



Keynote by DK Matai, Chairman, mi2g, ATCA and *The Philanthropia*



**Considerations for Future Scenarios:
Low Probability High Impact and Black Swan Events**

The Opportunity and Risk of Asymmetric Globalisation

Global Risk Summit, Geneva, Switzerland – 9th June 2007

**Address to representatives of Major Financial Institutions – Banks,
Insurance and Reinsurance Groups – WTO, World Bank, IMF & UN**

Chairman, Your Excellencies, Ladies and Gentlemen,

It is a great privilege, pleasure, and honour for me to be with you today. What I would like to do is first and foremost say that I am humbled to be here. I feel humbled because all of you are so much more illustrious, and have so much more experience and knowledge of low probability high risk events and all these words like Black Swans that don't mean much to poor me. In a sense I am humbled by the experience, the collective knowledge, and wisdom that is accumulated in this room. So thank you very much for taking time out of your busy lives to listen to what I might have to say.

We are all being hurled closer to each other as the world integrates faster than ever before. The propensity for fast global integration creates both huge opportunities and its inevitable flip-side, huge risks. In the future, we should be concerned about Low Probability High Impact and Black Swan events which can change the present trajectory of nation states and large economic entities, many with turnovers in excess of the GDP of most nations. Welcome to Asymmetric Globalisation in which friends and adversaries are no longer similar looking as they react to off-the-radar forces giving rise to Low Probability High Impact and Black Swan Events. This also means that more risk is transferred into the markets away from Sovereign states.

The risk of missing some High Impact events altogether increases with the complexity of our world. This statistical phenomenon has been dubbed Black Swan by statistician N N Taleb, who describes them as 'outliers', ie events which lie "outside the realm of our expectations, because nothing in the past can convincingly point to [their] possibility." This retrospective but not prospective predictability is the critical distinction between a Black Swan and a 'normal' Low Probability High Impact Event. Its impact is further exacerbated by our tendency "to act as if they do not exist."

All the forces of global integration -- technological, economic, political and social alongside lowered trade barriers and increased capital flows -- support improved opportunities for growth. At the same time, those same paradoxical forces of integration are accompanied by a growing number of asymmetric Low Probability High Impact and Black Swan events outlined by distinguished colleagues at ATCA over the last six years, the top ten being:

1. Climate chaos and environmental degradation;
2. Radical poverty;
3. Geo-politics and energy;
4. Organised crime & extremism;
5. Advanced technologies proliferation -- bio, info, nano, robo & AI;
6. Demographic skews;
7. Resource shortages;
8. Pandemics;
9. Financial systems and systemic risk; as well as
10. Transhumanism and ethics.

The asymmetric threats have led to growing insecurity about employment, health, public safety and the well being of future generations.

The asymmetric threats -- many likely to be manifest in Low Probability High Impact and Black Swan events in the 21st century -- are not in spite of globalisation but

because of it. The same forces of global market integration and technology that have enhanced competitiveness are also the ones that drive anxiety about humanity's security, physical as well as financial. For example:

1. The low-cost air or sea carriers that permit business proximity and enjoyment of more travel and leisure than ever before can become an instrument of terror, transporting not just businessmen and tourists as well as goods, but viruses, disease and crime.
2. The high-speed Internet system that has made more information available faster and more efficiently can also threaten the critical infrastructure, invade our privacy, carry out identity theft, transmit hate, and be used to direct a global campaign of malevolence.

There has been a radical transformation in public consciousness as a function of this very rapid change in global society. The heightened integration, economic expansion and popular optimism of the last few decades gave way in the last ten years to the Asian financial crisis; Tech bubble implosion; 9/11; Enron/WorldCom large scale corporate failure; and the dubiously premised Iraq war -- all of them together have eroded public confidence, elevated anxiety levels, and heightened risk aversion. Indeed, the collapse of the Soviet Union was, in large measure, brought about by the realisation of a population that their politicians had lied to them comprehensively and that life was better on the other side of the border.

As for businesses all around the world, what they are most concerned about is how to grow profitably. Many are sitting on mountains of cash, afraid to invest it because during the 1980s and 1990s, they invested too quickly and were not sensitive enough to risk. Since the turn of the century, because of all of the asymmetric events that have happened, from 9/11 to corporate scandals, they can be afraid to act. How do we make the decision to grow sustainably by doing things cross-border in a helpful way, in an environment of chronic volatility and instability? All the unsettling conditions of the asymmetric world today are likely to continue to manifest themselves, so how to look at the future and how to try to find the signals for future developments so as to gain insight on making the right decisions in the 21st century?

