



The Hazards Forum Newsletter

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Edited by Dr Ian Lawrenson OBE

Views expressed are those of the authors, not necessarily of the Hazards Forum

Further information regarding the articles in this issue is available from Alison Brown on 02 07665 2230,
email hazards.forum@ice.org.uk

1. Professor Peter Wolf FREng

We are very sorry to have to report the recent death of Professor Peter Wolf. Professor Wolf was a Distinguished Member of the Hazards Forum since 1999, having been Chairman of the Forum's Natural Disasters Committee and a member of the Executive for some years.

Peter Otto Wolf graduated in civil engineering from Queen Mary College in 1941. He subsequently worked as a consultant on land drainage, flood and coastal protection projects, followed by a short period for the War office, between 1944-5, during the later years of World War 2. He went on to work on various hydroelectric schemes before being appointed, in 1949, as Lecturer in the Hydraulics Section at Imperial College of Science and Technology. In 1956 he was promoted Reader and Head of the Hydrology Section.

He left Imperial College in 1956 to become the founding Professor and Head of Civil Engineering at the City University. He later became Professor Emeritus there. Since 1982 Professor Wolf was a Consultant, with Pell Frischman Consulting Engineers and since 1991 a Director.

He was elected a Fellow of the Royal Academy of Engineering in 1982 and was a Fellow of the Institution of Civil Engineers, of the Chartered Institution of Water and Environmental Management, of the Royal Meteorological Society and of the American Society of Civil Engineers; he was a past President and an Honorary Member of the British Hydrological Society and a member of the American Institute of Hydrology. Professor Wolf has been a Visiting Professor at Stanford and at Cornell Universities. He was Chairman of the Ministry of Agriculture, Fisheries and Food Committee on Flood Protection Research in 1984-5 and in 1993-7 a member of the UK Coordination Committee of the UN International Decade on Natural Hazards Reduction.

2. VIEWPOINT

Living with Risk: Promoting better Public Space Design by Helen Beck

The Commission for Architecture and the Built Environment (CABE)

Exciting and varied public spaces play a key role in creating inspiring and interesting environments that we all want to use and enjoy. However, is an over-sensitivity to risk and concern about liability and safety creating a country of bland and standardised places? Are we creating an environment in which encouraging 'risk-taking' is becoming harder and harder? Is the concept of a compensation culture little more than a popular myth?

A new report by CABE Space entitled *Living with risk: promoting better public space design* explores these questions. Supported by organisations that included ALARM (the National Forum for Risk Management in the Public Sector), the Health and Safety Executive and Zurich Municipal who helped shape the research as project steering group members, the report shows over-sensitivity to risk can have a profound effect on the quality of public space by restricting innovation and leading to dull places that people do not use.

Living with risk shows that an element of risk within the design of our public spaces can be an opportunity. The report points out that it is possible to use risk in a creative and positive way whilst continuing to sensibly recognise the regulatory context within which we must operate. We can design and create places for people's aspirations and enjoyment, rather than for their fears and concerns.

CABE is the Commission for Architecture and the Built Environment and is the Government's advisor on architecture, urban design and public space. Established in 1999, CABE provides expert, practical advice and guidance in order to influence the people making decisions about our built environment. CABE Space is the part of CABE dedicated to encouraging excellence in the planning, design, management and maintenance of parks and public space.

Living with risk is not the first time CABE Space has considered the impact of risk on our public spaces. In 2004, their report *What are we scared of?* highlighted how concern about risk could reduce the potential to create interesting and innovative spaces that people will enjoy visiting.

For instance, water jets spraying up unpredictably from a flat surface introduces risk into a space in a stimulating way. However, over-sensitivity to risk can lead to a response by individuals or organisations where most or all hazards are considered as risks that need minimising. In this context risk assessment focuses on managing the downside and 'hazards' of certain design features, rather than considering the potential of these features to inspire, offer stimulation and enjoyment of public space.

Living with risk takes this important issue further. It examines 10 case studies of public space schemes and considers the influence of the management of risk, in relation to ensuring public safety. The report sets out an agenda for risk-aware, not risk-averse public space design.

