

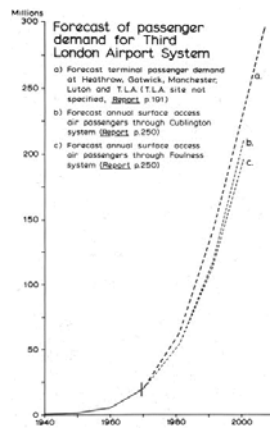
# Risk in a Hyper-Mobile World

An inaugural lecture  
by  
John Adams  
Geography Department  
University College London  
5 November 1998

- Geography is a wonderful subject for anyone who, like me, has had difficulty deciding what they want to be when they grow up. It keeps open more possibilities than any other subject I know.
- Down in the basement of my department you can find real scientists wearing white coats and peering through microscopes. If I want to know something about global warming, or acid rain, or air pollution, or just borrow a copy of *Nature* I know where to go.
- If I have questions about wetlands or drylands, or biodiversity, or remote sensing, or geographical information systems, or demography, or the Common Agricultural Policy, or the workings of Brussels bureaucracy, or Victorian transport systems, or world energy markets, or how to divine public opinion on an issue, or numerous other subjects ... I don't have to leave the department. And usually there is no where else in the world that I could go for a more authoritative answer.
- Ecologically speaking I am the department parasite. I have fed off most of them.
- I know that it is the convention in inaugural lectures to pay tribute to one's colleagues. But I have never been to an inaugural where the tribute has been more amply justified - and I include all our excellent support staff - our administrators, the computer people, and our cartographers. Working in the geography department of UCL has been an tremendously enjoyable and enriching experience - *intellectually* enriching.
- Well, this is an inaugural lecture, not a valedictory speech - I hope - so I turn now to the thorny question of what it is that I profess.
- My professing for a long time now has had two main preoccupations - **transport** and **risk** - and tonight I will attempt to make a connection between them.

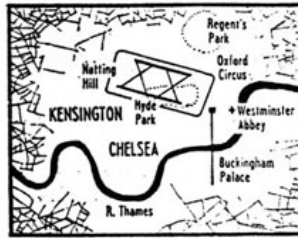
## Transport - a quick tour

- Predict and provide & cost-benefit analysis
- Moving pavements in Westminster Abbey and Tower of London?
- Hyde Park Airport



- Transport came first.
- The first thing I ever wrote on transport planning was commissioned by Hugh Prince who was editor of *Area* in 1970. It was a review of the Roskill Commission's report on proposals for a third London airport.
- **This is a graph from the Roskill Report.**
- It was my first encounter with two of the mainstays of transport planning for the past 30 years: predict and provide and cost-benefit analysis.
- Both have a seductive, common-sensical appeal. Under “predict and provide” - you use the forecasts to work out the size of the road or airport you will need, and you employ cost-benefit analysis to demonstrate that the benefits of building it will exceed the costs.
- 2 things fascinated me about the Roskill study.
- **First**, the enormous increase in traffic that they envisaged - How, I asked in my review were all the extra tourists predicted to come to London to be accommodated - **would they install moving pavements in Westminster Abbey and the Tower of London to get them all through?**
- Well, not so long ago a moving pavement was installed in the Tower of London to speed the flow of tourists past the crown jewels. I wish I could say I predicted it, but at the time I thought that I was posing a rather absurd rhetorical question.
- **The second thing that intrigued me about the Roskill Report** related to the cost benefit analysis. Roskill attached enormous value to the convenience of the travellers relative to the social and environmental costs of the project. To illustrate what I considered to be the inappropriateness of the values embodied in Roskill's analysis, I did a little cost benefit analysis of my own demonstrating that, using Roskill's values, the most efficient location for the **third London airport was Hyde Park**

SUNDAY TIMES JULY 12 1970



Site for third airport?

## How about an airport in Hyde Park?

By Tony Dawe

THE CITY of Westminster is a  
logical site for the new London

The cost-benefit a  
that Cublington, B  
cheapest site at a  
million and Foulm  
expensive at £2,385  
report has made a n  
on Mr Justice Ro  
members of his co  
observers at the  
public hearing—nov  
fourth month—say  
ton is emerging  
favourite. A decisio  
at the turn of the

Mr Adams says: "team has taken materialistic view o tried to cost every affected by an airpo many things which indirectly. But you luate the disruption of life of thousands this way."

Mr Adams cites t on recreational f historic churches. report evaluates facilities as the cost replacing them and time and travel cost reaching a new site.

The report asses on their insurance

The *Sunday Times* took an interest in my proposal and ran a story on it - reproducing my map showing the southern runway pointing at Buckingham Palace. The reporting was deadpan - some academic had had this idea.

This was my first venture into satire - and I discovered it is a difficult beast to control.

SUNDAY TIMES JULY 19 1970

## **Yes to Hyde Park Airport**

- “congratulate those who have had the courage to recommend an airport in Hyde Park”
- “London needs at least 6 airports of this size”
- “recommended Hyde Park in 1946”

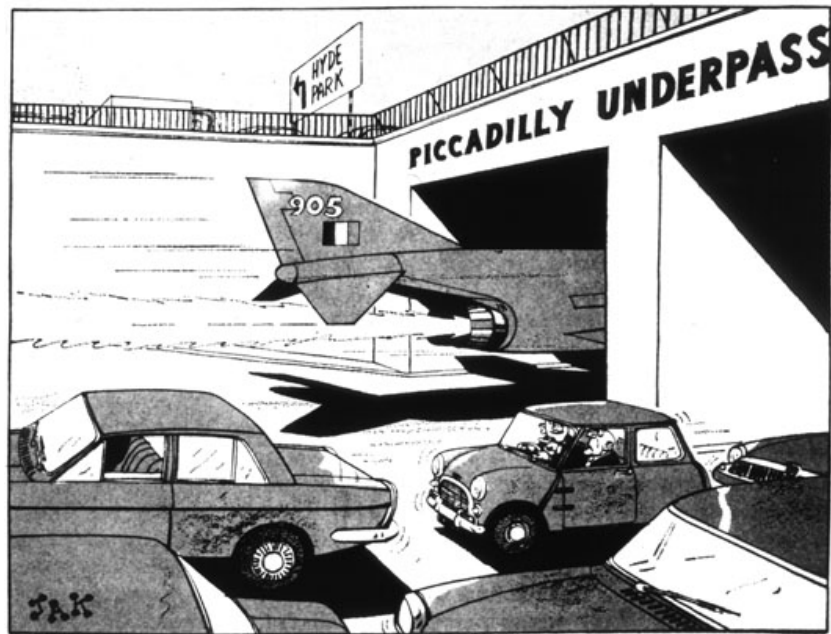
**Don Bennet (Air Vice-Marshal, ret)**

Blackbushe Airport, Camberley

**A week later**

**the Sunday Times published a letter to the editor - Yes!**

- **congratulating me on my courage in recommending Hyde Park**
- **pointing out that London needed at least 6 more airports of this size**
- **and finally pointing out modestly that the writer had recommended Hyde Park in 1946**
- **The writer was retired air-vice marshall Bennett - “Pathfinder Bennett”**
- This demonstrated for me the severe limitations of cost-benefit analysis.
- I can imagine no way that cost-benefit analysis or any other kit of analytical tools could ever settle the argument between the air vice marshall and me. I had chosen Hyde Park as the most absurd place I could imagine to put an airport.
- He thought airports were wonderful things.
- I don’t know if he lived there, but **his correspondence address was Blackbushe airport** - a decommissioned RAF airfield.
- The only way arguments like this are ever settled is if people’s values change. A cost-benefit analysis that attaches different people’s cash valuations to different parts of a problem at a particular moment in time settles nothing.



