MISCOMMUNICATING RISK

SOME KEY LESSONS FOR RISK MANAGEMENT

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Abstract

This PhD submission consists of twelve articles and six reviews published over the period 1999 to 2007, together with a context statement that seeks to draw out the dominant themes, methodologies and results of my research.

Essentially, I have examined the impact on the risk management of certain areas in science and security, of two significant trends that emerged and merged within contemporary society over the last 25 years.

These are; processes of '*individuation*' and of '*de-politicisation*'. Together, they have helped shape a new culture for policy-making and communication in most fields which, I suggest, has adverse consequences.

'*Individuation*' refers to the gradual breakdown of social bonds of solidarity and community which, while hardly new in capitalist society, accelerated in their reach and consequence over this period. Individuals isolated from strong social networks are ultimately weak.

'*De-politicisation*' refers to the loss of interest and participation in mainstream politics, which has also been widely noted and commented upon. This reached new heights (or lows) in the current period, and is distinct from the '*politicisation*' of both science and security.

These themes are explored further elsewhere, but it is my contention that their convergence has led to the creation of a new culture of risk management and communication which I have sought to critique.

My research, presented in the accompanying papers, has utilised a diverse set of methodological approaches, focusing primarily on the reinterpretation of existing data and analysis through a series of case-studies.

Intelligence, in both the general sense and in the world of security, consists of a combination of information and interpretation. My purpose here has been to present an alternative framework for contemporary debates.

My work has revealed the impact of these key processes and the new culture and identities – vulnerable victims and assertive advocates – that have been created by them. I have examined numerous manifestations and limitations of these.

My articles confirm the rise of a culture more worried over possibilities than probabilities. The precautionary principle in science and pre-emptive action in relation to perceived security threats are examples of this.

I conclude by noting that this has led to society being reorganised around risk. By miscommunicating risk – to connect with isolated individuals – politicians and officials will further exacerbate the trends identified above.

By implication, I point to the possibility of an alternative – a debate about risks that maintains a sense of perspective and proportion, thereby rekindling the social bonds that generate confident individuals and purposeful politics.

CHAPTER 1

Introduction

The concept of risk has risen to significant prominence in a period encompassing less than twenty years. Risk assessors, risk managers and risk communicators now play a central role at the heart of most organisations. Senior Risk Officers now sit on or advise the Boards of large corporations, as well as having significant roles in public sector institutions.

Reference to the phrase '*at risk*' in British broadsheet newspapers exploded from just over 2,000-a-year to almost 20,000-a-year over the period 1994 to 2000 alone (Furedi 2002a, p.xii). There are now numerous conferences, courses and centres devoted to exploring particular aspects of risk, from the technical to the social, as well as jobs and journals relating to these.

This expansion in profile and debate has been paralleled in other, related, areas such as the greater prominence, and contestation, surrounding as apparently straightforward a term as '*accident*' (Green 1997, Adams 2002).

These developments beg our understanding. Does society face more risks today than ever before? Is it that the risks we face are of a different type to those encountered in previous times? Or, rather than there having been a change in the quantity or quality of the risks that we face, have we somehow become more conscious of these?

If the latter is true to any extent, then an exclusive focus on the standard tools of risk management for dealing with problems – identification, assessment, management and review – is neither sufficient, nor in certain instances necessary. If we fail to be critical, of both the objective evidence for threats, as well as appreciating how they are perceived subjectively, risk management can readily add to the problems rather than being part of their solution.

In particular, risk communication designed to assuage perceived or projected public concerns may end up driving these concerns. What's more policy based on elite perceptions of public perception readily become a hall of mirrors within which original aims and purposes are lost and subsumed to the dominant presumption of the need to manage risk or reassure the public. In certain instances public perceptions can be extremely volatile – focusing unduly on one issue for a while before moving on to another – so policy made in relation to this may only serve to destabilise matters further.

The articles appended to the overarching framework presented in this context statement explore these themes in greater detail from a variety of angles. For instance, in *Poisonous Dummies: European Risk Regulation after BSE* (Durodié, 1999) I examine some of the immediate drivers of institutional nervousness, as well as their responses. *The Demoralization of Science* (Durodié, 2002a) developed some of the broader consequences of this, identifying themes

revisited in *Limitations of Public Dialogue in Science and the Rise of New 'Experts'* (Durodié, 2003b).

More detailed and specific case studies are provided in *The True Cost of Precautionary Chemicals Regulation* (Durodié, 2003a), *Facing the Possibility of Bio-Terrorism* (Durodié, 2004b) and *Risk and the Social Construction of 'Gulf War Syndrome'* (Durodié, 2006a), with the latter highlighting some of the new identities created when risk becomes fetishised.

I have sought to explain some of the wider social aspects in *The Concept of Risk* (Durodié, 2005a), a paper commissioned by the Nuffield Trust. Inevitably, there is some repetition, particularly in my key writings on security; *Cultural Precursors and Psychological Consequences of Contemporary Western Responses to Acts of Terror* (Durodié, 2005d), *What can the Science and Technology Community Contribute?* (Durodié, 2006b) and *Home-Grown Nihilism: The Clash within Civilisations* (Durodié, 2007a).

