Save the world: A commercial break
Lord Mayor Professor Micharl Mainelli
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Good evening Ladies and Gentlemen. I'm pleased that for the sake of the world so many of you took a Commerce break tonight.

As you know, it wouldn't be a Commerce lecture without a commercial. Tonight's talk is the eighteenth in a series set out over three years ago. It was originally supposed to be my valedictory address, but Gresham College has rather flatteringly extended this Commerce lecture series to a fourth year. Sometimes I'm a little concerned that the professional evaluation Gresham College holds probably reads something like, "as a public speaker, he's still finding his feet". Nevertheless, I'm glad to announce that during the next academic year a further six Commerce lectures will continue our theme of better choice. So here is our first commercial break, an advertisement for the nineteenth lecture, "Is The Party Over? Sustainable Hopes", here at Barnard's Inn Hall at 18:00 on Tuesday, 16 September.

An aside to Securities and Investment Institute, Association of Chartered Certified Accountants and other Continuing Professional Development attendees, please be sure to see Geoff or Dawn at the end of the lecture to record your CPD points or obtain a Certificate of Attendance from Gresham College.

Well, as we say in Commerce - "To Business".

[SLIDE: OUTLINE]

A moment ago I mentioned that tonight's lecture should have pulled the Commerce series together towards a close. To take you back briefly, we elaborated on the commercial valuation of ethical behaviour in March 2006 with "Take My Profits, Please! Volatility Reduction And Ethics". You will be aware that many people believe markets are not just one of the world's problems, but perhaps even the problem facing the world. We rebutted some of those arguments back in November 2006 with the lecture "Who Hates Globalisation?". However we also recognised many valid arguments against current commercial practices in the December 2007 lecture, "Stealing The Silver: How We Take From The Dispossessed, The Poor And Our Own Children". I should also mention three other lectures that set the background to tonight - on risk, March 2007 "Does Society Risk My Life Through Safety" The Perils Of Too Much Risk-Aversion"; on standards, October 2006 "Standards Markets: The Free Market Response To Regulation"; and on the role of government, January 2006 "Goldilocks Government And The Market: Not Too Little, Not Too Much, But Just Right".

Normally I'd give you a two hour break to go back and read your lecture notes, but I assure you that's not necessary. I just want to point out that we have covered a lot of relevant ground already which I don't intend to recapitulate. All the lectures remain available online if you want more detail. Tonight's talk is about global risks and what we can do about them. As you gathered from the blurb, we shall explore how

commerce might play a key role in helping us manage these global risks. Our title is "Save the World". The first question we need to ask is does the world actually need saving? If so, the second question is what can we do about it?

There's an old English expression, "what's that got to do with the price of fish?", meaning "so what?" or "let's be practical". So what have global risks and commerce got to do with the price of fish?

[SLIDE: THE PRICE OF FISH]

Well, perhaps quite a lot. Our second commercial break, in the sense of an opportunity realised, comes from mobile phones and fish. Robert Jensen studied the introduction of mobile phones to fishermen in Kerala, India in 1997. By 2001, nearly 60% of the fishing fleet had mobile phones. With mobile telephones (cellphones) the fishermen were able to learn about market prices while out at sea and pick the best market to land their fish. Jensen concluded that "fishermen's profits increased on average by 8 percent while the consumer price declined by 4 percent" [Jensen 2007, page 883]. Technology and commerce increased the livelihood and wealth of the disadvantaged. Wasted fish decreased from between 5% to 8% of the catch, to almost nil. Jensen provides down-to-earth proof of the importance of information. In a broader, statistical analysis Leonard Waverman and others went further to estimate that, across the developing countries he and his team studied, "a developing country that had an average of 10 more mobile phones per 100 population between 1996 and 2003 would have enjoyed per capita GDP growth that was 0.59% higher than an otherwise identical country". [Waverman et al 2005, page 2]

[SLIDE: GIANT YELLOW CROAKER]

Our third commercial break, in the sense of broken, comes from another interesting fish story that broke on Reuters [25 April] last week. In Hong Kong, three fisherman landed an 85 kilogram, 1.68 meter, Bahaba fish after a 90 minute fight. This Bahaba fish is colloquially called a giant yellow croaker. The three fishermen, well one was a housewife, thought they had also hit a big jackpot when they sold the fish to a local fish buyer for HK$20,000, about £1,300. But the fish buyer sold the massive fish, which is highly prized for its swim bladder, for HK$580,000, about £38,000, to a local restaurant. But then the restaurant sold the fish to a mainland Chinese buyer for HK$1,000,000, about £65,000. The three fishermen clearly undervalued their catch. Here we have evidence of how lack of information hurts, but also how trade and commerce manage to balance risks and rewards through exchange. Perhaps our three anglers are the three people in Hong Kong most in need of a mobile telephone.