"It's all right, they stop by parachute!"

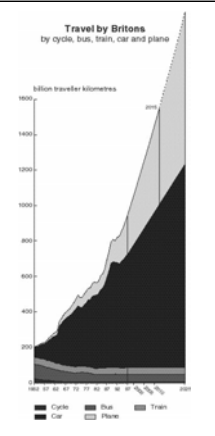
with acknowledgements to *The Evening Standard*

This was JAK's view of my proposal.

The caption reads **"It's all right, they stop by parachute!"**

## The Future?

- “we need to reduce the rate of road traffic growth”
- **things will get worse more slowly**
- the solution?
- a pollution-free perpetual-motion engine
- be optimistic



### •What of the future?

- Let us now fast forward almost 30 years. The future looks pretty much the same. Still, today, the application of cost-benefit analysis to environmental issues continues to settle nothing.
- Still, the forecasts of traffic growth remain mind boggling.
- **Here we have a graph** which shows that in 1950 the average Briton travelled about 5 miles a day. It is now about 27 miles a day, and forecast to rise by 2025 to over 60 miles a day.
- And still rising steeply.
- The basis for airport planning is still predict and provide. The Roskill forecasts turned out to be pretty accurate. Recent forecasts rise far beyond the top of Roskill's graph. And it is still assumed by Government airport planners that capacity must be provided to accommodate this traffic.
- The response to the road traffic forecasts is less clear - the policy seems to be to predict - and provide only a little bit more - and then to wring one's hands about what to do next.
- The recent Transport White Paper proclaimed policy to be to **reduce the rate of growth**.
- Put another way, given present problems of congestion, pollution and declining public transport, the new policy aspires, it seems to me, to ensure that, under New Labour, **things will get worse more slowly**.
- **What solutions are proposed?**
- Most of the time, money and effort currently being spent on transport problems are devoted to the development of **the pollution-free perpetual motion engine** - or as close to it as the laws of physics and chemistry permit.
- **Let's be optimistic** and assume that science and technology will succeed in this goal - let us assume that engines become hugely cleaner and more efficient.
- What is likely to happen if the realisation of these forecasts is assisted by technological developments that make flying and driving not only cleaner, but also cheaper?
- Certain problems, it seems to me, will remain.

## Consequences of hyper-mobility

- more polarised (greater disparity between rich and poor),
- more dispersed (more suburban sprawl),
- more anonymous and less convivial (fewer people will know their neighbours),
- less child-friendly (children's freedoms will be further curtailed by parental fears),
- less culturally varied (the *McCulture* will be further advanced),

• I will run quickly over what seem to me to be some of the most likely social consequences of the hyper-mobility that will result if these trends run on unrestrained.

• It is a list from a report I am writing for the OECD's project on environmentally sustainable transport. Given the lack of time available, I will present them simply, and rather baldly, as assertions, and I hope that they are assertions that most of you will find plausible.

• The world will become **more polarized** - as some become more mobile, the majority are being left in the dust. In 1950 there were about 2.5 billion people in the world who did not own cars. Now there are more than 5 billion.

• **There will be more suburban sprawl** - the government's car ownership forecasts cannot materialise unless more people move to the suburbs. The on-street car park in most cities is already full.

• **Society will become more anonymous** - in high mobility societies fewer people know their geographical neighbours; there is a limit to the number of people you can know, and if you know more at a distance you will know fewer close to home.

• It will be **less child friendly** - as the world fills with more strangers, and more traffic restrictions on children's freedom will increase. In 1971 80% of 7 & 8 year old children got to school on their own, unaccompanied by an adult. Now it is close to zero. The two main reasons that parents give for denying their children the freedom that they enjoyed as children are fear of traffic and fear of strangers. And the DoT has produced leaflets that declare that any parent who allows a child under the age of 12 out unaccompanied is "irresponsible."

• **Less culturally varied - the McCulture will be further advanced.**

- more dangerous for those not in cars (more metal in motion),
- fatter and less fit (less exercise built into daily routines),
- more crime ridden (more fear of crime, higher levels of recorded crime?),
- subject to a more Orwellian style of policing (more ‘clever’ CCTV surveillance, and computerised police intelligence), and
- less democratic (the majority will have less influence over, *and diminished trust in, the institutions that govern their lives*).

• **more dangerous for those not in cars - more metal in motion**

• **fatter and less fit - less exercise built into our daily routines**

• **more crime ridden - more fear of crime and higher levels of recorded crime?**

The question mark after recorded crime reflects the possibility that crime may be contained at the cost of more **Orwellian policing**.

• As societies become more mobile and anonymous, old-fashioned bobby-on-the-beat policing becomes ineffectual. “Clever” CCTV refers to the exploitation of computerised pattern recognition achievements that enable computers to identify car number plates and faces in crowds.

• **and finally - Less democratic.**

• This - in summary form - is a list of speculations about the future. The difficult thing about the future is that it does not exist, except in our imaginations.

• So this is a list of some of **the risks that I imagine** to be associated with transport policies that encourage, or merely acquiesce in, an indefinite extrapolation of historic trends.

• I have put last, and highlighted, the risk that seems to me to be the most important, and the most neglected, consequence of the age of hyper-mobility into which we are heading. It is the point on which I will conclude.

• But before I do - you have not earned your glass of wine just yet - I wish to say **a few things about risk**



## Risk - a quicker tour

- *Risk: analysis, perception and management* - Royal Society 1992
- “not a report of the Society”
- “a contribution to the ongoing debate”
- Risk is “real”, and capable of “objective measurement”
- “risk is culturally constructed”

- My interest in questions of risk grew out of my interest in transport. My first book was about transport planning, and I persuaded myself that road accidents were sufficiently important to deserve a chapter. In writing that chapter I got hooked on risk.

- Initially my interest focused on what sort of road safety measures did or did not work.

- My interest has spread much wider, but there are still connections to be made with my transport interests

- I will begin, with a debate that exercised the Royal Society when it published a report in 1992 entitled *Risk: analysis, perception and management*.