There are other Low Probability High Impact and Black Swan scenarios which have been flagged including :

1. Nuclear terrorism and the risk of destabilising violence inside and outside major nations conducted by non-state actors who answer only to themselves;
2. The surge in world liquidity — the amounts involved (in the trillions of US Dollars) and the investment choices of nation states pursuing competitive national objectives could generate massive risks from misallocations and lost opportunities for poverty eradication.
3. The asymmetries between the accelerating pace of technological and economic changes compared with the decelerating pace of decision-making in governments wrestling with social and cultural change, and large businesses and financial enterprises managing organizational change, create their own possibilities for Low Probability High Impact and Black Swan events. The way we practise democracy seems increasingly

out of tune with the scope of the issues we are facing. The lack of courage of the political class, the inclination not to discuss real issues -- for they do not help win votes or campaign contributions -- prevents adaptation and evolution of democratic nations at the pace required by the immensity and complexity of the global challenges. This deceleration or abdication of responsibility is especially relevant and troubling in the context of emerging 21st century technologies with their profound potential impact on human wellbeing, and indeed on the future of the species itself. Furthermore, the scope, scale, and rate of change of the potential disruptive events on our horizon -- like abrupt climate change, or a major global pandemic -- beg the question of whether governments, as they are presently organized and operate, will even be equal to the magnitude of change that seems to be coming our way.

4. There is growing gap and conflict between the inherited cultural lens, developed over centuries, shaping the vision of people in China, India and elsewhere -- enabling masses to cope with all aspects of daily life -- and the prevailing values and practices of the modern world which tend to destroy the meaning of life for them. The way we handle aging people, the crumbling solidarity, the disappearance of hundreds of local languages and historical landmarks every year as well as massive migrations of the poorest, create an individual level of anxiety conducive to extreme violence. As the traditional fabric of society melts down, radical poverty (less than USD 2 a day) coupled with eradication/uprooting of local culture and traditions is a major issue. In reality in many developing countries in Africa, Asia and Latin America, as well as amongst many in inner cities in developed countries, there is almost no hope whatsoever for the standards of living of the masses to rise, in their lifetime above the barest, lowest survival level. This can lead to radicalisation and significant disruption of the larger system.
5. A large scale asteroid, earthquake, volcano or weather-related catastrophe with a bigger impact than the present consensus due the presence of larger human populations in areas which were historically sparsely populated.
6. The current Middle East conflicts spinning out of control into a larger regional conflict thereby destabilising key oil producers and pushing Western economies into unsteady patterns of economic growth as oil prices fluctuate.

Understanding the Underlying Drivers

The discipline of portfolio risk management suggests diversification across national borders into other countries. Much of the research conducted over the last decade suggests that the most successful companies and countries are those that make the decision to grow beyond their borders and to do so continuously -- however there is a balanced (symmetric) and unbalanced (asymmetric) aspect. In trying to understand the future, there are five key drivers, all with a very important leveraging effect on technology and innovation. These are:

1. Globalisation
2. Demographics
3. Natural resource and Environmental issues
4. Government regulation and consumer/shareholder/stakeholder Activism at every level
5. Changing consumer values and then behavior patterns, particularly as people see the improved or different life-style in other parts of the world.

These drivers are overlain by Low Probability High Impact and Black Swan Events that can dislodge even a well-constructed view of the future. The **mi2g** Intelligence Unit, for example, aims to estimate certain conditions prevailing in the year 2020 and over the coming 50 years, for the purpose of getting a sense of the direction in which the world is moving in the future, to inform the present. The way we do it is as follows: a given driver -- such as Demographics -- is plotted and an econometric forecast is conducted on each of the drivers in terms of the most optimistic and pessimistic outlook; growth prospects; effects on market segment, customers, geography and industry; and so on. For each of the five drivers there are a series of indicators to derive some level of detail useful for discussion of each driver and its component parts. These indicators are further used to build sub-scenarios from which macro scenarios are developed on visual Contingency Capability Radars and Digital Risk Matrices, spanning across the entire continuum of future prospects. All this is used by senior management to prepare risk and action plans for different scenarios, to align the organisation and its thinking about the future, or to make decisions on which markets to enter or depart. Finally, this is incorporated into a master scenario plan for the future. [Note : There is another, far more powerful way to do this using morphological analysis which takes the whole system into consideration at the same time, identifying the major relationships between and among the drivers, and then arraying all potential behavior states in a framework that allows the easy identification of all potential scenarios of significant interest.]