But there's a much darker, sadder side to this story, taking the American slang meaning of "croak", i.e. "to die". The giant yellow croaker is critically endangered, nearly extinct, and few survive to maturity given overfishing. So commercial transactions are both saving and killing the planet.

[SLIDE: GLOBAL RISKS]

There are a tremendous number of global risks. In past lectures I've spoken about the Copenhagen Consensus issues, among them malaria, AIDS/HIV, corruption, armed conflict, governance, pandemics and climate change. We have many scarcity issues - water, cropland, living space or fish. We have many quality of life issues, such as obesity, longevity, genetic modification, access to medicine or employment opportunities. Given that financial markets are more and more frequently the mechanism by which global risks and rewards are transmitted, e.g. micro-finance, internalisation of carbon emissions, or motivations for drug companies to research tropical diseases, the robustness and resilience of financial markets themselves is a global risk.

Global risks are persistent. Most modern people believe slavery has been eradicated. Yet Anti-Slavery International soldiers on as the world's oldest international human rights organization with roots back to 1787. Given that Britain abolished the slave trade in 1807 as well as slavery throughout the British colonies in 1833, and the USA following its Civil War, it is hard to believe slavery persists. But people are still bought and sold like objects, forced to work for little or no pay at the mercy of their 'employers'. Bonded labourers often take, or are tricked into taking, loans. To repay the debt, they work constantly and, while sometimes receiving basic food and shelter as 'payment' for their work, may never pay off a loan which can be passed down for generations. Controlled by an employer, treated as a commodity and with restrictions on movement, slaves are found from Mozambique to Morecambe Bay. Despite bans in the 1948 "Universal Declaration of Human Rights" and the 1956 "UN Supplementary Convention on the Abolition of Slavery, the Slave Trade and Institutions and Practices Similar to Slavery" women from eastern Europe are bonded into prostitution, children are trafficked between West African countries and men are forced to work as slaves on Brazilian agricultural estates. Early and forced marriages of women and girls can force them into lives of servitude. The International Labour Organisation estimates that child labour affects the health and welfare of 126 million children worldwide.

I think we can rapidly conclude that the world is in need of a bit of saving. But what can we actually do about these risks? Isn't it all too complex. Alexander Evans and David Steven point out that the international system's increasing complexity is due to a "growing number of actors confronted by fluid and interlinked threats". They believe that "Two drivers of change stand out: scarcity, limits to the sustainable consumption of highly strategic commodities such as energy, land, water, food and 'atmospheric space' for emissions; and instability, the tendency for complex systems to experience unpredictable and unsettling shifts." Underlying scarcity and instability is the unsustainability of a still growing population. Arguably, population growth is at the root of many of our scarcity problems. Huge populations combined with rapid communications give us a number of feed-forward/positive feedback problems that increase the instability Evans and Steven fear. Human systems are not physical systems as we explored in a November 2005 lecture "Perceptions Rather Than Rules: The (Mis)Behaviour Of Markets"; they exhibit non-normal distributions of activity, with values subject to rapid change.

[SLIDE: RETHINKING GLOBAL RISKS]

Global risks are events or circumstances that are beyond any particular party's capacity to control, that may adversely impact multiple parties across geographic borders, industries, and/or sectors. However abstract they may be, global risks affect enterprises, even those not apparently involved, in different ways - disruption to a distribution channel, impairment of facilities, network interruption, reputation harm, higher commodity costs, and more - that are concrete enough to manage but still beyond any particular enterprise's capacity to control. Some of the risks have their origins in business activity, such as accounting misconduct, but entail a broader threat to society. Others, such as poverty and disease, pose a more tangible threat to society but can be mitigated by businesses through economic development, products, and services.

Commercial enterprises strive to create value for shareholders and other stakeholders, and have mechanisms that allow them to respond both to their existing environment and to anticipate change. Enterprises specifically work to reduce risk, i.e. they attempt to reduce the likelihood of adverse events or the impact on the enterprise if the risk materialises. Their risk management systems focus on competitive advantage for the individual enterprise. Global risks are characteristically low probability and high impact, rendering them too complex and uncertain for any single entity, working in isolation, to manage. Because organisations have a bias toward assigning greatest importance to those risks that are within the enterprise's control and their risk systems classify global risks as "beyond our control", they give insufficient attention to global risks. But external global risks are not necessarily beyond our collective capacity to manage, just beyond the scope of a single enterprise. Additionally, society will suffer without the contribution of business. Companies struggle with global risks more than enterprise risks due to:

¨ Complexity: no part of the problem can be isolated and solved; solutions that work are, of necessity, holistic. Asset values affect economic returns affect investment decisions affect politics affect communities affect compliance affect asset values, etc. Solutions to Global risks are likely to involve mechanisms, such as markets, which are not predictable. It is hard to anticipate the causal interactions of forces. Complex behaviour, within broad conceptual predictions, emerges rather than being directed;

¨ Uncertainty: the degree of uncertainty grows with the number of unknown quantities, difficulties with measurement and problems with prediction. How do we model decisions under uncertainty? What can our firm really do about global warming that might make a cost-beneficial difference? Multiple actors and political tensions mean that putting values on outcomes is inherently controversial. Should our firm "value" alleviating third-world hunger more than preventing bird flu?

¨ Scale: the effort involved in managing a global risk is beyond the capacity of any single firm, region, nation or trade group. Kunreuther and Heal [2002] point to the threat of systematic underinvestment in risk management where "the incentive to invest in protection approaches zero as the number of unprotected agents increases."

[SLIDE: WICKED PROBLEMS]

My colleague, Alexander Knapp, directed me to the concept of "Wicked Problems". The term was originally proposed by Horst Rittel (a pioneering theorist of design and planning at the University of California, Berkeley) and Melvin Webber in a treatise for planning. Rittel explored ill-defined design and planning problems which he termed "wicked", i.e. messy, circular and aggressive. These problems are not the comparatively tame problems most decision theorists study, for example chess, game theory or puzzle solving. The real world is messy, circular and aggressive. According to Laurence J Peter of The Peter Principle fame, "Some problems are so complex that you have to be highly intelligent and well informed just to be undecided about them."

Professor Christopher Dye gave a compelling lecture last month, "Why Is Africa Still the Poorest Continent?" He demonstrated the intractability of many African problems, but also why there were cautious reasons to be hopeful. Christopher and many others struggle to distinguish between solvable problems, unsolvable problems and wicked problems. Jeff Conklin summarises Horst Rittel's problems with wicked problems:

¨ "You don't understand the problem until you have developed a solution. Indeed, there is no definitive statement of "The Problem." The problem is ill-structured, an evolving set of interlocking issues and constraints.

¨ Wicked problems have no stopping rule. Since there is no definitive "The Problem", there is also no definitive "The Solution." The problem solving process ends when you run out of resources.

¨ Solutions to wicked problems are not right or wrong, simply "better," "worse," "good enough," or "not good enough."

¨ Every wicked problem is essentially unique and novel. There are so many factors and conditions, all embedded in a dynamic social context, that no two wicked problems are alike, and the solutions to them will always be custom designed and fitted.

¨ Every solution to a wicked problem is a "one-shot operation," every attempt has consequences. As Rittel says, "One cannot build a freeway to see how it works." This is the "Catch 22" about wicked problems: you can't learn about the problem without trying solutions, but every solution you try is expensive and has lasting unintended consequences which are likely to spawn new wicked problems.

¨ Wicked problems have no given alternative solutions. There may be no solutions, or there may be a host of potential solutions that are devised, and another host that are never even thought of."

[http://cognexus.org/wpf/wickedproblems.pdf]

Wicked problems are not just about global risks. Building a new power station or train system or computer program can be a wicked problem. Wherever the problem affects the solution and vice versa, where solutions are enmeshed in society and everyone cares, you probably have a wicked problem. Certainly most global risks, with long timescales, distant countries and, when it grabs their attention, everyone wanting to do something immediately, qualify as wicked problems. People want solutions that don't damage economic growth at home, but if it didn't cost anything it would be happening now. The rare few who state "if we want it so much let's pay for it' are considered either scuppering realists or unrealistic idealists.

[SLIDE: WICKED SOLUTIONS]

One of the big problems with global risks is determining how much it matters to act now. When people talk about risks, I often contend that something isn't a risk if no one is prepared to pay to avoid it or its effects. Take a frivolous example, the risk that the sky might turn from blue to purple. Assume that if the sky turns purple there are no other physical dangers, just a colour change. Assume too that people can make a payment to reduce the chance of the sky turning purple. If no one wants to pay, then I call the sky colour change an event, not a risk. On the other hand, perhaps people are prepared to pay to avoid having to adjust to new colour schemes or to keep cultural continuity with old masters' paintings. Then the sky colour change is a risk. You may find it frivolous that people will spend money to avoid something that has no negative effects, but if they pay to avoid it, it's a risk.