- Although the name of the Royal society appeared on the front cover of this report, the preamble insisted that it “**was not a report of the Society**” merely “**a contribution to the ongoing debate**”

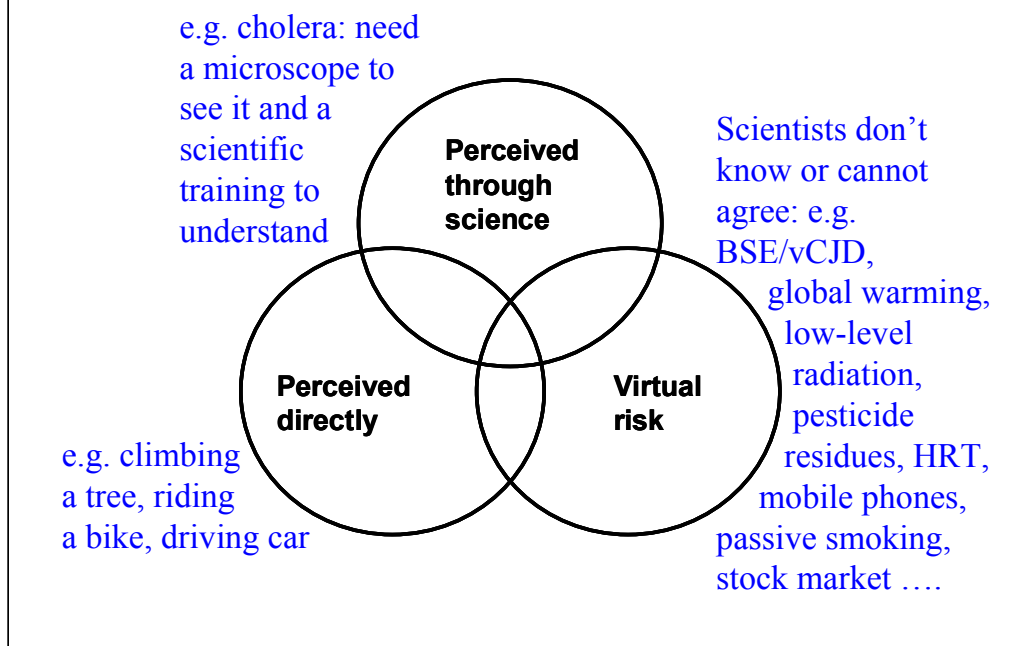
- It was a heated debate.

- One side maintained that **risk is real and capable of objective measurement**. The other insisted that **risk is culturally constructed**.

- The first of these positions was that of most of the Royal Scientists

- The second was espoused by the social scientists that the Royal Scientists had, many thought unwisely, invited to join their study of risk.

## Three kinds of Risk



- Much of this debate can be made to disappear if one is careful to be clear about the kind of risk one is talking about.
- I suggest that it is helpful to distinguish **three categories**
- **Directly perceptible perceptible risk** - eg climbing a tree, riding a bike, driving a car. This category of risk is dealt with instinctively and intuitively. You don't conduct a formal probabilistic risk assessment before you cross the road.
- **Risk perceived through science** - e.g. cholera, you need a microscope to see it and a scientific training to understand what you are looking at.
- **Virtual risk** - the scientists just don't know, or reputable scientists disagree.
- The second category, risks perceptible through science, contained most of the examples deployed by the Royal Scientists in their dispute with the social scientists.
- The third category **virtual risk** is the realm of risk culturally constructed. If science cannot settle an issue it is wonderfully liberating - people, including scientists, are freed to argue from their established beliefs, prejudices and superstitions.
- I will look briefly at each of these categories.
- First, directly perceptible risk. I begin with a portrait of a successful risk manager.

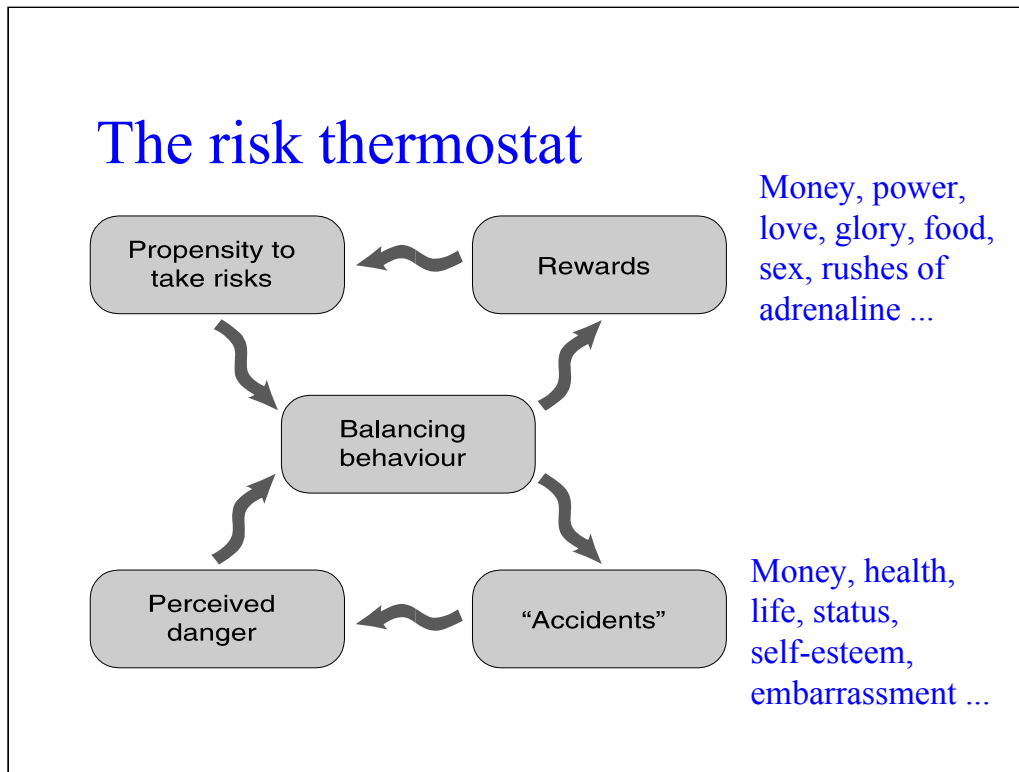
## A successful risk manager



Risk management is

- a balancing act
- instinctive
- intuitive
- modified by culture

- This is an example of primordial risk management
- Anyone who has ever been in the presence of a toddler learning to toddle will be under no illusions about being in the presence of a serious risk management exercise.
- I like this picture because it illustrates a number of attributes of risk management
- **It is a balancing act** - in this case a physical balancing act - but more generally an act in which the rewards of an act are balanced against the potential adverse consequences
- **It is instinctive** - successful risk management has been rewarded by evolution
- **It is intuitive** - we do not undertake a formal probabilistic risk assessment before we cross the road - or toddle across the room
- it is behaviour that is **modified by culture**. This little fellow is clearly performing before an appreciative audience. Desired behaviour is being reinforced.



- This is a more abstract version of what I think was going on in the previous picture- I call it the risk thermostat.
- The thermostat gets set in the top left hand corner - the propensity to take risks. I have yet to encounter anyone who has a zero setting. We all need a little excitement in our lives.
- A propensity to take risks leads to behaviour which leads - by definition - to accidents. Taking a risk is doing something that is accompanied by a probability of an adverse outcome. The contents of **accident box** are many, and various - they range from the fatal to the trivial, and are incommensurable.
- From surviving accidents, or seeing them on television, or being warned by mother, we acquire our perception of what is safe or dangerous.
- When perception and propensity get out of balance, we behave in a way that seeks to restore it. For example, if a car is fitted with better brakes, motorists do not drive the same way as before and enjoy an extra margin of safety. They go faster, or start braking later; the potential safety benefit gets consumed as a performance benefit.
- Lastly, the **rewards of risk taking**. These also are many, and various, and incommensurable - money, power, love, food, sex, rushes of adrenaline - whatever turns you on.

## Risk compensation

more dangerous &  
therefore slower

### Groovy, but drivers are unimpressed

WHEN the red lights go out on the starting grid at Silverstone's Albert Park circuit on Sunday, they will herald the start of a season with the biggest change in the sport's technical rules for 15 years.

