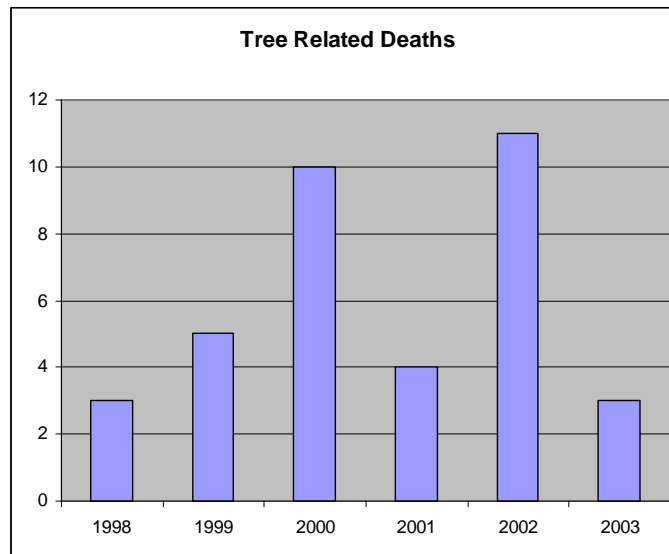


## Dangerous Trees?

Summary of argument presented to a conference on  
*The Future of Tree Risk Management*, London, 15 September 2006

Figure 1



Source: Julian Forbes-Laird, *Arboricultural Newsletter*, No 123 (December 2003).  
National Tree Fatality Database

The average annual number of tree-related deaths over this six year period (the most recent statistics available) was six, or one in 10 million averaged over the national population. The Health and Safety Executive considers that “an individual risk of death of one in a million per annum for both workers and the public corresponds to a very low level of risk and should be used as a guideline for the boundary between the broadly acceptable and tolerable regions.”<sup>1</sup> The “broadly acceptable region” the HSE explains as follows: “risks falling into this region are generally regarded as insignificant and adequately controlled.”<sup>2</sup>

Judged by this HSE guideline the tree-related risks that are the focus of this conference would appear to fall far below the HSE threshold of concern and require no further management. As someone new to the field of Tree Risk Management I propose in my presentation to explore the concerns that are seen to justify a conference such as this, and to relate them to other areas of “defensive practice”.

I share the concern of the Prime Minister. In a speech entitled 'Common sense culture not compensation culture'<sup>3</sup> he observed

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<sup>1</sup> *Reducing Risks, Protecting People*, p. 45.

<sup>2</sup> *Ibid* p. 43.

<sup>3</sup> IPPR, 26 May 2005, <http://www.number-10.gov.uk/output/Page7562.asp>

“In eight years as Prime Minister, I don't know that you accumulate much wisdom, but you certainly accumulate experience. I want to talk today about a particular problem my experience has led me to identify. It is an issue that seems more of a talking point than an issue of policy; that has many different facets to it; that is little discussed in the way I'm about to discuss it; but which, on the basis of my experience, if it goes wrong, has the capacity to do serious damage to our country.

It is what I call a sensible debate about risk in public policy making. In my view, *we are in danger of having a wholly disproportionate attitude to the risks we should expect to run as a normal part of life* [my italics]. This is putting pressure on policy-making, not just in Government but in regulatory bodies, on local government, public services, in Europe and across parts of the private sector - to act to eliminate risk in a way that is out of all proportion to the potential damage. The result is a plethora of rules, guidelines, responses to 'scandals' of one nature or another that ends up having utterly perverse consequences.”

From my brief introduction to the world of tree risk management I conclude that this discipline shares essential characteristics with other fields of endeavor that display a “wholly disproportionate attitude to the risks we should expect to run as a normal part of life.” Examples are offered routinely by the media: the banning of hanging flower baskets, the demise of school trips, the banning of home-made cakes at village fetes, the denial of soft-boiled eggs to residents of care homes, the practice of defensive medicine, panics about Sars, bird-flu, sunbathing .... are all examples of applied anxiety that collectively threaten “serious damage to our country.”<sup>4</sup>

### **Fault trees, event trees, and trees**

A feature common to most fields of risk management is the aspiration to develop formal, systematic methods for assessing it. Cost-benefit analysis, for example, which served as the principal justifier of Britain's destructive road building programme over the last four decades now appears to be gaining a foothold in tree risk management.<sup>5</sup>