Global solutions are plagued by tyhe tension between the room for action versus the degree of uncertainty. This tension is why things are frequently left so late. If you wait, you may find new ways of solving problems, but the problem also grows in scale. Actions are of two types, resilient actions or robust actions. Communities potentially exposed to hazards can adapt, resist or change to maintain an acceptable level of functioning and structure. That's resilience. Despite variations in starting assumptions or parameters, robust systems, communities or societies still function in the presence of partial failures or other adverse, invalid, or abnormal conditions. Resilient actions get by - resilient systems perform within the range of historic volatility. Robust actions try to solve the problem or handle a previously unreasonable scale - robust systems handle step changes in volatility. A lot of the difficulty with global problems is people getting used to them. A resilient approach to famine is to establish a reasonable disaster relief programme. Let's just get by for now. A robust approach to famine is to overhaul everything from agriculture to transportation to markets to governance to try and prevent famine from happening. Let's solve it once and for all. In some cases, robust approaches aren't attempted because of lack of confidence. In other cases, robust approaches are overdone, e.g. seeking a silver bullet technology such as nuclear fusion these many years. In some cases, robust approaches have achieved wonders, such as the eradication of smallpox. But solving global risks via robust approaches involves a lot of different activities.

[SLIDE: NOT JUST GOVERNMENT, AID OR GODS]

A few single approaches to solving global risk problems can be ruled out. We can start with government on its own. For many wicked problems dinner party answers start with the phrase "somebody ought to..." Of course we really mean some omniscient, omnipotent being who will come down and make everyone else act properly, pay to fix things and avoid all future problems. In the financial markets right now, everyone awaits the coming of new super-regulators who won't make the credit crunch mistakes of those who came before them. Sadly, neither that government nor that regulator exist, nor to the dismay of Pastafarians, does the Flying Spaghetti Monster exist. Less flippantly, Muhammad Yunus, founder of Grameen Bank and winner of the 2006 Nobel Peace Prize, says:

"Governments can do much to address social problems. They are large and powerful, with access to almost every corner of society, and through taxes they can mobilize vast resources ... So it is tempting to simply dump our world's social problems into the lap of government and say, 'Here, fix this'. But if this approach were effective, the problems would have been solved long ago . governments can be inefficient, slow, prone to corruption, bureaucratic and self-perpetuating. These are all side effects of the advantages governments possess: Their vast size, power, and reach almost inevitably make them unwieldy as well as attractive to those who want to use them to amass power and wealth for themselves.?[Yunus 2007, page 8]

Take the climate. According to the UNFCCC 86% of capital investment against climate change will come from the private sector. The comedian Jay Leno once quipped, "According to a new UN report, the global warming outlook is much worse than originally predicted. Which is pretty bad when they originally predicted it would destroy the planet." Of course government alone doesn't work, but neither does commerce. The UN and national governments won't solve climate change yet the private sector needs governments, and perhaps NGOs, to create rules that favour climate change solutions, e.g. effective costs for carbon emissions. I often wonder when I look at the increasing scale of the global NGO sector, are NGOs a sign of dysfunctional governments or a recognition that global risks need highly variegated responses?

Aid alone also doesn't work. Richard Laing of CDC (formerly the Commonwealth Development Corporation) says, "any behaviour change based on altruism is unstable" [Worshipful Company of World Traders' luncheon, London, March 2008]. In the 1700's Nicolas de Chamfort (1741-1794) wrote that "To give is a more lasting pleasure than to receive, because of the two, the one who gives is the one who remembers the longest"("Donner est un plaisir plus durable que recevoir, car celui des deux qui donne est celui qui se souvient le plus longtemps"). Our memories of development aid are long, but the relief seems short. Paul Collier wrote a fascinating book last year, "The Bottom Billion: Why The Poorest Countries Are Failing And What Can Be Done About It". He summarises:

"The story so far: a group of countries with nearly a billion people living in them have been caught in one or another of four traps [conflict, overabundance of natural resources, landlocked or poor governance]. As a result, while the rest of the developing world has been growing at an unprecedented rate, they have stagnated or even declined. From time to time they have broken free of the traps, but the global economy is now making it much harder for them to follow the path taken by the more successful majority. As a result, even when free of the traps they sit in limbo, growing so slowly that they risk falling back into the traps before they can reach a level of income that ensures safety." [Collier, 2007, page 99]

Globalisation alone won't work. For one billion of us globalisation has been good. For four billion of us globalisation is helping improve things. But for the bottom billion export diversification is harder because China and India are displacing comparative advantage opportunities, "capital flight has become easier", and "emigration has become more attractive". [Collier 2007, pages 120-121] Collier emphasises that external interventions, aid and military, can help and can work, but that donors need to be more limited, and much sharper in their interventions.