Risk in a public space context

'Public spaces' are outdoor open spaces that are publicly accessible, for instance parks, squares, streets and play areas. Public spaces also include informal spaces such as empty building plots that may be used by people when taking a short-cut between other locations.

Because public spaces are 'open' they are the focus of interest for a wide range of stakeholders; all of whom will have different interests in relation to the question of risk and

all of whom will also have their own understanding of what constitutes a risk. Activities of some groups using public spaces may be considered to create risk for others, for example skateboarders. But equally, some users may be more susceptible to risk than others.

When considering risk in the context of public spaces it is useful to distinguish between hazard and risk:

- a 'hazard' is any feature of a public space design that may cause harm, for instance kerbs, water features or trees;
- a 'risk' is the chance of that harm occurring and its magnitude.

Risk is a matter of judgement rather than an absolute standard and cannot be defined objectively. Careful use of risk management techniques can help to determine the level of thought and action that is needed in relation to identifying and assessing hazards and determining the extent of risk and the scale of impact.

Risk aversion occurs when all or most hazards come to be seen as risks that require active management. Both criminal and civil law have the potential to impact on attitudes to risk and it is easy for legal guidance to become viewed as prescriptive requirements.

Furthermore, risk in public space design cannot always be predicted. Space may be used in ways that were not anticipated, by street vendors or entertainers for example. Sometimes this can lead to retrofitting of security measures that may adversely impact on design quality, or users' enjoyment of a particular space.

This shows the complexity of the public space design professional's task in managing risk and balancing and reconciling different interests in this process.

Is there a compensation culture?

Living with risk shows how disproportionate responses to risk are fuelled by a popular perception that there is a compensation culture whereby individuals seek to make claims for negligence against those responsible for misfortunes they suffer.

A compensation culture is a powerful idea but the reality of this is hard to establish. In 2004, the Better Regulation Task Force argued that

compensation culture is 'all in the mind' stating 'almost everyone we talked to...told us that the reality is somewhat different, because the number of personal injury claims is going down.'¹ Long term trends in personal injury claims remained relatively stable since the late 1990s and mean damages awarded in cases brought by 'no win no fee' companies actually fell between 2002 and 2005.

Evidence indicates that the idea of a compensation culture is an oversimplification of a more complex situation. Furthermore, evidence shows that people are developing more critical attitudes to risk culture. People want the freedom to choose how to respond to risk and are capable of assessing risk for themselves. In 2005, a survey by the Health and Safety Executive found that 71% of people surveyed agree or strongly agree that 'health and safety compensation claims have gone too far.'²

Lessons from the *Living with risk* research

Living with risk concludes that unfortunately it is far easier to justify 'playing it safe' than use risk creatively. Public space design that uses risk as a positive feature needs more evidence to justify its creation.

Risk-averse decision making tends to rely on a weaker, less thorough evidence base. For instance, using statements about what people may do, often in an extreme case – for example 'people may fall into the river.' Risk assessment and management does require some supposition about how people may behave. However, it is important that this is as robust as possible and that we do not manage for the lowest common denominator in terms of risk perception.

Living with risk finds that key to challenging over sensitivity to risk is clear design vision supported by strong leadership. This helps resist decisions that are based on 'worst-case scenarios' and informs the strategic direction of the project from the outset.

For example, the redesign of Kensington High Street in London removed street furniture and barriers that were originally installed to 'protect' pedestrians and separate them from traffic. The thinking behind this design was that reducing signage in urban streets can heighten road-user awareness, forcing all users of the space to take more care and be more vigilant. The success of this scheme depended heavily on an individual politician who took a personal

and political chance to champion and lead on the design. Accident statistics have backed up this approach, showing a significant reduction in both serious and minor road accidents along the street since the completion of the works.

Involving the public in design processes results in more informed, evidence-based decisions as it allows for design decisions to be mediated through stakeholder debate. This is particularly important in creating an inclusive environment and can help to highlight the different ways spaces might be used that may not otherwise have been predicted by the designers.

Living with risk notes that design professionals understand the idea of 'risk' in ways that are different to health and safety specialists. For instance, design professionals talk about risk as a feature that fosters the creation of varied and interesting spaces and this should not be interpreted as meaning that designers want to create a dangerous or insecure environment.