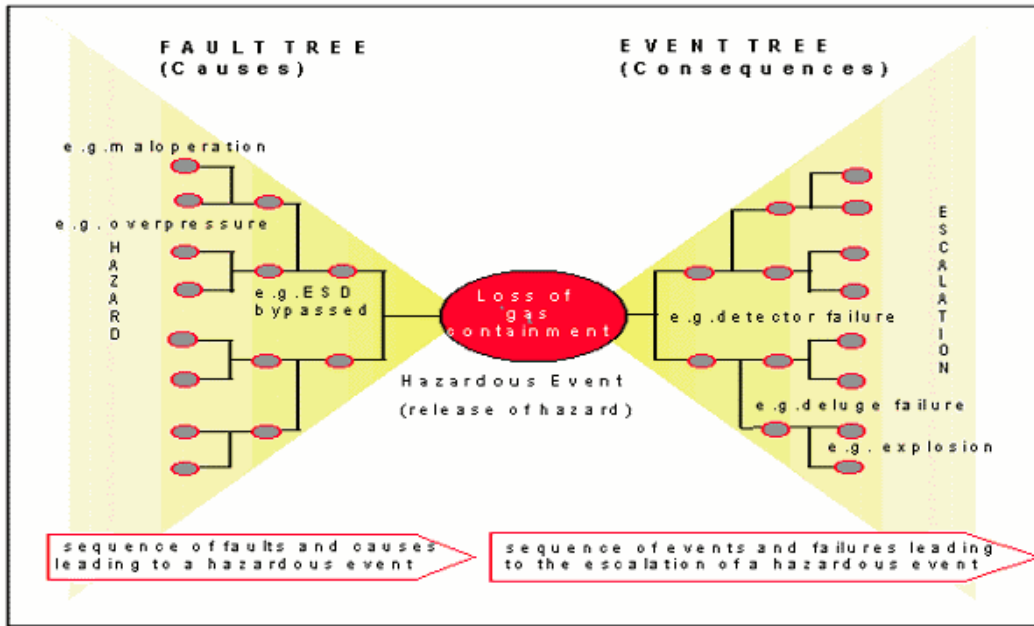
Promoters and managers of large civil engineering projects have accumulated the largest body of systematic risk-management experience. Figure 2, borrowed from the nuclear industry, presents two forms of risk assessment much used by engineers and project managers. The fault tree on the left sets out the chains of faults that could have produced an undesired outcome; the event tree on the right sets out the chains of contingencies that could lead to future undesired outcomes.

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<sup>4</sup> For more on this theme see “Risk Management: cutting the CRAP” at <http://www.geog.ucl.ac.uk/~jadams/publish.htm>

<sup>5</sup> My dissatisfactions with this method are elaborated in my book *Risk* (chapter 6) and “Risk “Benefit Analysis: who wants it? who needs it?” At <http://www.geog.ucl.ac.uk/~jadams/PDFs/presentations/cost-benefit%20for%20Yale%20conference.pdf>

Figure 2



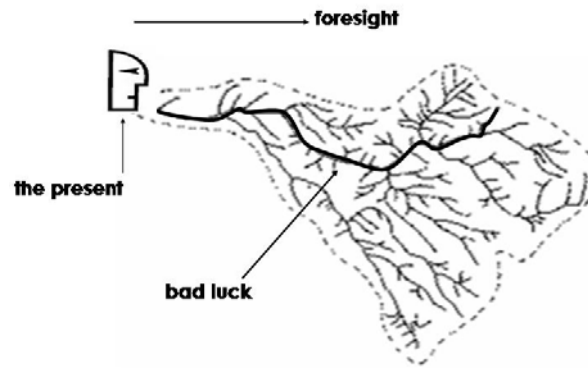
[www.acm.ab.ca/safety/images/fault-tree.gif](http://www.acm.ab.ca/safety/images/fault-tree.gif)

Event trees are useful devices for setting out systematically what one knows about possible causes of accidents. But they have a very demanding appetite for numbers. Each branching point in the tree must have attached to it a probability. In the absence of large and stable actuarial data bases, most of these probabilities will be guesses with wide error bands. The numbers on the right-hand margin of the page will therefore commonly be compound guesses with extremely wide error bands. Further, most event trees, such as the one above, will be highly simplified versions of the reality they seek to capture. They are particularly bad at representing the probabilities of human error.

Event trees nevertheless provide a useful metaphor for the way in which we try to manage risk. Figure 3(a), while still simplistic, is an attempt to suggest the density and complexity of the real world event tree through which we must peer when trying to manage risk. Occasionally something nasty, which had looked from our vantage point like a risk worth taking, happens. With obscured foresight the nasty event appeared to be at the end of a chain of contingencies whose compound probability was judged to be "broadly acceptable". This used to be, in a less litigious age, called *bad luck*.

