biometrics, idiocracy, the Arctic passage, the Indian Ocean, the future nuclear landscape, social networking and cyber security. In 2010, HCSS started up the Strategy and Change Programme in cooperation with the Netherlands Organisation for Applied Scientific Research (TNO), to develop and provide input to the long and medium strategy of TNO and the Dutch government in the field of security, technology and innovation, wellbeing and sustainability.

Strategic Orientation: Strategic Dialogues

Strategic Dialogues bring together the key players on a specific issue together to discuss future trends, strategic options and likely consequences, through the use of new and more traditional methods. HCSS regularly invites eminent persons who play a key role in international security or conflict resolution to discuss strategic issues and policy approaches with policymakers and experts. These Hague Strategic Forums (HSFs) host a select number of participants and take place in the beautiful surroundings of the Lange Voorhout. HSFs have been held on, amongst others, a comprehensive strategy for Afghanistan, the future of the EU, the Korean peninsula and the situation in Iran.

In a less traditional vein, HCSS initiated the New Horizons project to collect a wide variety of expert views as input for the future Strategic Concept of NATO. The New Horizons project used an interactive on-line consultation among several hundred individuals from key security constituencies around the world to identify and assess the most important challenges to the Alliance and the strategic dilemmas it encounters.

Strategic Navigation: Risk Assessment & Capability Development

HCSS continuously works on improving tools and methods for cutting-edge strategic orientation and navigation, both internally and for client organisations. HCSS assesses the potential risks of external developments for clients and develops strategic options to help clients set investment priorities and navigate the future environment. Capability development involves more extensive projects of longer duration in which HCSS supports client organisations in developing their capacity for strategic orientation and navigation with state-of-the-art processes, knowledge and tools.

HCSS examined the implications of mineral scarcity for a number of strategic industries in the Netherlands and compared national responses of a set of relevant countries. HCSS assessed the value of national chemical, biological, radiological and nuclear (CBRN) approaches and policies in the light of future technological and geopolitical developments in the CBRN realm. HCSS has been, and still is, very closely involved in the implementation of the Dutch National Security Strategy and the transformation of the Dutch armed forces. Key to both projects are the development and application of methods to prioritise risks in an amorphous threat environment (including risk and impact assessment and scenario exercises), and the translation of national ambition levels to investment and procurement policies. This in turn allows for the evaluation of strategies both *ex ante* and *ex post*.

Strategic Navigation: Strategy Evaluation

HCSS regularly evaluates strategies and policies that have been implemented in the past for its clients across a diverse range of fields, both in the public and the private sector. This may involve the evaluation of a specific strategy or the comparison of strategies of several actors, ranging from the implementation of the comprehensive approach by several governments to the compliance with security risk frameworks by a multinational company. HCSS participates in a multi-year evaluation of the activities undertaken by the international community to promote security in Sudan. Previously, HCSS authored, amongst other studies, an evaluation of the global humanitarian mining action programme of the Dutch Ministry of Foreign Affairs.

Figure 23 provides an overview of the types of products HCSS offers. Clients determine what type of support they require in their strategic orientation and navigation process and tailor-made solutions are created, which often combine several elements of different products.

ACTION FIELD	OUR COMPETENCE	OUR SERVICES & PRODUCTS
STRATEGIC	• (Meta)foresight • Semantic Analysis • Scenario Database • Benchmarking • SWOT Analysis	• Strategic Surveys & Scenario Development • Geopolitical and regional security analyses • Conflict analyses • International benchmark studies • The Hague Strategic Debate • Thinktank National Security • Innovative policy recommendations
TACTICAL	• Security Table • Acceleration Room • Risk analysis AMCAT • Benchmarking Bull's Eye	• Trend and scenario analyses • Operational evaluations and lessons learned • Analytical studies & presentations • Shake-up presentations and discussion
OPERATIONAL	• Serious Gaming • Decision Support • Techniques • Survey Software • Think tank Software	• Crisis Management Gaming • Threat and Risk assessments • Piracy Database • Operational evaluations • Identification of lessons learned

Figure 23. HCSS PRODUCTS

Would you like to know more?
Please visit our website at hcss.nl or contact us at info@hcss.nl.

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performance.' in Stock, James H. and Watson, Mark H. ed., *Business Cycles, Indicators and Forecasting*. Chicago: The University of Chicago Press, 1993: 11-84.

Appendix – Example of Surveyed Foresight Studies

TITLE **Future World Scenarios**
ORGANISATION NATO
PUBLICATION YEAR 2006
NUMBER PAGES 70
TIME SPAN 2015-2030

TITLE **Multiple Futures Project**
ORGANISATION NATO
PUBLICATION YEAR 2009
NUMBER PAGES 74

TITLE **Deutschland im Jahr 2020: Neue Herausforderungen für ein Land auf Expedition**
ORGANISATION Deutsche Bank
PUBLICATION YEAR 2007
NUMBER PAGES 29
TIME SPAN until 2020

TITLE **Global Strategic Trends Programme 2007-2036**
ORGANISATION Development, Concepts and Doctrine Centre (DCDC)
PUBLICATION YEAR 2007
NUMBER PAGES 106
TIME SPAN 2007-2036

TITLE **Prospective géostratégique à l'horizon des trente prochaines années**
ORGANISATION Ministère de la défense, France
PUBLICATION YEAR 2008
NUMBER PAGES 27
TIME SPAN until 2037

TITLE **Final Report**
ORGANISATION European Secuirty Research & Innovation Platform (ESRIF)
PUBLICATION YEAR 2009
NUMBER PAGES 342
TIME SPAN until 2030

TITLE **Sarasota: A Strategic Conversation about the Future**
ORGANISATION Global Foresights Associates Inc.
PUBLICATION YEAR 2002
NUMBER PAGES 24
TIME SPAN until 2025