Globalisation: The first driver means something very different to different people. In terms of the **mi2g** Intelligence Unit, the focus is on economic, political, social and technological integration in objectively measurable, universally available facts that come from reliable sources and can be put together to raise questions about the convergence of these forces in various countries. While a few years ago globalisation may have been viewed as an irreversible, immutable and irrefutable force in everyone's best interest, looking at the last golden era of globalisation (1870-1914) with great technological progress, the greatest migration of people and more trade and finance crossing borders, it all came to a halt because of the interactions between the Great Powers became unsustainable – the world could not fit all of their hopes and aspirations. The First World War, and the Spanish influenza that followed, weakened the will for globalisation; nations became more introspective, Russia became communist and the US refused to participate in the League of Nations. This was followed by an era of protectionism, and that led to a global depression. What this leads to is the conclusion that globalisation should not be taken for granted. It should not be assumed that economics trumps politics because history is replete with examples where in fact the opposite has been the case.

The effects of Globalisation will also continue to be seen on another level, that of transborder environmental challenges and pandemics. These challenges will be exacerbated by the rapid movement of peoples as well as bird and insect migrations. These types of challenges will have to rely on cooperative networks and institutions for containment. On the policy level also it shows the importance of having co-

operative policy frameworks and structures for dealing with such global challenges. Effective action is based on risk perception and management since it must not be assumed that all societies can perceive and contain risk equally. These challenges are in part outgrowths of the economic and communication networks of the globalised world.

Globalisation has also delivered the significant risk of 'Over-Integration' in the developed economies. We have spent much of the last ten years at a corporate level working out ever more ways to 'run lean'. Moving to just in time inventory control, closing warehouses, taking out staff, off-shore outsourcing, making ever more use of real-time electronic communications etc. This is fine in isolation, but it does sharply increase dependence on the continued reliability and smooth running of national (and international) infrastructure. We would argue that in several Western economies (and possibly other major economies) this infrastructure has been fragmented and under invested. We believe that the potential for a cascade failure – say starting in power then spreading to communications, logistics, etc has never been greater.

There is still not enough of a 'systems view' taken of Critical National Infrastructure' as a whole. This acts as a very nasty potential force multiplier for certain Low Probability High Impact and Black Swan events.

Demographics: The world population has trebled in the last century with great advances in life expectancy. Global population growth is now down to about 1.2% per year, not only due to population decline in developed countries, such as throughout Europe and Japan, but because the 750 million people in sub-Saharan Africa over the last decade have seen their life expectancies decline, largely due to HIV/AIDS. Developing countries are experiencing strong growth in the 15-39 year-old segment, while the industrialised world is experiencing an aging population. There are also huge changes in population and demography, with over 90% of the global population now living in the developing world. In addition, the locus of population growth has shifted to urban areas. In cities ill-prepared for this shift in urban concentration there will be huge instability. These changes both within and between societies are going to have a tremendous impact on economics. In addition to the demographics, there have been changes in the global labour environment. First, since the end of the Cold War there has been clear integration of global labour markets and an environment in which the digitisation of data and low-cost telephony have made outsourcing possible. At the same time, a radical restructuring of economic power is now occurring as we shift from a manufacturing- to a services-based economy. In fact, in the period 1995-2005 there was a net decline in manufacturing jobs globally of more than 11%. Even China has 15% fewer manufacturing jobs than in 1995. At the same time, it doubled factory output as a function of technology-driven innovation and productivity improvements. Dealing with a shortage of labour coupled with depopulation could mean importing labour (immigration) or exporting jobs (outsourcing). While manufacturing jobs were declining throughout the last decade or so, the youth population in the developing world grew by 18%. That is an important dynamic to consider when thinking about future global demographics. There is a big problem potentially emerging between the labour surplus countries and the labour deficit countries.

Natural Resources and Environmental Issues: It is commonly held that most forecasts on oil reserves have been and will continue to be wrong. In this view, for example, instead of depleting oil and gas reserves in the energy sector, a million times more computing power is being used today than in 1970. This suggests that we have added to reserves in ways previously unforeseen. New sources of

hydrocarbons have also been found. Therefore, to understand the future of energy, the politics of the supplying countries come into play, particularly Russia and the former Soviet Union/CIS countries as well as OPEC, and the demand side of Asia in general, and of China and India, in particular. Conversely, an increasing number of geologists and energy experts point to the fact that hardly any recoverable hydrocarbon resources of global scale (ie in the order of magnitude of Saudi Arabia's Ghawar or Mexico's Cantarell possibly diminishing fields) have been discovered since the 1970s. While important savings can be achieved, alternatives are mostly in relative technological infancy and/or insufficient in terms of supply or plain fiction in the case of Hydrogen (which is not an energy source, but a storage medium). Moreover, much of our energy distribution infrastructure and hardware (eg engines) is hydrocarbon based and a reasonably smooth transition to any combination of alternatives is predicated on a sufficiently slow depletion of hydrocarbons.