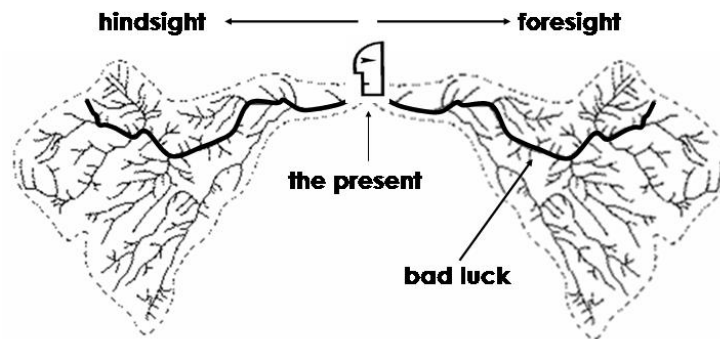
Figure 3

a.



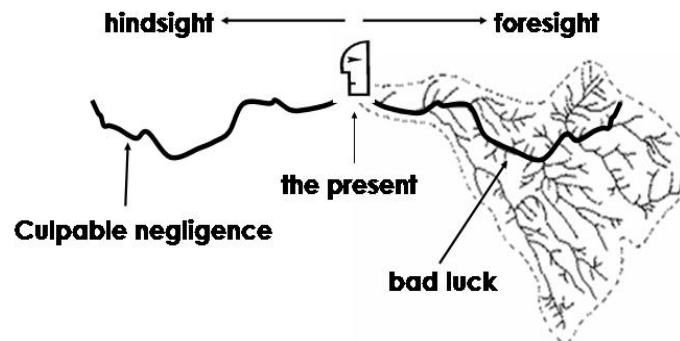
We might, after such an event, have then invoked hindsight (Figure 3(b)) in order to try to understand what went wrong and perhaps learn a lesson for the future.

b.



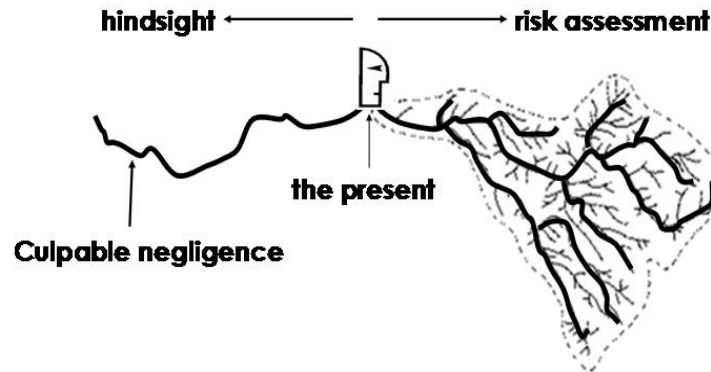
In the risk-blame-litigation-compensation culture the application of hindsight has now, almost routinely, acquired a forensic character. The unhappy decision is likely to be examined in court by a lawyer armed with a machete with which he cuts off all the other branches, leaving starkly exposed a one-branch fault tree called "culpable negligence" - Figure 3(c).

c.



The fear of being found guilty of culpable negligence is one of the principal drivers of the risk assessment mania currently afflicting British society. Every event (potential tree failure in the context of this conference) at the tip ends of all the branches of the event tree must now be formally assessed (Figure 3(d)). Or, when it becomes apparent that this is impossible or unaffordable, “failsafe” procedures are implemented: if in doubt chop it down, or declare the area off-limits to the public.

d.



The job of the institutional risk manager is to try to imagine what might go wrong, and devise the means to avoid it. Indeed the risk assessor is often warned not to allow his or her judgment about what is safe or dangerous to be corrupted or compromised by contemplation of the rewards of risk taking. A growing perceived risk, that risk managers everywhere are now striving to reduce, is the risk of being found guilty of culpable negligence – with the growing risk that such a verdict could lead not just to a heavy financial penalty, but time in jail.

## Two worrying examples

**1. Everything must be inspected.** On New Year’s Day 2005 in Durnham Massey Park, a National Trust property near Altrincham, a beech tree fell in a storm and killed an eight year old boy. The head estate warden and the estate manager were arrested on suspicion of manslaughter. The coroner declared, a year and a half later, that all mature trees on the Trust’s land adjacent to paths should be inspected and logged, rather than the current system of “negative reporting”, in which, if nothing is “apparently wrong inspectors move on and don’t make a record.” At the time of writing, one and a half years after the accident, the HSE who have taken over from the Crown Prosecution Service, who dropped the case for lack of evidence, have promised a report sometime in the future<sup>6</sup>; a threat of dire consequence still hangs over the National Trust. Given the many millions of mature trees in Britain, the risk assessment and risk management implications of the coroner’s judgement, pursued to their logical conclusion would require the diversion of enormous resources to inspection and/or the execution of countless mature trees that could not be guaranteed 100 percent safe – and who would offer that assurance in our litigious times?