Another truism is that solutions to wicked problems are not "top-down" imposed solutions. Jeremy Hunt, the Conservative's Shadow Secretary of State for Culture, Media and Sport remarked at a City event in March on philanthropy - "If you want to solve the big social problems of the day you can't just do it through money and targets". But our third commercial break, in the sense of halting things, means braking a slide towards the idea that wicked solutions are just about Commerce; that today's problems are all caused by poor government. Rischard of the World Bank makes an extremely pointed warning. He talks of four stresses in the ?new world economy", 1 - "adapting to the new rules of the game" (speed, boundary-free, knowledge intensive, hypercompetitive), 2 - "growing disparities", 3 - "turbulence and fragility". "The fourth type of stress associated with the new world economy is subtler. It has to do withexcessive trust in the market, and the complacency that results from it." [Rischard 2002, page 34] We can just sit back and wait for the free market to save the day. The invisible hand will arrive and all will be cured.

[SLIDE: COLLABORATE OR COLLAPSE]

Companies pay attention to global risk because, if left unmanaged, a global risk can render daily risk management efforts moot. The level of concern about global risk is driven by management perception of what is most likely to affect its business. An oil price spike, for example, is of significant concern to a transportation company, slightly less to a food manufacturer vulnerable largely to the indirect commodity price impact, and still less to a services company that transfers its costs to its clients. The problem is trying to figure out what a poor, isolated company can do. Commercial enterprises have long recognised that multi-party collaboration affords opportunities. There are trade associations, bulk-buying agreements, knowledge sharing agreements, regulatory and self-regulatory standards, mutual risk management and mutual insurance. How can organizations adhere to their goals, add value, benefit from their own added value and collaborate in achieving goals that are shared by business and society? In 2006 the World Economic Forum's Global Risk Programme identified three core areas where these problems can be addressed and risk mitigation improved:

¨ "enhancement of the quality of information on risk and its flow amongst stakeholders;

¨ reassessment of risk priorities and reallocation of resources and incentives accordingly; and

¨ strengthening the capacity and resilience of business and political and administrative institutions at all levels."

Michael Faraday once stated that, "The five essential entrepreneurial skills for success are concentration, discrimination, organization, innovation and communication." I would argue that his five essential skills are the same skills required to solve global risks, concentration on some risks over others, the ability to make judgements, organisation, innovative approaches and good communication. The balance of this talk examines how we might organise our collaborative responses.

A collaborative response - one that not only yields general social benefits but also bestows commercial rewards commensurate with the level of investment - requires a framework that aligns interests, incentives, and other factors. I would like to set out a framework, of four elements developed in part by Z/Yen working with PricewaterhouseCoopers that may help you to think about solving global risks. We call this framework Collaborative Global Risk-Reward, "an integrated approach among many actors to address risk, adopting multiple interacting and reinforcing strategies and tools, while providing just rewards to participating enterprises". The framework tries to align organizations' thinking on developing, implementing and evaluating global risk solutions. The framework's four elements are:

- Participants: at what levels of organisation might we act?

- Methods: what tools and techniques and mechanisms should we use to help us meet our strategy?

- Outcomes: what will come out of this, and how will success be measured?

- Principles: what guidance can we have to help us increase our chances of success?

[SLIDE: PARTICIPANTS]

Global risks involve many policy issues, many political issues, many commercial issues, many project management issues and many implementation issues. We have to recognise "everything, everywhere at all times" - ownership, enforcement, multiple players, multiple player interactions.

Subjective individual perceptions, not objective organisational assessments, drive attention towards global risks and, thus, resources committed to global risk solutions. "Risk is exposure to a proposition of which one is uncertain ... Risk is a condition of individuals and animals - that are self-aware. Organizations, companies, and governments are not self-aware, so they are incapable of being at risk. Rather, they are conduits through which individuals - members, investors, employees, voters, and such - take risk."[Holton, 2004] I would point you to another excellent paper by Evans and Steven as part of the London Accord exploring why climate change is now such a hot risk - "Climate Change: The State Of The Debate" - as it has passed a perceptual tipping point for many people in the street, while perhaps avian flu hasn't.

Solving global risk is neither the responsibility of public institutions alone nor a burden that public institutions can fairly impose on private institutions. A truly Collaborative Global Risk-Reward Framework would engage various institutions in dialogue, recognizing not only mutual duties but also unique capabilities at four levels:

- Single-entity: a company, government department, NGO or other legal entity working on its own;

- Multi-entity directed: a collaborative effort led by a single organisation, typically operating in a hierarchical manner, i.e. top-down to a plan;

- Multi-entity emergent: a self-organising network structure, such as markets or commons-based peer production;

- Collaborative risk-reward: an integrated approach among many actors to address risk, adopting multiple interacting and reinforcing strategies and tools, while providing just rewards to participating enterprises - a rich system of many entities acting at all three previous levels acting in concert.