Health and safety professionals consider risk in a different way as they are trained to identify hazards that might harm individuals. Thus, in order to sensibly navigate risk, without sacrificing the elements that make our public spaces interesting, different professional understandings of risk must be recognised and reconciled to enable mutual understanding.

Living with risk recommends the promotion of the Health and Safety Executive's sensible approach to risk management. Practically, this could involve:

- Helping to train decision-makers to prioritise more effectively, so that attention is focused on the real risks
- Emphasising that managing risks should be about identifying and taking practical steps – not generating paperwork for its own sake
- Sharing practical examples of how a sensible approach to risk management has helped enable high-quality design.

Overall *Living with risk* encourages a balanced approach to risk to ensure our public spaces both accommodate and sensibly recognise risk without compromising on the quality of these places. This way we can ensure that these places remain vibrant and sustainable focal points of our communities.

For copies of the full report and report briefing visit www.cabe.org.uk/publications. *Living with risk* is part of a wider CABE programme *Design better streets* that provides, research, guidance and case studies aimed at promoting higher-quality street design. For more information see www.cabe.org.uk/streets

¹ Better Regulation Task Force (2004) *Better routes to redress* London: Better Regulation Task Force

² HSE evidence to the Select Committee on Constitutional Affairs, 2005.

3. Changes in the Hazards Forum

Simon Whalley, who has provided secretarial support to the Hazards Forum at the Institution of Civil Engineers, will be moving to new responsibilities shortly. These duties will be passed to Alison Brown. She can be contacted by the usual Hazards Forum number 020 7665 2230 or by email via the usual address hazards.forum@ice.org.uk

There will also be changes to the Hazards Forum website in the near future. Full details will be given in the next issue of the Newsletter.

4. SHARING LESSONS LEARNED FROM ACCIDENTS

A 'JUST CULTURE' APPROACH

A meeting of the Hazards Forum, sponsored by Corus, was held on the 19th June 2007 at the Royal Academy of Engineering, chaired by Dr David King, Chief Inspector of Air Accidents and Head of the Air Accident Investigation Board (AAIB). In his opening remarks he said that the aviation industry had tried using the 'Blame Free Culture' but it did not work. Even if the best and most effective investigation were carried out on an accident but not widely disseminated, then as a consequence, nothing would change and the total effort was wasted.

The AAIB had the purpose of improving aviation safety by determining the causes of air accidents and serious incidents and making safety recommendations intended to prevent recurrence, without apportioning blame or liability. To allow free dissemination we need the right context – 'The Just Culture'.

Assad Kotaite, President of the International Civil Aviation Organisation, had stated:

'Given the forecast for sustained growth of air transport in coming years, it is essential that all Contracting States of ICAO cooperate in reducing the number of accidents worldwide. Effective safety oversight systems and transparency in the greater sharing of information is how we can best achieve this objective.'

The year 2004 was the safest in terms of fatalities since ICAO's creation in 1944 but August 2005 was one of the worst months in history. We cannot be complacent. Five major accidents claimed at least 330 lives. In the first half of 2005 one third of the world's fatal accidents were in Africa, which represented less than 5% of the global traffic.

There was, however, a battle with governments who were trying to criminalise accident investigation. A Joint Resolution was passed on the 17th October 2006:

- '...a growing tendency of prosecutors & judges to seek criminal sanctions in the wake of aviation accidents, even when the facts do not appear to support findings of

sabotage, criminal negligence or wilful misconduct

- '...we have progressively elevated the system to its current high level of safety, in part, because the industry has been permitted to conduct thorough investigations and **collect complete information** about the causes of accidents.'

This resolution was signed by the Flight Safety Foundation, Royal Aeronautical Society, Academie Nationale de l'Air et de l'Espace and the Civil Air Navigation Services Organisation.

Dr King then introduced Professor James Reason who had done much work on the Just Culture approach in the aviation industry.