<sup>6</sup> <http://news.bbc.co.uk/1/hi/england/manchester/5194540.stm>

The on-going HSE investigation will prove an interesting test of the HSE's ability to reconcile its one-in-a-million test of a risk's significance with its ALARP test of whether a safety measure has reduced a risk to a level that is As Low As Reasonably Practicable.

**2. If in doubt chop it down - the poisonous yew tree.** Last March the Daily Mail ran an article with this headline:

“Yew Couldn't Make It Up! Nanny Council Chops Down 100 Yew Trees Next to a Playground in Case the Children Poison Themselves by EATING the Leaves.”

“A council that spent £5,000 planting a row of yew trees last year is digging them up again in case children are poisoned by their leaves. Bristol County Council planted 100 yews to create a border between a café and a children's play area. However, a risk assessment later concluded that the trees should be pulled up because, if eaten in sufficient quantity, the leaves can cause vomiting. A council spokesman admitted that this was extremely unlikely to happen as the leaves tasted ‘foul’, but said, predictably, that it was better to be safe than sorry.”<sup>7</sup>

Bristol County Council's concern about the danger of the yew is not unique. Figure 4 is taken from a report of the Development Control and Regulatory Board of Leicester County Council of 16 February 2006. The picture shows a yew tree that has obviously been there for many years, and a taped-off section of a children's playground – taped off once the peril had been recognised!

Figure 4



Source:

[http://politics.leics.gov.uk/Published/C00000144/M00001420/A100012553/\\$BBattenBirstalltpo.doc.pdf](http://politics.leics.gov.uk/Published/C00000144/M00001420/A100012553/$BBattenBirstalltpo.doc.pdf)

<sup>7</sup> Would yew believe it? [http://www.merseyworld.com/faith/html\\_file/curiouser.html](http://www.merseyworld.com/faith/html_file/curiouser.html)

The report noted that “there remains a significant risk that children could ingest foliage or berries while they are out playing”, and adopted the recommendation of Ofsted: “The yew tree sheds toxic foliage and berries into the children’s play area. An Ofsted report on the Woodlands (sic) Day Nursery has recommended that the yew tree is removed in the interest of child safety”.

The foliage and berries of the yew are indisputably toxic. But no evidence was adduced in either the Ofsted report or that of Leicester County Council that the risk of their ingestion by children was “significant”. Nor have I been able to find such evidence. The tree, of manifest amenity value, is, it appears, to be sacrificed on the altar of disproportionate risk aversion.

### **Where next?**

“Bad luck” currently enjoys an ambiguous legal status. “Accidents” or “acts of God” as they used to be called are sometimes acknowledged by the courts. But not consistently. Those responsible for the management of trees manage in fear of being held liable for culpable negligence. The guidance currently on offer is not reassuring. *Veteran Trees: a guide to risk and responsibility* published by English Nature<sup>8</sup> engenders nervousness:

- “Where work is carried out, the owner should take the opportunity to inspect the tree (including any branches that have been removed), and to carry out any further work that is shown to be necessary. Failure to do so may lead to subsequent liability.”
- “It may, for example, be appropriate to erect signs to warn of potential hazards, although that will only be sufficient if there is some way for the person reading the sign to take avoiding action.”
- “Liability is determined on the basis of whether a danger posed by a tree could have been foreseen, and whether reasonable remedies could have been undertaken, which would have reduced the risk to an acceptable level.”
- “To meet legal requirements, it is crucial that owners manage risk and can be seen to do so, and are able to provide evidence that this has been done.”

As a teenager in Canada I spent a number of summers at Summer Camp. My fondest memories are of canoe trips involving camping in the wilderness and portages requiring lifting the canoe over fallen trees. A requirement for a risk assessment of all the trees I might have passed would have rendered my adventures impossible.

My introduction to the world of tree risk management in Britain leads me to the conclusion that it is disproportionately risk averse and is having, in the words of the Prime Minister, “utterly perverse consequences”.

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<sup>8</sup> Caroline Davies, Neville Fay and Charles Mynors, English Nature 2000, <http://www.englishnature.org.uk/pubs/publication/PDF/VetTreesRisk.pdf>