New regulations introduced this year have opened up a series of doubts about how the racing is going to turn out.

The new cars, which are narrower, have proved to be more of a handful during thousands of miles of winter testing and nobody is quite sure what they will be like when they are racing side-by-side at 200mph.

That is not to say the sport's ruling body have fired a shot in the dark by changing the rules — they had to do something to slow the cars down because, thanks to the Formula One tyre war between Bridgestone and Goodyear, lap times were tumbling by up to six seconds.

The most noticeable change has been the introduction of grooved tyres, which return to the sport for the first time since the late 1980s. The reintroduction will result in less tyre in con-

by GORDON HOWARD

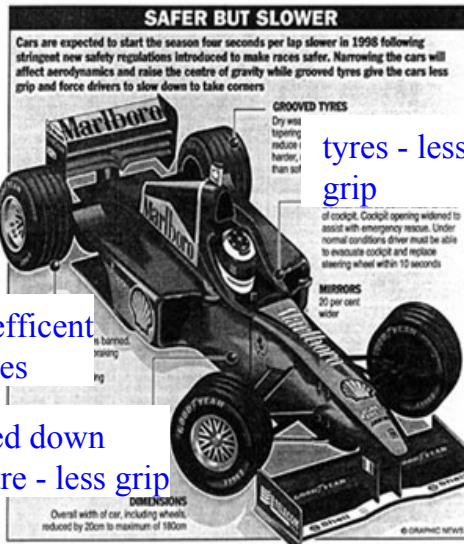
tact with the track and therefore less grip.

The narrower cars downforce for corner less drag in a stra distance will be 1 come down from a a lower cornering.

Limits placed on the size of the brake disc will slow down the again, braking distances should be longer.

There should, opportunities to should become's

But what do Damon Hill has After witnessin Jerez last year, masher tried to because off the track, he was — on to the point of making the cars and tracks a lot safer and spending all this money when drivers are going to crash into each other deliberately?"



• Let us consider the implications of this way of looking at risk management with a specific example with fairly obvious rewards from risk taking -

#### • Formula 1 racing.

• Since the death of Ayrton Senna there have been numerous changes to the Formula 1 construction rules. Most of these changes, in the terms of conventional road safety policy, have made the cars more dangerous

• The most recent set of rule changes has

- **made brakes less efficient**, increasing stopping distances
- **reduced the grip of tyres**, making the car less controllable
- **reduced the downforce**, also reducing the grip in the road
- **the sub-heading reads “safer but slower”**

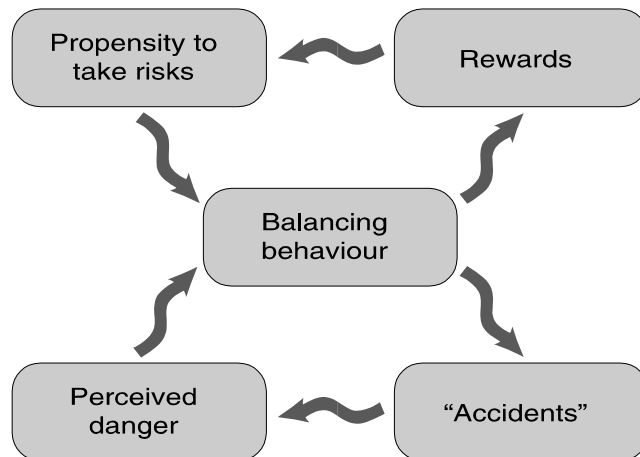
• **I would change this to “more dangerous and therefore slower”**

• The behavioural principle underpinning these changes is known as “**risk compensation**”. The presumption of the rule-makers is that the drivers will notice the change in performance and slow down. The hoped for result is that if they do crash, it will be at a slower, less catastrophic speed.

• This way of looking at risk has profound implications for road safety policy.

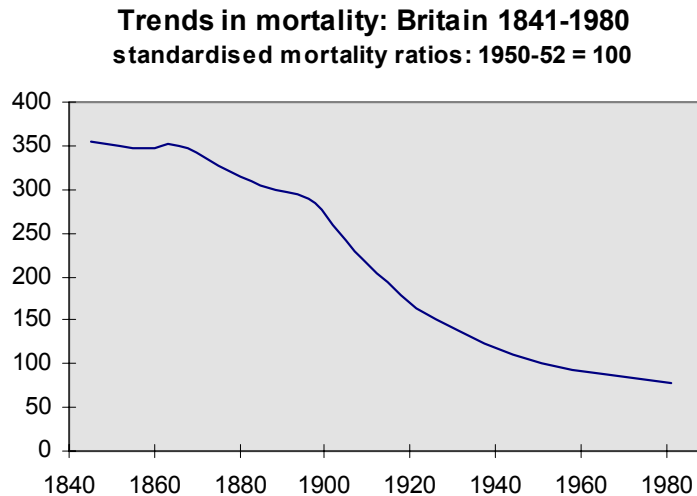
• But this is the quick tour, so I will leave you to speculate about what they might be, and move on to my second risk category, **risk perceived through science**

## Risk perceived through science



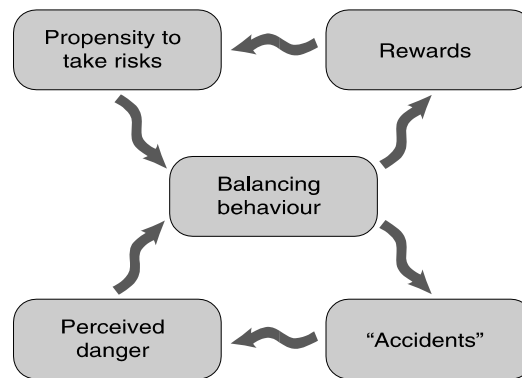
- Science has played a hugely important role in illuminating the connections between behaviour and consequence.
- If you do not know that it is cholera in your well that is making you ill, however risk-averse you may be, you cannot take sensible precautions

## Risk perceived through science



- Graphs such as this, showing enormous declines in mortality, and increases in life expectancy over the last 150 years, are tributes to the achievements of science in the conquest of infectious diseases. The credit I believe should be widely shared with engineers, nutritionists, epidemiologists and all the other disciplines that have contributed to making our society today richer, healthier and longer-lived than ever before.
- But, would-be scientific risk managers frequently over-reach themselves.
- Part of their problem lies in their conviction that risk is “real”, and “acapble of objective measurement.

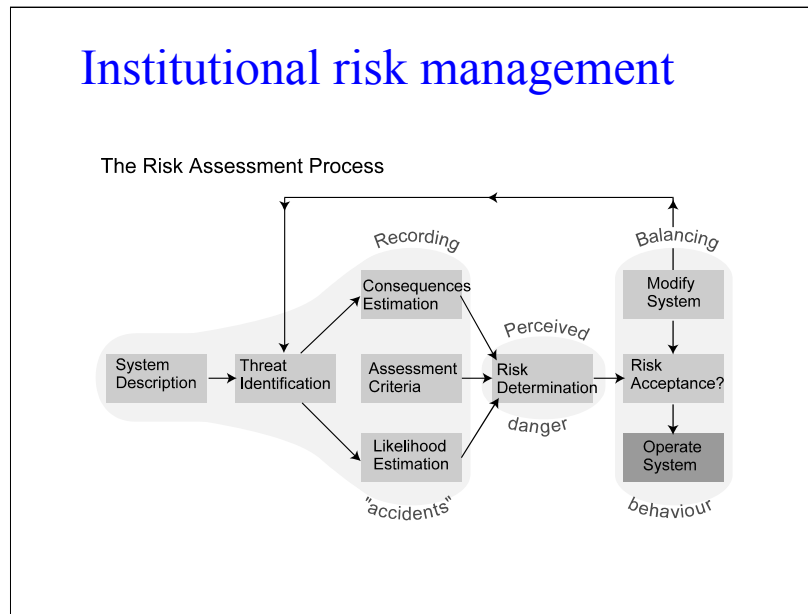
## Risk: Actual or perceived?