Professor Reason said that he wished to talk about Beyond Hindsight Bias rather than Just Culture. He said there were problems with the past because we could not recover the 'whole truth' of the accident in the investigation. The past was never wholly knowable, there could be some 'hard' facts with the rest being best guess and theory. There were often alternative views. He then discussed in detail the following accidents giving some of the alternative possibilities:

- *Papa India* air crash, Staines (1972) - They knew what happened but not 'how' or 'why'
- Moorgate tube crash (1975) - Suicide was the default possibility
- Mt Erebus air disaster (1979) - System failings (Mahon), not just human error (Chippindale)
- Chernobyl (1986), Dryden Report (1989) - As above, but also invoking remote contributions.
- *Columbia* spacecraft crash (2003). CAIB (Gehlen) Report - Outcome bias and counterfactual fallacy

Traditionally, investigations had been limited to the persons directly involved but current accident prevention views supported the notion that additional preventive measures could be derived from investigations if management policies and organizational factors were also investigated.

In the CAIO Report 8th Edition Annex 13 (1994) it was reported:

Management information. Accident reports should include pertinent information concerning the organisations and their management involved in influencing the operation of the aircraft. The organisations include . . . the operator, air traffic services, airway, aerodrome and weather service agencies; and the regulatory authority. Information could include organisational structure and functions, resources, economic status, management policies and practices . . .

There was thus an ever-widening search for the 'upstream' factors from the Individuals, to the Workplace, to the Organisation, to the Regulators and to Society at large. This movement to the management system area was echoed in many hazardous domains. But has the pendulum swung too far, from Individual Responsibility to Collective Responsibility?

With the *Chernobyl* accident, Valeri Legasov attributed the disaster to the errors and violations of the operators. Two years later (in a pre-suicide tape) he said that the disaster stemmed principally from the faulty running of the Soviet economy - particularly in regard to the control rod design

In the *Columbia* spacecraft crash (2003). The CAIB (Gehlen) Report said:

- 'In our view, the NASA organisational culture had as much to do with this accident as the foam.'
- 'When the determinations of the causal chain are limited to the technical flaw and individual failure, typically the actions taken to prevent a similar event in the future are also limited . . .'

But in this we also get:

'The causal roots of the accident can be traced, in part, to the turbulent post-Cold War policy environment in which NASA functioned during most of the years between the destruction of *Challenger* and the loss of *Columbia*.'

These remote factors give some concerns as they had little causal specificity, they were outside the control of system managers and were mostly intractable. Their impact was shared by many systems and the more exhaustive the inquiry, the more likely they were to identify remote factors. Their presence did not discriminate between normal states and accidents; only more proximal factors do that.

All accident investigations revealed systemic shortcomings, as they were present in all organisations. It was then a short step to argue that these latent 'pathogens' caused the accident. There were always organisational interventions that could have thwarted the accident sequence. Organisational factors were conditions rather than causes.

The 'conditions' in these disasters were poor safety culture, inadequate tools and equipment, poor design and construction, etc, etc. Disasters happened because:

UNIVERSALS	Tensions between production and protection create
CONDITIONS	latent factors that collectively produce defensive weaknesses that
CAUSES	permit chance conjunctions of local triggers and active failures to breach all the barriers and safeguards.

There followed a general discussion on Professor Reason's talk but little was said about getting industry to share information other than to note that the aviation industry had succeeded in sharing information as a natural way of preventing repeat accidents.

Dr John Bond

5. The Science and Policy Interfaces for Disaster Reduction Network

The Science and Policy Interfaces for Disaster Reduction (SPIDER) Network, was recently launched by the Benfield Hazard Research Centre with partners Cambridge University Department of Geography; University College London Department of Earth Sciences; Coventry University Centre for Disaster Management; University of East Anglia School of Environmental Sciences; Portsmouth University School of Earth and Environmental Studies; the Institute of Development studies at the University of Sussex.

It is re-examining the role of scientific knowledge for disaster risk reduction. Through a series of linked meetings and activities, the six UK-based academic departments are attempting to forge a new collaborative partnership.

The rise of disaster risk reduction as an approach to managing disasters more community-centred, vulnerability-based is challenging how traditional hazard-related scientific knowledge is generated and communicated. There is broad recognition that scientists, social scientists, policy-makers, communities and practitioners need to reconsider their relationships with each other and critically assess the way different forms of knowledge are used in attempts to generate safer communities.