This last paper has since been expanded upon and published as *Fear and Terror in a Post-Political Age* (Durodié, 2007b) in the journal Government and Opposition, although this is not included in the present collection.

A number of significant, though shorter, reviews are interspersed between these key articles. Together these form a persuasive literature pointing to some

important lessons for the management of risk. Above-all, my intention is to encourage those involved to stop miscommunicating risk and focus rather more on the need to develop greater clarity of purpose in dealing with the problems of society.

This PhD submission aims to get to the heart of a concept that impacts on the understanding and actions of countless politicians, officials, regulators, entrepreneurs and activists. It touches on the full range of human endeavour, from science and technology, through social policy and human relations to security and defence. Above all it examines the fine balance between exaggerating threats and dealing with real risks, as well as the role of robust and effective communication in both of these.

This is not to critique attempts at communication per se, but rather to identify that exercises such as '*GM Nation?*' (whereby the government, in June 2003, appeared to seek views from the '*public*' as to the deployment of genetically modified crops into the UK), as well as, for instance the establishment in the same year of the Committee on Radioactive Waste Management (CoRWM) (again ostensibly a listening exercise between appointed '*experts*' and the supposed '*public*'), smack more of image management and the need '*to be seen*' to be communicating and listening than really purposeful dialogue.

As I identify elsewhere, real dialogue means having the courage to offend people and present them with a view they had not thought of. Much risk communication today serves rather more as a blame deflection mechanism for institutions lacking the confidence to promote a clear agenda – or worse – lacking any agenda at all.

CHAPTER 2

Theoretical Framework

The articles appended to this context statement are neither contributions to science nor to security studies. Rather, they serve to examine, and seek to confirm, certain cultural trends that, while gradual in their genesis, have come to the fore of decision-making in these areas only over the last twenty years. This is, of necessity, an interdisciplinary study using a range of methodologies – primarily re-evaluating existing evidence through an alternative framework of analysis that draws, for its main intellectual and theoretical insights, from the field of sociology, and in particular political sociology.

Political sociology is where political science and sociology intersect. The field looks at how major social trends, outside of the formal institutions of political power, can affect the political process, as well as exploring how various social forces work together to shape policy (Orum 2000). Social norms and expectations, as well as cultural values and beliefs, inevitably form a broader context that orient and mediate policy-making in all areas of human endeavour and which, while not solely determining the outlook and actions of officials and experts, can still play a considerable role in supporting or supplanting these.

Accordingly, my work also makes use of, but serves to critique, the limited social construction theory of Berger and Luckmann (1966), suggesting that their conceptualisation of the social was too narrow. Primarily, they understood this to derive from the cumulative effect of numerous individual interactions, and their

work has thus tended to lead others into an examination of the various motives – primarily seen as economic or psychological – that such individuals might hold.

But it should be noted that, as early as 1895, in his classic work *The Rules of Sociological Method*, Emile Durkheim, the founder of modern sociology, indicated that; '*society is not the mere sum of individuals, but the system formed by their association represents a specific reality which has its own characteristics*' (p.129, 1992 edition). He went on to suggest that; '*every time a social phenomenon is directly explained by a psychological phenomenon, we may rest assured that the explanation is false*'.

The same might be said about explaining social phenomena in terms of narrow economic motivations – such as profit or greed. For Durkheim, this error was akin to using physics or chemistry in order to understand biology. It is not merely a question of picking the wrong tool of analysis, or of misunderstanding the scale of the system involved, but rather of failing to appreciate the fundamental qualitative '*break in continuity*' between such disciplines.

Social Construction

It is ironic, in an age when, for instance, the social construction of science has become an established idea – drawing in large part on Thomas Kuhn's analysis in his work *The Structure of Scientific Revolutions* (1962) – that so few seem to

inquire as to the social, cultural and political trends that shape the sociology of science – as opposed to science – today. There are numerous tracts exposing some of the influences impacting upon scientists – such as the pursuit of profit or prestige – but few, if any, seek to examine the forces that draw policy-makers and sociologists into problematising science at this moment in history.

My answer, is that the sociology of science – and likewise new theories of security that seek to emphasise a supposed human dimension, as typified by the so-called Copenhagen School in International Relations of Ole Wæver and Barry Buzan (1991) – are themselves social constructs, shaped by the social, cultural and political circumstances within which they have emerged. In other words, we need to understand the wider social construction of social construction theories. My writings seek to go to the heart of this problem.

Models of science, security, or anything else, do not simply emerge from society. They reflect its dominant modes and preoccupations. It is not possible, for example, to simply explain science or international relations, purely in their own terms. Frameworks of explanation rely, in large part, upon existing social structures as linguistic and conceptual metaphors (Appleton 2007) – although in science at least, their ultimate validity and use are then dependent upon rigorous testing against reality.