- **first**, the distinction they commonly make between “actual” risk and “perceived” risk is, I believe, false. There are *only* perceived risks. Risk is a term that applies to the future; it exists only in our imaginations. There are expert perceptions and lay perceptions, but both are perceptions.
- The problem is that **risk is reflexive**. People attempt to measure it in order to inform behaviour. What they measure influences behaviour, and changes that which they have just measured. In physics it is known as the Heisenberg problem - the act of measurement alters that which is being measured.
- **second**, most measures of so-called actual risk are backward looking. They are **historic accident rates**. They are valid measures of the future only if nothing changes. But, as we have just observed, the point of attempting to measure risk is to inform behaviour, which changes that which has just been measured. **This point has significant policy implications.**
- People living alongside dangerous roads routinely have their requests for traffic calming measures turned down because they have good accident records - their roads are “objectively” safe they are told, and they are just neurotic. But their roads have good accident records because the residents are responding to the perceived danger. Children are forbidden to cross the road; old people are afraid to cross it; fit adults cross it quickly are carefully. The good accident record is purchased at the cost of community severance. People on one side of the road do not know their neighbours on the other.
- Today there are one third as many children killed in road accidents as in 1922 when there was hardly in any traffic. This does not prove that the roads are three times safer for children. They are now so dangerous that children are forbidden to go out any more.



# Institutional risk management



- Another extremely common problem lies in the way that institutional risk managers define their job or have it defined for them.
- In recent years I have been invited to give a number of seminars to regulators and risk managers working in commerce and industry. Each time before I go I ask them to send me their in-house risk management manual.
- And usually I have been able to find in what I am sent a wiring diagram that looks something like this. The process of risk management is formally set out with boxes and arrows and feedback loops identifying the points in the process at which information is collected and decisions made and the consequences monitored.
- And each time I have been able to demonstrate to them, with my shaded overlays that, in essence, their risk management procedures can be reduced to the bottom loop of my risk thermostat model.
- Risk management, in institutional settings, usually means risk reduction.
- As individuals, we manage risk by balancing risks and **rewards**, but the task of institutional risk managers is to reduce accidents.
- At one seminar when I had this slide on the screen one of the risk managers present exclaimed - "So that's why we were known as the sales prevention department."
- When I ask who in the company is in charge of the top loop, the answer - after a bit of head-scratching - is usually the marketing department.
- And when I ask to see the wiring diagram containing both loops, and identifying the person responsible for the overall balancing act, no one can produce it.
- I believe that this helps to explain why the job of the sales prevention department is not always a happy one. They are charged with managing the behaviour of people who have top loops. **Whenever the safety managers insist on more precaution than individuals judge necessary there is likely to be tension, resentment and frustration.**

## Risk: a reflexive phenomenon

- Nobel Prize for Economic Science (1997)
- Robert C. Merton and Myron S. Scholes, for developing a formula that determines the value of stock options and other derivatives.

- Let's take a further look at the problem of reflexivity. This is a problem that routinely defeats those who aspire to manage risk **scientifically**. The environment in which one is making decisions usually includes lots of other people making decisions - whether on the road or the stock market.
- Last year - just last year - the Nobel Prize for Economic Science , and I stress science was won by Robert Merton and Myron Scholes **for developing a formula that determines the value of stock options and other derivatives**.

- “Options are used by sophisticated investors to insulate themselves from losses due to sudden market shifts.”
- “Risk management is the key to success,” Mullins (former Vice Chairman of the US Federal Reserve System) said in an interview soon after joining the firm.
- **Long Term Capital Management**

• Here are a couple of typically enthusiastic quotations that I picked up off the Internet following the announcement of their Nobel Prizes. They give the flavour of the achievement for which they won their prizes.

• **The firm** referred to in the Mullins quotation is **Long Term Capital Management**, the hedge fund whose spectacular collapse at the end of September threatened to bring down the the world’s stockmarkets. The fact that Merton and Scholes are directors and co-founders of the firm has generated a considerable amount of *schadenfreude*.

• How did they get it so wrong?

• They appear to have believed that they could predict risk. But the problem, their problem, is that risk is reflexive. They ran into the Heisenberg problem.

• In the financial markets there are millions of people attempting to measure risk, and making decisions on the basis of these measurements.



- Matt of the Daily Telegraph sums it all up rather nicely.
- There are millions of dealers and investors all around the world attempting to sniff fear, or confidence, and placing orders to buy or sell according to what they detect.
- The world of finance provides an extremely important exception to the point that I have just been making about institutional risk management being focused exclusively on the bottom loop.
- Current problems in the world's financial markets have largely been caused by the dominance of the **top loop** in the incentive structures of the big players in the game.
- In a good year the Christmas bonuses of the so-called rocket scientists who speculate with other people's money are large enough to retire on comfortably for life. If they get it wrong, the worst that is likely to happen is they will lose their jobs. It is an incentive structure designed to promote irresponsible speculation.
- But I do see an important role for science in risk management. It has a role to play in communicating information about risk. There are many popular fears that are clearly non-sensical.

## Risk communication

- The chemical industry routinely uses the chemical *dihydrogen monoxide* in its processes. It is used in significant quantities and it often leads to spillages and other leaks, and it regularly finds its way into rivers and into our food supply.
- This chemical is known to have the following effects:

Last year, a friend, Roger Bate, conducted a survey of attitudes toward environmental risks.

He interviewed 125 people outside Oxford Circus tube station.

The last question on his questionnaire was prefaced with some information for the interviewees.

- it is a major component of acid rain
- it contributes to erosion
- it decreases the effectiveness of automobile brakes
- in its vapour state it is a major greenhouse gas.
- it has been found in the tumors of all terminal cancer patients
- it can cause excessive sweating and vomiting
- accidental inhalation is often fatal.

**Should this chemical be strictly  
regulated or even banned by an  
authority such as the UK  
Government or the European Union?**

**Yes? No?**

**Yes 76%**

**dihydrogen monoxide**

**H<sub>2</sub>O**

- They were then asked whether this chemical should be banned.
- 76% voted to ban dihydrogen monoxide.
- More commonly known as H<sub>2</sub>O, even more commonly known as water.
- When confronted by the unfamiliar we are all easily led - sometimes astray.
- Virtual risks may or may not be real, but they can have real consequences.
- But now, let us look at a virtual risk which cannot be as easily mocked as dihydrogen monoxide.