The SPIDER Network is seeking to build new relationships by inviting diverse stakeholders to a series of linked meetings over a two-year period. These meetings and other linked activities will seek to address questions such as:

- Who takes responsibility for leading initiatives that attempt to build institutional, community and household resilience in multi-hazard, high vulnerability areas?
- How can scientists and other stakeholders engage the public and policy-makers in the

- production of scientific knowledge that promotes trust through feelings of co-ownership?
- How can awareness of uncertain, high-magnitude, low-frequency hazard events be improved, and how can vulnerability to these events be reduced?
- What dynamics of power, personality and resources influence the value of different knowledge in the governance of disasters?
- How can climate and disaster scientists work more closely to increase the impact of messages about the need to take action?

The Network members are planning a series of working papers, with the intention of publishing them in a special issue of a leading interdisciplinary journal. In addition the SPIDER Network is compiling a series of annotated bibliographies of interdisciplinary disaster risk reduction related research. Each Network meeting will produce a conference report, paying particular attention to the discussions and the emerging research questions.

The SPIDER Network is committed to promoting the work of new researchers in the disasters field. The website hosts a database of new researchers and currently has around 80 members. An e-mail based discussion list is used to share research ideas, conference announcements, funding opportunities and to ask questions. New researchers are able to advertise their research interests and find other new researchers with similar interests.

For details of future meetings and conference reports see www.spidernetwork.org/events
For more details contact Tom Mitchell, BUHRC, t.mitchell@ids.ac.uk, the Network co-ordinator or visit the Network's website: www.spidernetwork.org

6. 'Science in Parliament'

As a member of the Parliamentary and Scientific Committee the Hazards Forum receives a copy of the Committee's journal 'Science in Parliament', which is published quarterly. As it is not feasible to circulate our copy of the journal widely, the contents of each issue are shown in the Hazards Forum Newsletter. Any member who wishes to see any of the articles should contact the Editor at ilawrenson@theiet.org

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7. 'Alert 22'

Alert 22, the latest Newsletter from the Benfield UCL Hazard research Centre is now available.

The articles largely focus on the topical subject of the summer floods of 2007, including the implications for the insurance industry, but also include the 2-3 year programme for development, testing and application of the Tsunami Generator, developed jointly by UCL and HR Wallingford as part of the EPICENTRE project, and on Mainstreaming Disaster Risk Reduction.

The Newsletter can be read or downloaded at www.benfieldhrc.org/activities/alerts/alert22.pdf

8. Parliamentary & Scientific Committee

The Hazards Forum is a member of the Parliamentary & Scientific Committee and members are able to attend the Committee's meetings in one of the Forum's places. The meetings and events over the next few months are listed below. Anyone interested in any of these meetings should contact the Editor on ilawrenson@theiet.org for further information.

Tuesday, 13th November 8.30 am: Breakfast Briefing: Potential for Concentrated Solar Power & Creation of a HVDC Grid

Addresses by

Dr Gerry Wolff CEng *Coordinator of TREC-UK*
Neil Crumpton *Friends of the Earth*

Monday, 26th November 5.30 pm: Natural Disasters

Addresses by

Professor Stephen Sparks FRS *NERC Research Professor and Director of the Centre for Environmental and Geophysical Flows, Bristol University*
Professor Christopher Rapley CBE *Director, Science Museum, London*
Professor John Dewey FRS *University of California, Davis and University College, Oxford*

Wednesday 5th December: The Committee's Annual Lunch at the Savoy Hotel

The Guest of Honour will be Sir David King FRS.