TITLE **Ten-Year Forecast Perspectives**
ORGANISATION Institute for the Future
PUBLICATION YEAR 2009
NUMBER PAGES 94
TIME SPAN 2006-2016

TITLE **Scanning the Future: American and European perspectives**
ORGANISATION EU Institute for Security Studies (ISS)
PUBLICATION YEAR 2008
NUMBER PAGES 4
TIME SPAN until 2025

TITLE **Global Trends 2025: A Transformed World**
ORGANISATION National Intelligence Council (NIC), US
PUBLICATION YEAR 2008
NUMBER PAGES 120
TIME SPAN until 2025

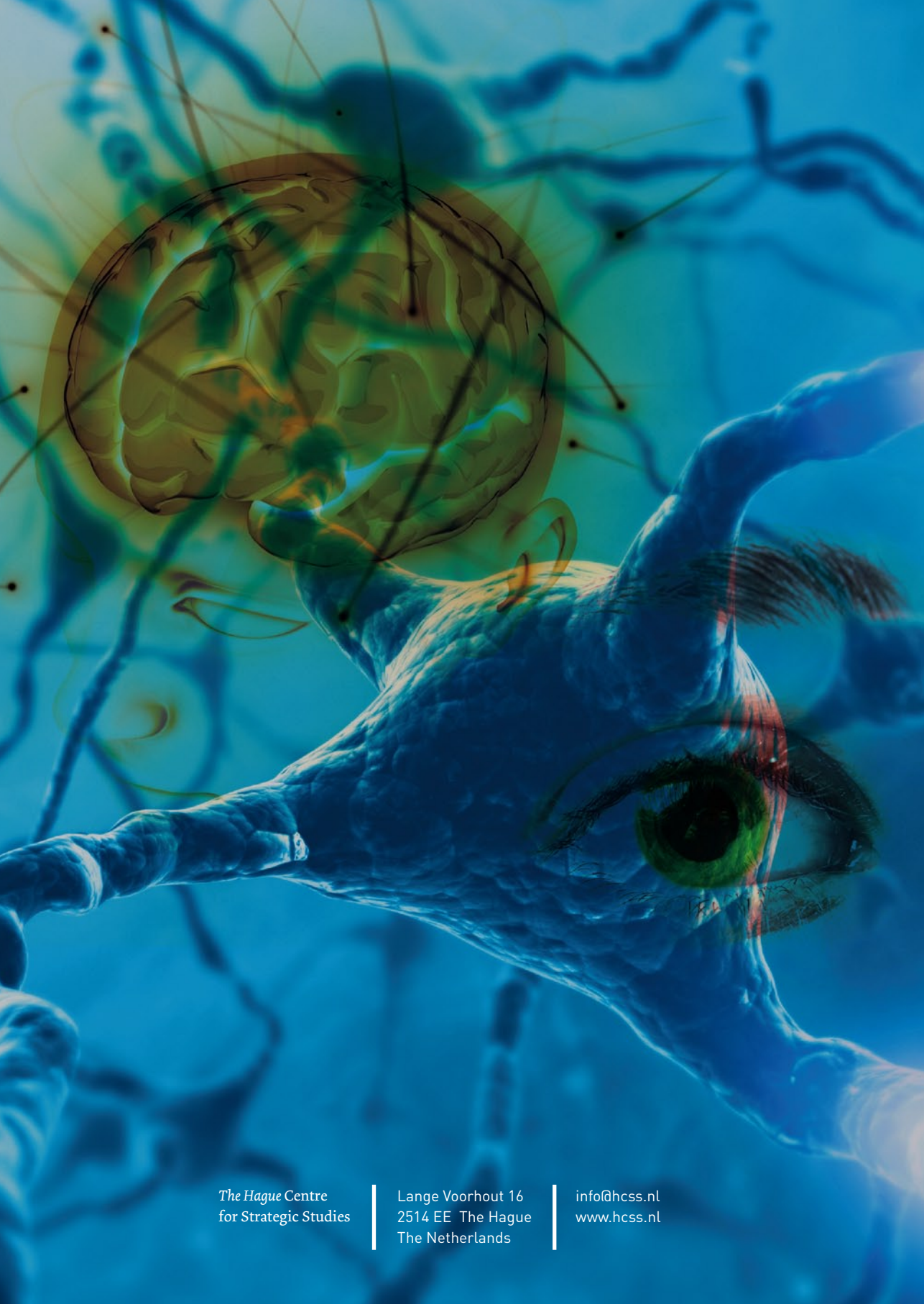
TITLE **55 Trends Now Shaping the Future of Terrorism**
ORGANISATION Proteus USA
PUBLICATION YEAR 2008
NUMBER PAGES 254
TIME SPAN 21st Century

TITLE **EU research and innovation policy and the future of the Common Foreign and Security Policy**
ORGANISATION ISIS Europe
PUBLICATION YEAR 2006
NUMBER PAGES 60
TIME SPAN until 2015

TITLE **The New Global Puzzle: What World for the EU in 2025?**
ORGANISATION EU Institute for Security Studies (ISS)
PUBLICATION YEAR 2006
NUMBER PAGES 254
TIME SPAN until 2025

TITLE **The Shell Global Scenarios to 2025**
ORGANISATION Shell
PUBLICATION YEAR 2005
NUMBER PAGES 18
TIME SPAN until 2025

TITLE **Synopsis of global scenarios and forecasting surveys scenarios in risk habitat megacity (RHM)**
ORGANISATION Universidade Nova de Lisboa
PUBLICATION YEAR 2008
NUMBER PAGES 28
TIME SPAN 21st Century



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