Subjective, or emotional, mis-assessments of risk provide opportunities for profit. In a single-entity situation, the entity can use asymmetric evaluation to profit. If the single-entity employs objective assessment while others follow emotion, the single-entity should gain advantage in the long-run. With global risks, the failure to align emotion with objective assessment across multiple entities means that the wrong risks are addressed in the wrong order. Trivial risks can be inflated - perhaps the Millennium Bug or computer viruses? Significant risks can be overlooked due to familiarity - perhaps world hunger?

[SLIDE: METHODS]

There are diverse mechanisms available for dealing with global risks. Take "malaria" - we have malaria@home/malariacontrol.net conducting stochastic modelling of the clinical epidemiology via a network computing grid, the Gates Foundation work, pharmaceutical R&D, anti-malarial drugs, direct aid for the afflicted, distribution of mosquito nets, education in affected areas, spraying mosquitoes, draining mosquito breeding areas, or raising funds, to name but a few. Complex global risks imply messy diverse solutions, no silver bullet. I group mechanisms into four generalmethods:

¨ Knowledge: the degree to which risk management is enhanced by sharing information and knowledge or conducting research with other entities about severity, likelihood and effectiveness of responses;

¨ Markets: the degree to which market mechanisms price risk and reward improvement, a richness of supporting financial methods and, in many cases, direct financial support;

¨ Standards: the degree to which standards and the audit of standards can help to set goals, share knowledge, improve the effectiveness of market forces and provide signals from consumers to producers;

¨ Policies: how well intelligent guidelines, legislation, regulation and enforcement underpin public and private sector responses.

We need to give more thought to the conflation of benefits between methods, for instance government support for a developing standard, e.g. requiring the standard in government purchasing. Methods will vary widely, even for similar problems. To take two similar examples, governments simply banned CFC's to protect the ozone layer, and this policy method worked. In contrast, for SO2 the US government supported a traded market for SO2emissions, and this market methodachieved in months what most believed would have taken regulatory years. Today, we are poised with a similar problem, that of CO2 and other greenhouse gases, between tax methods and cap-and-trade methods.

[SLIDE: OUTCOMES]

Desirable outcomes of effective responses to global risks include the following:

¨ Expand frontiers to solve or mitigate a global risk - e.g., developing new drugs which might cure and/or prevent disease, finding technologies that provide renewable energy, or adapting irrigation techniques to help meet the needs of farmers in barren places;

¨ Change systems to reprioritise a global risk, to develop markets or to release resources - e.g., the introduction of cap-and-trade carbon markets, or adaptation of government policies on child labour to harmonize divergent home and host country standards;

¨ Deliver service to address the immediate need - e.g., providing care for children in war-torn places, or providing care for the elderly in HIV/AIDS stricken regions;

¨ Build community to help people deal with global risks through communal activity - e.g. voluntary carbon

emission reductions or enlisting corporate participation in terrorism reduction while creating new commercial opportunities for provision of security measures.

Activities involved in expanding frontiers, such as finding a cure for a killer disease, will probably result in high reward or high-risk. They either spend lots of money to cure the disease or they spend lots of money but fail. Middling outcomes are unlikely and this type of activity is often best analysed financially as an option. Activities involved in changing systems are also relatively high risk and/or high reward activities. Service delivery involves lower risk, lower reward activities than expanding frontiers and changing systems. Service delivery responses are most amenable to cost/benefit analysis. It is very difficult to define objectives and prove outcomes from communitarian activities. Volunteers and members are often a mixture of supporters and beneficiaries, with some individuals being both supporters and beneficiaries. Communitarian activities therefore tend to be relatively low risk and low reward and are best evaluated by seeing whether people want to pay membership costs.

Many activities fall into more than one of the above categories. Indeed some organisations, such as charities for the blind, clearly perceive themselves to undertake activities in all four categories - expanding frontiers: research into blindness; changing systems: lobbying for changes in legislation; service delivery: helping the blind; communitarian: promoting a sense of belonging.

[SLIDE: FRAMEWORK EXAMPLE - FISH]

So we have an overall framework. Let's return to fish as an example of how this framework maps global risks. It has become clearer and clearer over time that fisheries policy problems are particularly exacerbated by two characteristics common to natural resource management:

¨ Degrees of uncertainty: in fisheries uncertainty stems from a large number of unknown quantities, difficulties with measurement and poor tools for handling uncertainty, for instance which fish eat what, when and where? what is the investment profile of a fisherman? can we estimate predicted environmental changes? how do we model decisions under uncertainty?