The natural resource situation depends not only on politics and economics but also on the environment and what is likely to happen in the future on the issue of climate chaos and availability of natural resources other than energy. One of the most problematic resources is water and the fact that in 2050, more than 40% of the world is expected to be in a water-scarce or shortage situation. With population growth, the consumption of water for agriculture, food and manufacturing has increased without being replenished. Clearly, availability of water has been acknowledged as a problem and the Intergovernmental Panel on Climate Change has come to publicise that this issue is no longer one of mitigation, but of adaptation.

Activism and Regulation: If it is assumed that people feel more vulnerable than ever before, they will look to government for protection. At the same time, because people are feeling more threatened and activist groups are enabled by technology, there is more power to be leveraged by shareholder/stakeholder activism at every level. At the same time, more will be demanded from government in the future. The policy issues on which government must pronounce are becoming more complex, related to privacy and digital technology, biotechnology, stem cell research, etc.

Consumer Power and Preferences: The human race is a remarkably resilient one and the information-rich world in which we find ourselves, allows us all to see what is going on in far-flung parts of the globe. Where there is poverty, we want riches, where there are riches, we will want more. Prediction of the future is never straightforward but we can always count upon the dynamics of changing environments with the constancy of human venalities, hopes and fears. Drawing a map of the world to scale and considering only those people earning USD 10,000 per capita adjusted for purchasing power parity, the visible world population in 2000 can be momentarily reduced from 6 billion to 1 billion people. In 2015, the situation is completely different in that this visible population doubles to more than 2 billion, with 1 billion in the developing world (over 500 million in China and 300 million in India). This is why investors are most likely to invest in China and India -- because of the potential for burgeoning new markets. It is also important to note that while Japan and Europe are in decline, their concentrations of upper-income consumer groups actually grow. This leads to talk about more consumers in the industrialised world wanting to buy "experiences" (such as high-end luxury goods, customised features, entertainment, travel, tourism, higher education, wellness and better health) rather than plain product. Thus, the homogenisation of markets, which was discussed years ago, seems unlikely to happen, in part because when people fear that the world is crowding in on them, they look to "comfort products" that they can somehow relate to rather than broad, global, homogenised products. As people react and push back

against globalisation, they actually gain a preference for local brands that they think help define who they are and what they are, assuming such brands offer roughly equal quality as well as price.

All of this leads to a certain view of the world with the **mi2g** Intelligence Unit future scenario being one of Low Probability High Impact events which at the highest level suggest that the US, China, India, EU, Russia and Brazil economies will be dominant and the other economies will be fulcrums, leveraging power between the top six, not discounting for Black Swans. The Low Probability High Impact events that are going to affect the human condition, are potentially disruptive, and could be positive (for example, the Green Revolution) or negative (for example, avian flu) and beyond anybody's control. This would suggest that there will be much more intense resource competition and price escalation, or perhaps new and more efficient uses of natural resources.

In looking at the risks that concern business leaders, while traditional risks remain, such as country financial risk and civil disturbance, there are also new, emerging risks that have to do with security threats, terrorist attacks, theft of intellectual capital and IT disruption. In fact, top business leaders' greatest fear is that they are unable properly to monitor risk and guide strategy. It is this lack of strategic assessment and risk mapping that makes companies reluctant to invest. Some obstacles executives identify as impediments are the lack of tools to recognise early warning signs, and the lack of information necessary to make strategic decisions which is the lacuna that the **mi2g** Intelligence Unit seeks to fulfil. Unless they have independent, third-party assessments, executives cannot discharge their responsibilities.

Inspiration from the Internet to Solve Complex Global Challenges

The Internet was born of risk mitigation, the desire to create a network, highly robust and survivable. In most part by a simple decision to build a packet based network with nodes rather than a circuit based network. In a sense each node connected to all other nodes via multiple paths a form of holistic communication. The network and the TCP/IP protocol feature redundancy, fail safe measures, a distributed architecture, decentralisation, an autonomous nature, efficiency, mobility, structured formal communication and negotiation protocols, as well as a vehicle for collaboration not limited by time or geographical constraints. The Internet and the world wide web are an open architecture with rules allowing for improvement and enhancement by any of the participants with the sharing of these enhancements with other participants. Other sectors of global society, and the humanity as a whole could benefit from these same principles applied to communications infrastructure.

