Newsletter

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NEWS FLASH

Risk Frontiers spins out from Macquarie University!

As at July 1 and after 23 years at Macquarie University Risk Frontiers will be spinning out as a private R&D company under the ownership of the existing employees. Below we review this remarkable history as we embark on the next leg of this adventure.

Five of Australia's six most costly natural hazard events have come from different perils: a tropical cyclone, an earthquake, a flood, a bushfire and a convective storm. Over the last 23 years, a unique approach to understanding these risks has developed in Australia through a close relationship between the insurance and academic sectors. And by doing so Australia has been at the cutting edge in applying advances in technology and science to the benefit of the broader community.

The early players in the catastrophe loss modelling space set up shop in the late 1980s in America, but it was not until Hurricane Andrew made landfall in Florida in 1992 that the true power of such modelling was recognised. Approaches to pricing natural hazard risks at the time relied very much on the proverbial rate maker's moistened finger in the air and recent experience. The errors in this approach had not been exposed because the previous 20 years had been relatively benign with no intense hurricanes making landfall and afflicting areas of high exposure.

Missing from the traditional approach was the bringing together of the science of the hazard with a geospatial understanding of assets and the structural weaknesses of buildings together with insurance policy conditions. Natural catastrophe loss models, while primitive by today's standards, did just this.

Risk Frontiers' Suite of CAT Models to be available on AIR Worldwide's Touchstone Platform

Risk Frontiers' suite of Probabilistic Catastrophe Loss Models for Australia and New Zealand will be available on AIR Worldwide's Touchstone® 5.0 platform for licensing from Risk Frontiers in June 2017. The suite of models comprises the following:

* Tropical Cyclone (Australia) - CyclAUS 3.1
* Earthquake (Australia and New Zealand, post Christchurch) - QuakeAUS 5.1, QuakeNZ 2.0
* Bushfire (Australia) - FireAUS 2.1
* Hail (Australia) - HailAUS 6.2
* Flood (Australia) - FloodAUS 3.1

During a demo at AIR's Envision Conference in Las Vegas in April, Risk Frontiers models worked seamlessly on a preview release of the Touchstone 5.0 environment.

Starting in June, clients who license both Touchstone 5.0 and Risk Frontiers for Touchstone will be able to run Risk Frontiers' models on exposures stored in Touchstone directly from the Touchstone user interface.

Risk Frontiers maintains and continues to develop its own Multi-Peril platform, but this new delivery method provides an easy access option for Touchstone users.

Please contact Risk Frontiers or AIR for further information about licensing Risk Frontiers' models on Touchstone.

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Within hours of Hurricane Andrew making landfall, modelling pioneer Karen Clarke forecast Andrew's insurance losses to be in excess of $13 billion, way more than Lloyds of London's estimate of $6 billion. Months later when the final loss emerged at $15.5 billion, eleven insurance companies had gone bust. Clarke's early estimate of losses after Andrew had proven robust and the utility of catastrophe models fully apparent.

Meanwhile, on the other side of the world in Australia, farsighted individuals in the insurance sector also saw the benefits of catastrophe modelling, but were well aware that interests in the larger exposures of Europe, America and Japan would capture this development. Australia needed its own R&D capability in this new area of applied science.

With this in mind, parties in the insurance sector in Australia reached out to the academic sector to see if there was interest in developing an independent research centre in the natural hazards space. Macquarie University Professor Russell Blong answered this call and the start of a unique partnership between industry and academia was spawned.

Risk Frontiers, born in 1994 under Russell's leadership, is now the longest running natural hazards research centre in the country. It was initially funded by a group of sponsor insurance, reinsurance and reinsurance broking companies, which provided seed capital in the form of sponsorship. Representatives of these companies provided an advisory board that still exists to this day and which helps set Risk Frontiers' research agenda. Much of that agenda today is devoted to improving the management of natural hazard risks including a significant commitment to risk communication.

While its business model has changed somewhat over its 23-year history, Risk Frontiers developed into an independent, self-funded R&D business under the stewardship of Professor John McAneney. It continued to thrive despite the differing incentive structure of academics and the commercial business interests of the insurance sector. In spinning out of the University, Risk Frontiers seeks to realise our ambition to become the most credible independent source of risk knowledge, products and services in the natural disaster space, across Asia Pacific.

While the insurance sector still remains a core focus of many of the activities at Risk Frontiers, our multidisciplinary team also works closely with government, disaster management agencies, and supports international efforts to help manage disaster risks and improve the safety of communities. Several staff served as expert witnesses to the Royal Commission into the 2009 Victorian bushfires. The team has also made invited contributions to other key inquiries such as that into the 2010-11 Queensland floods, the Productivity Commission's review into funding natural disasters and the role of government in the provision of natural catastrophe insurance.