¨ Complexity and holistic nature of managing sustainable stocks: no part of the problem can be isolated and solved in isolation. Stocks affect economic returns affect investments affect votes affect communities affect compliance affect stocks, etc.

This diagram contrasts the various outcomes with the generic methods providing 16 intersections. You can see the wide range of responses that might be available to help prevent fishery collapse and move towards sustainable fishing. One initiative my firm has supported for years is the Marine Stewardship Council (MSC), located in the box where change systems intersects standards. The MSC tries to harness consumer preference for sustainable seafood products through a branded certification programme. If you look to the change systems intersection with knowledge, the Southern African Sustainable Seafood Initiative (SASSI) successfully uses texting technology to help preserve the country's many fish species. Its FishMS service informs users buying fish about which species are in plentiful supply, endangered or illegal to buy. We don't have time to explore the many interactions of scale, global and local, inshore or pelagic, for a problem such as fishery devastation - it's a multi-level, messy wicked problem, but the framework starts to provide a conceptual structure for organising our thoughts.

Rischard proposes to alleviate global problems through the use of "global issues networks", a new type of public space that reacts with speed and minimal hierarchy, relying on networked governance. Our Collaborative Risk-Reward Framework helps to show how all of these global issue networks might fit together. The framework starts to show the diverse range of mechanisms needed to solve a global

problem. The framework can be used to try and identify gaps at the junctions of methods and outcomes.

[SLIDE: PRINCIPLES]

Collaboration requires planning and division of roles, open communication channels between organizations, and funding. An excellent strategy can still suffer from poor management, leading to poor implementation. An excellent strategy poorly executed is, in actuality, a poor strategy. Individual organizations enter new structures making new commitments to a common mission. Each partner contributes resources and reputation, and shares risks and rewards. In the face of a global risk, no strategy can be directed "top-down". Global risks are solved messily with many overlapping mechanisms at levels from local communities to international government. Still, I believe that there are likely to be a number of principles that can be enumerated to help us better design Global Collaborative Risk-Reward.

Ostrom derived eight design principles for systems that successfully manage common-pool resources, viz: clearly defined boundaries, congruence between appropriation and provision rules and local conditions, collective-choice arrangements, monitoring, graduated sanctions, conflict-resolution mechanisms, recognition of rights to organize, and the use of nested enterprises. This is a good starting set for thinking about Global Collaborative Risk-Reward principles. Another approach might be to recognize that Collaborators must work through fluctuating and new communities, requiring:

¨ Communication: multi-entity responses always require a higher degree of communication than single-entity responses;

¨ Contribution: if people and organisations are not part of the development of the solution, then they are less likely to be part of the solution, i.e. they are likely to remain part of the problem;

¨ Consensus: respect, time and space must be made to allow people to develop consensus about responses, including time to adapt emotional responses to objective data;

¨ Commitment: people and organisations build trust through evidence of shared commitment in the form of time, resources and patient attention;

¨ Cooperation: people and organisations must be respected for their position and rewarded for their appropriate efforts, all mixed with a degree of tolerance for different viewpoints and different motivations.

[SLIDE: EFFICIENT, SUSTAINABLE MARKETS]

In our fish example markets are just one strand, albeit an important one. Are they up to the job? They haven't done so well with fish. Rischard cautions that "if we leave all problem-solving to the market, emerging social problems will be left unattended" [Rischard 2002, page 34], e.g. job insecurity. Doyne Farmer of the Santa Fe Institute is committed to scientific exploration of markets. He observes that "One of the most fundamental principles in financial economics is called market efficiency. This principle takes many forms: A market is informationally efficient if prices reflect all available information; it is arbitrage efficient if it is impossible for investors to make "excess profits", and it is allocationally efficient if prices are set so that they in some sense maximize everyone's welfare." [Farmer et al 2005, page 3]

Markets are self-organising information processing systems that direct societies. Markets can and do help

to set goals through prices. These three types of efficiency imply certain goals. Information efficiency should mean that prices aren't predictable but that prices help to communicate values through society and therefore direct commercial efforts. You need no further proof than to look at various manias and panics such as tulip bulbs or credit crunches. The goals may be odd, but markets set them. Good markets should provide information that permits improved decision-making.

Arbitrage efficiency should mean that it is impossible to make money without taking risks. We examined arbitrage efficiency in February 2008's lecture "How To Get Ahead In Commerce: The Sure-Fire Ways To Make Money", looking at poorly designed markets with concomitant problems of lack of competition, information asymmetry or agency problems and externalities. Good markets encourage people to take risks that other people are prepared to reward. Further this attraction to risk should benefit society by spreading the load. One can argue that a market is incomplete if all relevant risks can't be hedged. We may have a long way to go.