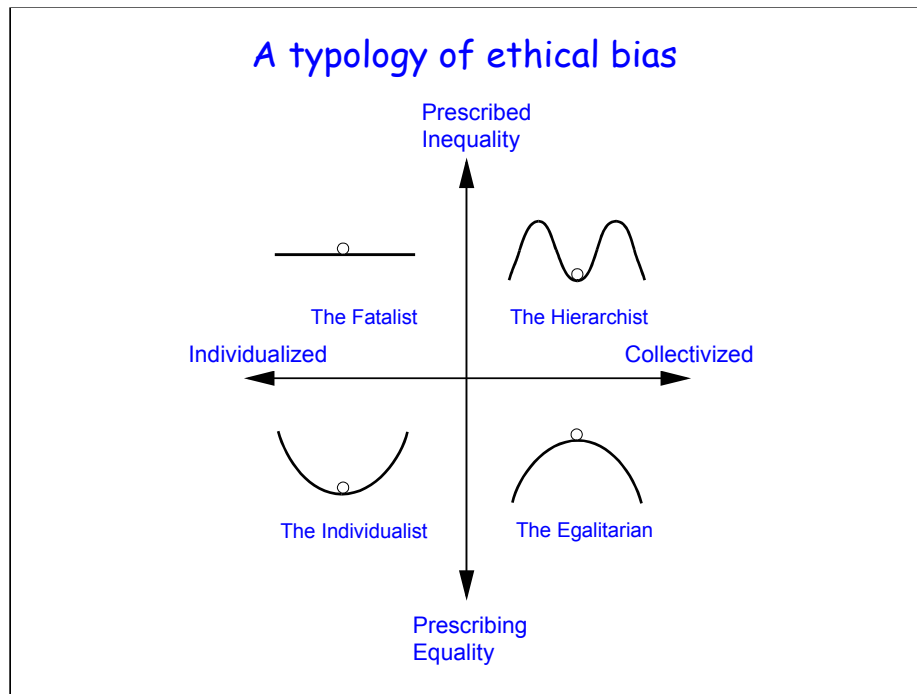
## A virtual risk: vCJD from BSE?

“I have worked in this field for 25 years ... did I go out and eat lamb chops, did I go out and eat lamb brain, sheep brain? The answer was ‘no’, but it was not based on scientific criteria, it was based on just emotion. ... At a scientific level I cannot give you a scientific basis for choosing or not choosing beef, because we do not know the answers.”

*Nobel Laureate Stanley Prusiner  
BSE Inquiry, 6 June 1998*

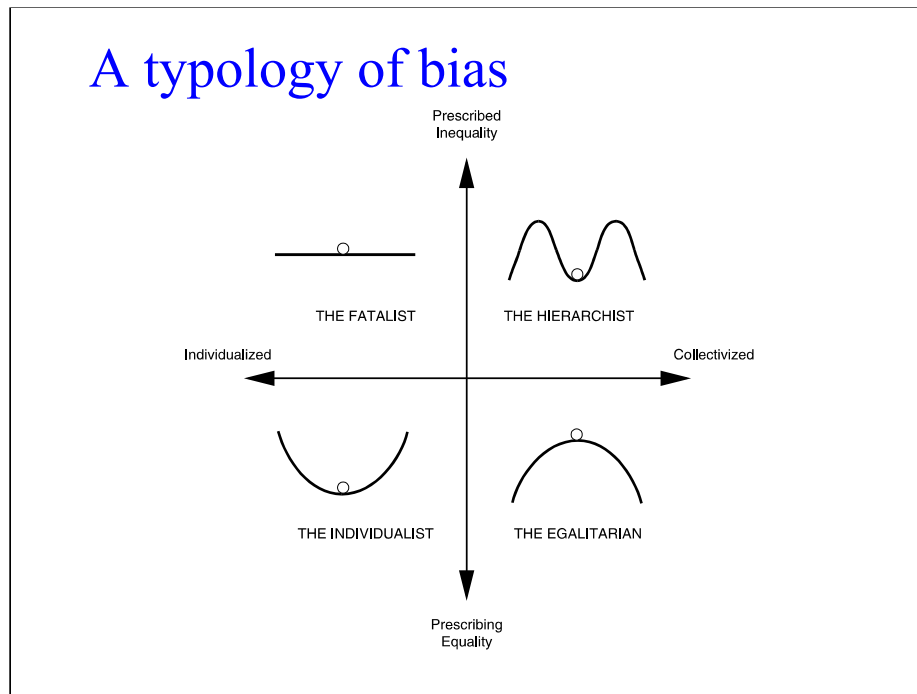
- Because time is short I will confine myself to a single example - BSE and its possible connection with vCJD.
- A scientific consensus appears to be emerging in support of the hypothesis that vCJD is caused by eating BSE infected meat.
- But this consensus received a bit of a knock last June when Stanley Prusiner gave evidence to the BSE inquiry. Prusiner, by virtue of his Nobel prize for his work on prions, arguably outranks all the other scientists in the debate.
- In his evidence he declared himself unconvinced by the evidence so far produced that a connection had been established.
- He was asked if he had changed his diet since learning of BSE. This is what he said.
- For me, that fact that he has been unable to establish a connection after 25 years looking is reason enough to put it a long way down my personal list of things to worry about. For Prusiner, the possibility seems to be reason enough not to eat lamb.
- So what do we do, what should we do, when confronted with scientific uncertainty such as this?