Risk Frontiers will continue to provide evidence-based thought leadership on topics ranging from the potential for improved building codes and land use planning guidelines to reduce risk. Our research interests include risk communication, the detection of global climate change signals in loss data, post-disaster event investigations, estimating the economic costs of natural disasters and helping emergency service agencies in the development of risk management plans. It collaborates closely with other research institutions including the Australian Bushfire and Natural Hazards Cooperative Research Centre.

Risk Frontiers has served Australia remarkably well and is now set to continue to expand on this legacy of achievement as the world faces new challenges in a warming climate as well as the current threats from natural and man-made risks. In spinning out of the University, Risk Frontiers can be more commercial in some aspects of its business operations, while continuing to provide the rigorous science-based advice that its clients have come to expect. Strong relationships forged with key academics at Macquarie University will be maintained with the creation of a Risk Frontiers Fellowship Fund for joint collaborative research in natural hazards, as well as new endeavours in cyber security and machine learning. Stay tuned . . .

Please visit our website to keep abreast of new developments http://www.riskfrontiers.com. Or contact John McAneney directly (john.mcaneney@riskfrontiers.com).

Should governments allow fire affected communities to rebuild?

Associate Professor Michael Eburn, email: michael.eburn@anu.edu.au

In January 2017, the ABC's 7.30 program reported on the rebuilding of Wye River and Separation Creek, two Victorian settlements that had been severely impacted by bushfire on Christmas day 2015. During the course of the program, Michael Buxton, Associate Professor of Planning and Environment at RMIT University, Melbourne, argues against 'allowing people to rebuild when fire-affected areas are burnt out'.

The 2009 Victorian Bushfires Royal Commission recommended:

> *The State develop and implement a retreat and resettlement strategy for existing developments in areas of unacceptably high bushfire risk, including a scheme for non-compulsory acquisition by the State of land in these areas.*

The State did not adopt that recommendation. The then Premier of Victoria, the Hon John Brumby, said:

> *We have hundreds of thousands of Victorians who choose to live in our bush and in areas close to our beautiful state and national parks. These places are, by their very definition, in high fire-danger-risk areas, but I will always defend people's right to live in these areas and enjoy the beauty of our natural bush.*

Associate Professor Buxton was 'disappointed the Government stopped short at implementing' this recommendation. He says:

> *Governments just keep allowing people to rebuild when fire-affected areas are burnt out… Every rational factor says, "Don't do it. Don't allow people to rebuild in these really dangerous areas." But governments, um... I think they have this emotional reaction.*

In answer to the question 'Why shouldn't people be allowed to stay and rebuild…?' he says, 'I think governments have a responsibility to prevent people from doing extreme harm or potential harm to themselves'.

This brief review raises several questions such as: Does every rational factor really say 'Don't allow people to rebuild in these really dangerous areas'? Is the government response any more, or less, an 'emotional reaction'? Do governments have a responsibility to prevent people from doing extreme harm or potential harm to themselves? I suggest that the answer to all those questions is 'no'.

Does every rational factor really say 'Don't allow people to rebuild in these really dangerous areas'?

The United Nations defines risk as 'The combination of the probability of an event and its negative consequences'. That definition of 'risk' is largely replicated in risk registers that define a risk as low, medium or high in a matrix with probability as the 'x' axis and consequences on the 'y' axis.

Assessing and managing risk is not simply a matter of having accurate risk figures. There is nothing inherent in a 2%, 1%, or 0.4% probability of flood, fire or other hazard that says a risk is or should be acceptable, but another risk is too high. What is acceptable depends not only on the statistical probability of the hazard event but also its potential consequences and the assessment of those consequences depends on the values of those at risk.

For people who focus on bushfires or natural hazards, the risk of death and destruction from that hazard is axiomatic. A land use planner who takes a broad, landscape view and identifies that one community is at a higher risk of bushfire than another may identify that an effective way to manage the risk is to move people out of the high risk area, to the low risk area. Such an action is not risk free nor does it create a risk free environment. There may be risk to people's health and wellbeing if they are forced to leave an area that is important to them. There is a risk of social dislocation if people are forced to move and move into other small communities that are not resourced to support the newcomers. The risk of loss due to fire may be reduced but a sociologist or psychologist may see forced relocation as an action that unacceptably increases risk of other harms. For the people who value the life and lifestyle of their community, the loss of homes to fire may be a significant outcome, but being denied the right to continue to live there may also be severe.

People who understand the risk, who place different values on various losses and who have considered those issues are being equally rational when they decide to rebuild their homes. The question of whether rebuilding is a rational response depends on what values one is trying to preserve. To put that another way, it depends on what factors are taken into account when deciding where a consequence sits on the 'severity' scale of the risk register.