Finally, allocation efficiency should mean that it's impossible to make somebody better off without making someone else worse off. Markets satisfy the goal of helping to allocate risks and rewards through society. Markets should maximise social welfare.

[SLIDE: MARKET LIMITS]

A few paradoxes arise. If information efficiency is strong, then innovation should be kept secret. If one firm is successful but grows too large, secrecy is lost. If arbitrage efficiency is high, then there are few ways to make large amounts of money and interest in work and innovation might collapse. Finally, highly efficient allocation may not be equitable and may lead to reallocation outside the market, e.g. by force or taxation. While nodding towards Rawls and Nozick, I would like to quote from an online conversation I've had with Doug Sunshine, "in any 'immaculately conceived' initial distribution of resources, normal activity will take place until there is some exogenous change that will inevitably benefit some and hurt others. All political evidence, however, points to the fact that the 'losers' of said change prefer to be compensated by the 'winners' than to bear their loss silently. If their numbers are great enough, they will agitate for political action to be compensated - you are now exiting Nozick's Utopia." [Doug Sunshine, 7 April 2008]

To focus on selfishness though is, in many ways, to fall into a trap nearby the overly-rational man assumption into which everyone accuses economists of falling. Current behavioural finance work explores where this rational man assumption is wrong and where self-interest is not a primary motive. Adam Smith took self-interest as a way of working with the grain of people. Mao Zedong, ostensibly at the other end of the spectrum from Smith, also believed in working with the grain, albeit sometimes much more roughly. He said, "you can only lead the people from where they are, not where you want them to be". [from conversation with Lawrence Jackson on a 1974 trip to China]

People's motives are complex and, while many ways to save the world may not fit the neo-classical rational man, people are prepared to act in economically non-selfish ways. Pat Dunphey's challenges us - "are you just being human or are you a human being?". An interesting example of the importance of social impetus over economic determinism comes from the UK's Sustainable Development Commission. Writing about moving society towards sustainable consumption in 2006, the Commission noted that "People are willing to change, but they need to see others acting around them to feel their efforts are worthwhile. Fairness matters." The Commission believed so seriously in the power of joint, mutual action that they even titled their report "I Will If You Will".

Muhammad Yunus, the founder of Grameen Bank wonders about the structure of government, private sector firms and NGOs. In his book, "Creating A World Without Poverty: Social Business And The Future Of Capitalism", Yunus "think[s] things are going wrong not because of 'market failures'. The problem is

much deeper than that. Mainstream free-market theory suffers from a 'conceptualization' failure, a failure to capture the essence of what it is to be human." [Yunus 2007, page 18] Yunus proposes a new type of entity, a social business. Social businesses would be non-loss, non-dividend businesses that might pay investors back their loans, but that's it. "Rather than being passed on to investors, the surplus generated by the business is reinvested in the business." [Yunus 2007, page 24] What Yunus proposes does not strike me as novel, there have been many mutual businesses, many businesses that reinvest profits in their community, take the cooperative movement for a start. However, I agree with him that society could make it easier to set up non-loss, non-dividend businesses.

[SLIDE: WHATEVER WORKS]

So what is the answer to saving the world? I don't think there is one. Current markets alone are not enough. So my fourth commercial break is - give markets a chance, but alongside everything else, sharing knowledge, developing standards and setting policies. We are combining methods in novel ways, from the aggressive conclusions of cost/benefit analysis used by the Copenhagen Consensus teams on global ills to Yunus' microfinance at Grameen Bank to numerous internet inventions. But the solutions to wicked problems are likely to be wickedly complex. I've been heard to say that, "one may start with economics and rationality, but at the end of all social science is contingency theory". Or as Deng Xiaoping pointed out more memorably: "It doesn't matter if a cat is black or white, so long as it catches mice."

I'd like to end by referring to another Gresham lecture, in March Professor Rodney Barker explored "Do We Need A Martian Invasion In Order To Avoid Attacking Each Other?". He pointed out how helpful a common enemy can be for social cohesion. I sometimes think global risks keep us from attacking each other by providing a common enemy. So, if we get started attacking global risks collaboratively, perhaps we can save the planet from us, and us from ourselves.

Thank you.

Discussion

1. Participants: Who identifies risks that warrant collaborative response?

2. Methods: What succeeds or fails?

3. Outcomes: How can success be measured?

4. Principles: What rules yield social benefits yet bestow commensurate commercial rewards?

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