The Internet has had an overwhelmingly positive benefit on humanity promoting connectivity and leading to unity. It is producing a rapid evolution of consciousness, snowballing intelligence, and enhanced awareness. There are also the realised benefits of efficiency (collective cost reduction) and increased speed, defining the manifestation of deliverables. Yet we have still only utilised a fraction of it's potential.

The world entities – large medium and small nation states, businesses and NGOs as well as communities – should feature the same elements of the Internet fulfilling the desire for a highly robust and survivable humanity, such as:

Redundancy: If one component fails another duplicate exists to perform the role of the failed component.

Fail Safe Measures: Designed to trigger action to prevent system failure which could include predefined policy in response to events, monitoring metrics, predictive analysis, backup systems etc.

Ensured Operational Continuity: This provides infrastructure and a means for a business, country /government, institution and even the individual or family, to continue it's operations uninterrupted in the event of displacement or catastrophic geological destruction or contamination of it's home base. In this we see where one country could host the government and financial operations of another country for example in event of some catastrophic black swan event.

Distributed Global Systems: This provides that no single entity or system is dependent on any other single entity or piece of infrastructure for it's operation and survival and that function is spread out over large geographical regions so that events disabling specific areas do not effect the whole.

Decentralisation: This helps to eliminate a single point of failure and the need for centralized control and the vulnerabilities associated with it; favouring instead collective control by the whole body.

Autonomous Systems: These systems work having well defined human intelligence and function embedded in them without the need for direct human intervention, which eliminates the dependency on individuals and prevents interference or disruption by those working in their own self interest to the detriment of others, or an imbalance of power enabled by centralized control.

Efficiency: Reduced energy consumption, and speedy execution of steps for manifestation

Mobility: Allowing flexibility and adaptability without being constrained by dependency on being located at any specific geographical coordinates.

Structured communication and collaboration: Allows for organized and moderated, but open, Socratic dialog capable of formulating policy, defining projects and managing the steps for implementation as well as gathering and formulating intelligence from a multitude of sources; producing an integrated solution accommodating the needs of all participants in a balanced way. It also provides a manner by which the collective can voice and authenticate it's intent so that government can deliver and execute the tasks necessary for it's fulfillment.

Reduction of Fear: Risk mitigation also reduces fear and that is a good thing. Most detrimental behavior is the result of fear. When there is no fear there is stability and security, a reduction in conflict, which results from fear, is a reduction in cost. This leads to prosperity and abundance which then reduces the conflict resulting from conflicting desire because there can be enough for everyone in a number of areas.

Conclusion

After constructing the scenarios that give the corporate client an opportunity to envision the future, the risks are mapped by, first of all, prioritising the most important factors in terms of generating earnings for the corporate operation; then identifying the critical infrastructure, locating vulnerabilities and developing responses by

creating flexibility or redundancy to prepare for disruptions; and finally, implementing a system to monitor changes in the conditions via the Contingency Capability Radar and Digital Risk Matrix. This global risk assessment can also be called Horizon Scanning developed to deliver government-wide or enterprise-wide transnational capability in very sophisticated ways. Most importantly, everyone in the government department, company or NGO at the senior executive level must understand who has responsibility for each risk, the severity of the risk, the impact on profitability, the action to be taken, and who to approach for managing that risk as well as putting the risk mitigation plan in place.

In short, the view at the **mi2g** Intelligence Unit is that the only way companies can do what they need to do to grow is to have a more dynamic view of the world by rigorously researching and powerfully imagining the future, and putting in place a risk-mitigation strategy so that, as the world continues to manifest volatility and change, there is room to move forward and act responsibly for shareholders and stakeholders at every level despite Low Probability High Impact and Black Swan events.

As a special consideration, please note that some Low Probability High Impact and Black Swan events may actually become High Probability High Impact Events as time goes by owing to the five drivers converging and colliding.

[ENDS]

Reviewers include:

Aileen Armour-Biggs, Douglas Byblow, Professor Nigel M de S Cameron, Herve de Carmoy, Fred Cohen, Napier Collyns, Jean-Yves Gresser, Hamid Hakimzadeh, Gerald Harris, Willy Hersberger, Rear Admiral John Hilton, Chris Histed, Alexander Hoare, Prof Sai-Felicia Krishna-Hensel, Richard Lee, Prof Jean-Pierre Lehmann, Andrew Leung, George Littlejohn, Thierry Malleret, Dr Harald Malmgren, Nicholas Mellor, Miguel Mendonca, Prof Jim Norton, John Petersen, John Pickering, Richard Thomas Gerber, Commodore Patrick Tyrrell, Michael Wade, Sir Harold Walker, Ian Walker and Martin Wolf.