Tuesday, 11th December 2007: Visit to Victoria and Albert Museum, South Kensington, Cromwell Road SW7 2RL

Tuesday 22nd January 2008 at 5.30 pm: NEW DISEASES and RENEWED THREATS

Addresses by

Professor Hugh Pennington FRSE *President of MRSA ACTION UK*
Professor Nigel Minton *University of Nottingham*
Professor Andrew McMichael FRS *Weatherall Institute of Molecular Medicine, University of Oxford*

9. Calendar of Events

Date	Event	Venue	Contact/further information
2007			
NOVEMBER			
6-9	'HAZOP Study for Team Leaders and Team Members' Short course from the Institution of Chemical Engineers (IChemE)	Staff House Conference Centre, University of Manchester	Rachel Robinson, IChemE T: 01788 534458 e: courses@icheme.org www.icheme.org/HazopTeam
7-8	IET Seminar on 'Safety Assurance'	Savoy Place London WC2R 0BL	Peter Shepherd, Lloyds Register T: 01438 765 656 e: events@theiet.org
20	'Software Reliability', seminar organised by the IMechE	IMechE 1 Birdcage Walk London SW1	Michelle O'Brien T: 0207973 1309 F: 020 7222 9881 e: m_obrien@imeche.org
20	'Scoping and Design for a Major Project – a Risk-based Approach towards the 2012 Games', a Hazards Forum evening event	Olympic Delivery Authority 1 Churchill Place, Canary Wharf, E14 5LN	e: hazardsforum@ice.org.uk
21	'Business Risk and Continuity Planning', seminar organised by the management Group of the IMechE, co-sponsored by the IMechE and the Hazards Forum	IMechE 1 Birdcage Walk London SW1	T: Rachel Croshaw e: r_croshaw@imeche.org
2008			
JANUARY			
21	'Societal Risk and Responsibility', the 16 th HSE/SIESO workshop	Manchester Conference Centre	www.sieso.org.uk/events.htm
MARCH			
11	Hazards Forum AGM, followed by an Evening Event	Institution of Civil Engineers One Great George Street London SW1P 3AA	Alison Brown T: 020 7665 2230 e: hazardsforum@ice.org.uk

SIESO/HSE Workshop Societal Risk and Responsibility Buncefield and Texas City

The workshop being organised by SIESO and the HSE on this subject, which was to be held on 22 October has now been postponed until 21 January 2008.

It appears that the final report on the Buncefield disaster will not be published by the original date. As the report will be a major and integral part of the workshop, SIESO is anxious that the lessons learned should be available for comment at the workshop, and has decided therefore that the workshop should be postponed until 21 January, when delegates will be able to discuss fully the investigation team's final findings.

Full details of the workshop are available at www.sieso.org.uk/events.htm

10. Membership of the Hazards Forum 2007

Distinguished Members

Professor P A Bennett, FREng

Professor Sir Bernard Crossland, CBE FRS FREng

Dr S N Mustow, CBE FREng

Dr A C Patterson, CBE FREng

Professor Sir Frederick Warner, FRS FREng

Institutional, Corporate and Individual Members include:

British Computer Society

British Hydrological Society

British Psychological Society

City University

Cranfield University

Ergonomics Society

Eurogears Ltd

Geological Society

Institute of Measurement and Control

Institution of Chemical Engineers

Institution of Civil Engineers

Institution of Engineering and Technology

Institution of Mechanical Engineers

Institution of Materials, Minerals and Mining

Institution of Occupational Safety and Health

Institution of Structural Engineers

Lancaster University

Met Office

National Health and Safety Groups Council

Risk Management Solutions Ltd

Risk Support Ltd

Royal Academy of Engineering

Royal Society of Chemistry

Safety and Reliability Society

Society of Industrial Emergency Service Officers

University of Nottingham

University of York

BP plc

Corus Group

CSE International Ltd

Du Pont de Nemours (Luxembourg) sárl

DSTL

Health and Safety Executive

Lloyd's Register

NEBOSH

Rail and Safety Standards Board

Shell UK Ltd

United Utilities

Dr John Bond

Mrs Patricia Bond

Mr Iain Carter

Mr Nigel Cheetham

Mr Frank Crawley

Mr Graham Dalzell

Dr Chris Elliott

Mr Ed Spence

Mr Robert Foster

Mr Robert Gilchrist

Mr Frank Groszmann

Mr Brian Neale

Mr Peter Livock

Dr J McQuaid CB

Mr Mark Paradies

Mr Fred Pell

Mr Michael Selfe

Mr David Eves CB

Mr Brian G J Thompson

Mr Simon Turner

Professor John Uff CBE QC