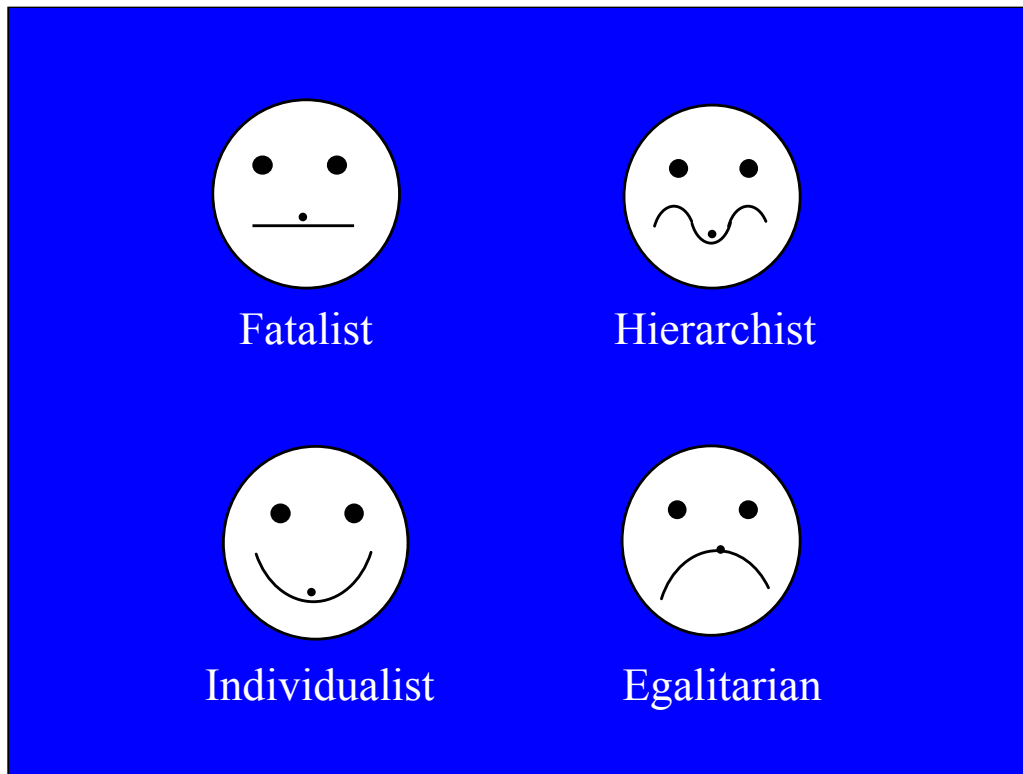


- This is a typology that I have borrowed from a friend, Michael Thompson, that I have found extremely useful in trying to make sense of debates about virtual risks.
- Time is short so I will take you through it very quickly.
- First the icons. In the lower left hand corner we have a ball in a cup. You can shake it about and the ball always comes back to rest safely in the bottom of the cup. This icon represents **the myth** of nature benign, nature stable, nature robust.
- In the lower right we have a ball balanced precariously on an overturned cup. This represents the **myth** of nature fragile and precarious.
- Top left we have nature unpredictable.
- Top right represents nature trustworthy and reliable **within limits** - but be careful not to knock the ball over the rim.
- These are referred to as four **myths** of nature - to stress the point that, in debates about virtual risks to health and the environment, we frequently cannot be sure which to believe.
- There is a **cultural typology** that Thompson showed maps on to this rather neatly. On this graph, toward the left, **cultures** become more individualistic; toward the right, more collectivist in ethos; toward the top, more governed by inherited status and prescriptive rules; and toward the bottom, more democratic.
- In the lower left we find a character known as the individualist
- In the lower right the egalitarian
- Top left the fatalist
- Top right the hierarchist

## A typology of bias



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- These are caricatures, but nevertheless recognizable types that one encounters in debates about threats to the environment. With a little imagination you can begin to see them as personalities.
- The **individualist** - optimistic, confident, pragmatic - a gambler because you are likely to win more than you lose. Not much concerned about threats to the environment
- The **egalitarian** - or environmentalist - treads lightly on the earth and invokes the precautionary principle at every turn.
- **Fatalists** - have little control over their lives - *que sera sera*
- **Hierarchist** - here we find the institutional risk managers; big business, big government, big bureaucracy. They employ all the people in white coats to work out where the critical thresholds lie, and economists to devise optimal strategies for living within them.
- The **Hierarchist** sees nature as something to be exploited for his benefit; the **Egalitarian** sees nature as something to be obeyed and respected and interfered with as little as possible; the **Hierarchist** sees nature as a management problem. And the **fatalist** ducks if he sees something about to hit him
- They are certainly recognisable in the debate about BSE. Lets look at a few examples in the form of quotations that I have abstracted from the debate.



## Egalitarian

- Feeding dead sheep to cattle, or dead cattle to sheep, is “unnatural” and “perverted”.
- “It is the full story of the beginnings of an apocalyptic phenomenon.”
- “Great epidemics are warning signs, symptoms of disease in society itself.”

- The egalitarian sees BSE as punishment for unnatural, hubristic methods of industrial agriculture.
- The last two quotations come from the foreword to Richard Lacey’s book on BSE
- The problem is embedded in an apocalyptic societal context.
- **If you cannot prove beef is safe, assume it is dangerous.**



## Individualist

- “The precautionary principle is favoured by environmental extremists and health fanatics. They feed off the lack of scientific evidence and use it to promote fear of the unknown.”
- “It is clear to all of us who believe in the invisible hand of the market place that interference by the calamity-promoting pushers of the precautionary principle is not only hurtful but unnecessary.”

- The individualist views industrial agriculture as a boon to mankind, and CJD as an extremely rare disease whose connection with BSE is unproven.
- Hostile to regulation. Publish everything you know and let the shopper decide.
- **If you cannot prove beef is dangerous, assume it is safe.**



## Hierarchist

- “We require public policy to be in the hands of elected politicians. Passing responsibility to scientists can only undermine confidence in politics and science.”
- “I have not got a scientific opinion worth listening to. My job is simply to make certain that the evidence is drawn to the attention of the public and the Government does what we are told is necessary.”

- In the case of BSE the ball has gone over the rim. The hierarchy is acutely embarrassed.
- The ball has become a hot potato, to be passed on to someone else as quickly as possible.
- The second quotation is Stephen Dorrel explaining that he was only obeying orders.



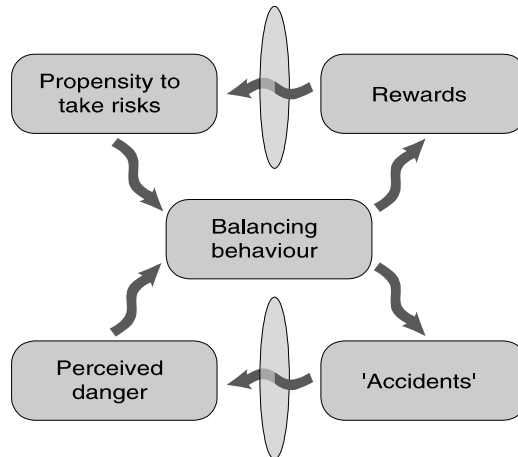
## Fatalist

“They should shoot the scientists, not cull the calves. Nobody seems to know what is going on.”

- **“Charles won’t pay for Diana’s briefs”**  
Main headline in *The Sun* on 21.3.96, the day every other newspaper in the country led with the BSE story

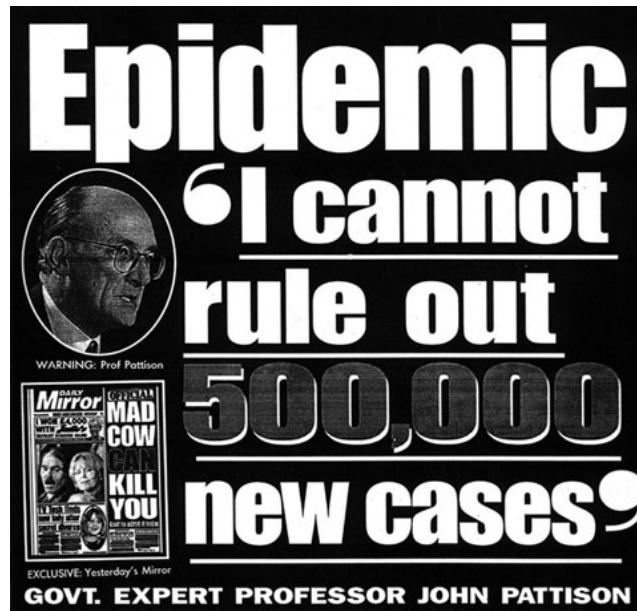
- A dairy farmer on the verge of bankruptcy.
- The Sun is **the** fatalists newspaper.