Is the government response any more, or less, an 'emotional reaction'?

Which risk is to be prioritised is not based on the risk matrix but on our emotional perception of risk. Risk Frontiers have identified 974 bushfire deaths between 1900 and 2015.[updated from vii] However, bushfires cause fewer deaths than other natural hazards such as floods, cyclones and heat waves which, during the same period (1900-2015) have caused 1912, 1216 and at least 4561 deaths respectively. Each year, road accidents kill more people than have ever died in Australian bushfires. In 2015 alone, 1205 people were killed in road accidents: that is nearly twice the entire number of people killed in bushfires in the preceding century. Even so the emotional reaction to bushfire losses is much greater than our reaction to the annual death toll on the road.

A risk that governments seek to manage, apart from the risk of death and destruction due to a hazard such as bushfire, is the risk of being blamed for a disaster. If potential blame is a risk then it is a risk that can be managed.

> *… experts who are being made increasingly accountable for what they do are now becoming more preoccupied with managing their own risks. Specifically, secondary risks to their reputation are becoming as significant as the primary risks for which experts have knowledge and training.*

In order to manage this 'secondary risk' governments have to balance the risk to their reputation should a hazard event such as a terrorist attack, a catastrophic bushfire with loss of life, a domestic murder or a fatal car accident occur, with the risk to their electoral standing should they take measures to reduce that risk. Those risks can be reduced e.g. by refusing entry to everyone from a list of proscribed countries, requiring all homes in fire risk areas be built as underground concrete bunkers, refusing bail for anyone alleged to have committed domestic violence or banning private cars. The solutions may be effective, but not at a cost the community is willing to pay.

Not allowing people to rebuild their homes may also be a price that is too high, and the demand that people not be allowed to rebuild is as much an emotional reaction, based on factors other than a quantifiable risk, as the decision to allow people the 'right to live in these areas and enjoy the beauty of our natural bush'.

The policy of the National Strategy for Disaster Resilience is to build resilient communities and share responsibility for all aspects of disaster management. A disaster resilient community is one where people understand the risks that may affect them. They have comprehensive local information about hazards and risks and have taken action to mitigate their risk and to develop plans to respond should a hazard occur. Compelling people to move out of an area does not create a resilient community. A community that has never faced, and never will face, a bushfire is not 'resilient' to bushfire. Forcing people to move away from an area that they love, and the neighbours and relationships that they have established, is to destroy a community, not make it resilient. If individuals and communities are to take responsibility for their own risk, then governments, insurers, and other communities (such as the community of land use planners) should accept that those individuals and communities are free to make choices that

risk should be a matter for negotiation.

If individuals and communities are to take responsibility for their own risk, then governments, insurers, and other communities must accept that those individuals and communities are free to make choices that others would not make, or would prefer them not to make. If, on the other hand, governments believe that individuals or communities are actually incapable of making informed risk decisions and determining for themselves what is an acceptable risk, then it is time to rethink the National Strategy for Disaster Resilience.

others would not make. If governments are going to share the responsibility for risk management with individuals or communities then there has to be room for those individuals and communities to prioritize those values in a way that is both rational and informed, even if others, including governments, would prefer to give greater priority to other values such as individual safety.

Do governments have a responsibility to prevent people from doing extreme harm or potential harm to themselves?

In the High court of Australia, Crennan and Kiefel JJ said:

> *The common law generally does not impose a duty upon a person to take affirmative action to protect another from harm… So far as concerns situations brought about by the action of the person at risk, it is the general view of the common law that such persons should take responsibility for their own actions…*

Governments may not have an obligation 'to prevent people from doing extreme harm or potential harm to themselves' but they may have an obligation to prevent them doing harm to others. Building codes can ensure that developers and landlords don't expose subsequent purchasers or tenants to undue risk. Prohibition of building in high risk areas may be necessary to protect vulnerable people, such as children, who cannot make an informed choice to accept a risk. Restrictions may be justified on the basis that the cost of providing necessary infrastructure, such as evacuation routes and fire fighting services, imposes too great a cost on the broader community.

Conclusion

There may be good grounds for refusing to allow communities to rebuild after they have been razed by fire but the claim that these are 'really dangerous areas' is not sufficient. Danger and risk are in the eye of the interest holder. Experts in fire, flood or hazard management may well be able to determine the probability of a hazard event that is the relevant point on the 'x' axis of the risk matrix. Where a consequence sits on the 'y' axis, in the range from minor to extensive, depends upon the interests and values that the person making the assessment chooses to prioritize. In these days of 'shared responsibility' and 'resilient communities' acceptable

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