## Cultural filters

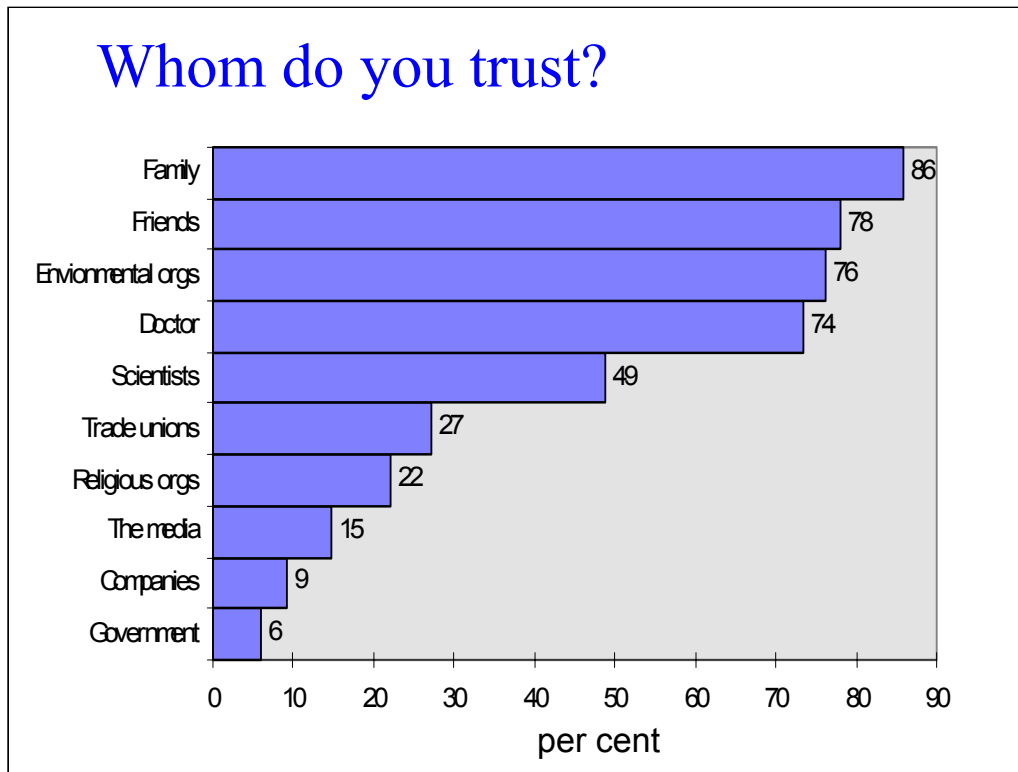


- The BSE story suggests that our risk thermostats have cultural filters.
- Very different information gets through different filters.
- Two years ago I attended a lecture by Prof. John Pattison, the head of SEAC - the Spongiform Encephalopathy Advisory Committee. He described being cornered by a journalist from the Daily Mirror who demanded to know what was the worst that could happen. At the time 14 cases of variant CJD had been identified. Prof Pattison explained that because the disease had a long incubation period - or **might** have - it was impossible to say. The journalist persisted. Prof Pattison replied that **if** BSE was proven to be the cause of the 14 known cases, the worst could range from 14 dead to 500,000. I offer no prizes for those who guess which number the Daily Mirror ran with.





- Some scientists, such as Richard Lacey, offer us very alarming hypotheses, others are much more reassuring.
- A scientist, such as Prof Pattison, saying “dunno” in the face of great uncertainty, and contending hypotheses is a bit like one of those Rorschach ink blots that psychologists used to use. Some will look at “duuno” and see a happy smiling face, and others will see one that is dire and threatening.
- Public opinion in such cases is extremely volatile. When the BSE story first broke beef sales plummeted.
- Less than two years later there was a stampede to buy the last spare rib before Jackboot Cunningham made them illegal.
- Two possible explanations occur to me, both of which may be true
  - First, the media can keep only a limited number of scares going at any one time - and the body count following the original alarm was disappointing - so they moved on.
  - Secondly, what the two public responses had in common was that people simply did not trust what the Government was telling them.

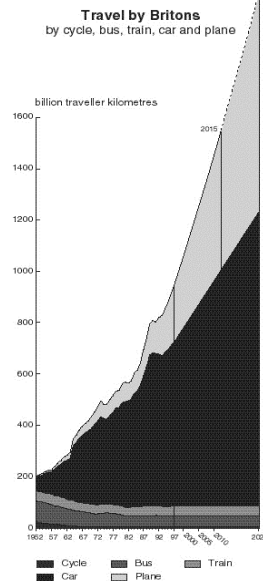


- Public opinion in the presence of virtual risk is highly malleable.
- In the face of great uncertainty we are confronted with phantoms that can be inflated or dispersed with slight puffs of wind. The meanings that we impose upon uncertainty are influenced by our cultural filters. These filters are constructed out of our previous experience. **Their most important function is to tell us who and what to trust.**
- The BSE story as it unfolds is disclosing a worrying amount of mistrust in the Government.
- This graph** presents the findings of 3 surveys carried out by Claire Marris, Ian Langford and Tim O’Riordan of UEA. They asked their samples “would you trust institution X to tell you the truth about threats to the environment”. X referred to the Government, Companies, the media etc.
- Least trusted were companies - at 9% - and the government - at 6%. These are the main producers and regulators of threats to the environment, and the people likely to have the most useful knowledge about them.
- Most trusted are friends and family at 78% and 86%. Unfortunately these are the people least likely to have useful knowledge about threats to the environment.
- **Now for the transport connection**

## Transport and risk: a connection

With increasing mobility  
the world will become

- less democratic (the majority will have less influence over, *and diminished trust in, the institutions that govern their lives.*)



I conclude with a rather gloomy speculation. In terms of the typology of bias I discussed earlier, it might be characterized as an egalitarian speculation. I think we are heading into trouble.

I suggested near the beginning of this lecture that increased mobility - hyper-mobility - is undermining our trust in the institutions that govern our lives.

It is doing this by expanding the scale of problems that must be confronted.

- Environmental problems, economic problems, political problems, military problems are all being transformed by the process known as globalization. Science and technology have produced undoubted benefits, but they are also creating risks on an unprecedented scale. If the scale of institutions does not expand in step with the scale of the problems that they are responsible for governing, these institutions will become impotent.
- But this growth of scale diminishes the significance of the individual - sociologists refer to this process of social fragmentation as individuation.



- A friend of mine will be standing in the forthcoming elections for the European Parliament. His constituency extends from Carlisle to Liverpool and contains over 4 million voters. I find it difficult to imagine that his constituents will feel their individual votes to be of great significance. As hyper-mobility increases the scale of government it diminishes the significance of the local. It diminishes the interest of the voter. It generates **apathy**, which is a close relative of fatalism.
- A few years ago I received an intriguing invitation - to speak to a conference of science fiction writers about transport planning. I asserted - to those more familiar with the literature than I, and hoping to be contradicted - I asserted that nowhere in the genre of science fiction dedicated to speculating about futures in which distance had been conquered by science and technology, could one find a plausible example of a working democracy.
- I was not contradicted. The form of government in all such futures - from Brave New World and 1984 to Star Wars and Blade Runner - is tyrannical hierarchy.



## Hyper-mobility is

- enlarging the scale of man-made virtual risks
- diminishing the trust in those institutions that will be necessary to manage these risks democratically

•So, **I conclude** that the trends toward hyper-mobility, that are being aided and abetted by governments everywhere - including Britain - are

- enlarging the scale of man-made virtual risks, and
- diminishing the trust in those institutions that will be necessary to manage these risks

•This is a rather dismal note on which to end, so I will make one final point.



I am grateful to College for allowing me to ride my risk hobby horse on the fifth of November.

A number of people have asked me if I would be proffering any advice about how to deal with the risks of this particular night.

My advice for tonight, is the same as my advice for any night - or any day. Speaking with the authority vested in me as a professor of the University of London, and a student of the University of Life, my advice is

**Be careful!**

**Or Lucky!**