Hence Newton's Laws served to reassure – at a time when the existence of God was being opened to question – that there still were invariable laws that have to be observed, as well as reflecting the simple mechanistic laws of cause and effect familiar to the period of early manufacturing. Faraday's idea of an electric field drew its conceptual strength from a period when the notion of lines of force operating throughout space reflected the military and commercial reality of his world. In a similar vein, Darwin's theory of evolution relied for its descriptive power upon the wider language of competition in advanced capitalist societies that could make certain bodies obsolete.

Drivers

What then, are the dominant social, cultural and political drivers today, that act as the prism through which science and science policy, as well as security and security policy, are now viewed and re-conceptualised? These have their own laws and patterns of evolution that are quite distinct from the subject matter of science or security themselves. To work towards addressing these is the core purpose of this work. Economic forces and a desire for personal acclaim are not new. If, as I contend, there has been a sea-change in our understanding of science and security, as well as how society has sought to shape and regulate these over the recent period, then there must be some contemporary forces that we ought to be able to identify and examine in order to understand what it is that has changed in society to make this so.

My work draws on two core trends, identified by others, that have emerged and merged within society over the recent period. Together, they have helped to shape the new culture within which policy-making occurs. Indeed, the rise of risk management and risk communication – the ostensible subjects of this PhD submission – as new frameworks of analysis with which to regulate most forms of human activity are themselves an outcome of these processes. These are the emerging impact of '*individuation*' and of '*de-politicisation*' in the world today.

1. Individuation

'*Individuation*', as the term is used by the sociologist Frank Furedi (1997) is effectively a combination of isolation and alienation. It derives from the gradual breakdown of social bonds of solidarity, or community cohesion which, while hardly new, have accelerated quite dramatically in their reach and consequence over the recent period. Notably, Furedi distinguishes this from '*individualism*', which he sees in more positive terms noting that; '*The process of individuation has not produced a culture of confident individualism*' (p.147, 2006a edition).

For Furedi then, despite the talk by many of a rise in '*selfish individualism*' over recent years – as exemplified through supposed excesses, hubris and greed – individuals isolated from strong social networks are ultimately weak. This point is further emphasised by Heartfield (2002), who states that; '*To individuals who are*

isolated, society ceases to be an extension of themselves, and becomes instead a vast impersonal force'. He continues; '*By contrast, confident and gregarious individuals will tend to sense the possibilities of social action*' (p.56).

Furedi goes on to identify '*the diminished importance attached to subjectivity*' as '*one of the defining features of contemporary social and political life*' (p.149). By this he means that our conceptualisation and understanding of the individual, as a freely willing, independent agent who is the subject of human history has, through a growing discourse of failure and limits over the course of the twentieth century, become attenuated. His work explores the processes through which this state of affairs has come about, as well as some of its consequences (Furedi 2001, 2004, 2006b).

More ominously, Heartfield notes that; '*In certain historical circumstances the possibilities of the free individual come into being. By implication, these circumstances can be expected to pass into the historical past*' (p.24), although he concludes more optimistically that '*human subjectivity persists in denial of its own existence*' (p.239). In effect, individuals today are not so much the active subjects of history as perceiving themselves as having become the passive objects of it, and then increasingly acting and organising accordingly.

The diminution in our view of the impact and importance of human agency is not just of linguistic interest. It reflects and reinforces key aspects of the societies we

live in and shape. We see ourselves as being '*at risk*' from forces that are '*either entirely external to us, or so innately internal that there is little we can do about them*' (Durodié, 2005, p.4). Leading sociologist Anthony Giddens has also noted '*a pronounced tendency to naturalise social problems*' (Giddens, 1994, p.220).

A heightened sensitivity towards risk has led policy-makers to focus unduly on perception and emotion. This explains the tendency among many writers today to explain varying attitudes towards risk through psychological rather than sociological terms. The confusion is compounded by the fact that many of these individuals describe themselves as sociologists. Even when, as we shall see, a model known as '*Cultural Theory*' is deployed (Douglas and Wildavsky, 1983), this revolves largely around categorising the behaviour of people into different groups, rather than seeing the consequences of the shifts in any broader social forces that might affect all.

2. De-politicisation

'*De-politicisation*' refers to the widely recognised trend across most advanced capitalist economies towards a loss of interest and participation in mainstream politics, particularly over the last couple of decades (POWER Inquiry 2006). Exceptions, such as the recent Presidential elections in France, serve to confirm the rule, as well as being dependent upon an outdated polarisation between, and emotional attachment to, supposedly Left- and Right-wing parties.

In fact, few today are active, or even passive, members of political parties or trade unions as their forebears were, and there is little evident desire, in many quarters, to engage in, or raise the standard of, debate. When people do vote, it is often out of a sense of duty, or on a negative basis – against a candidate, rather than for the alternative (Rosenthal 1997). This effect is most striking among younger age groups.

This means that there is little loyalty, and accordingly predictability in the outcome of many contemporary elections. Marginal events, largely disconnected from the actual process – such as a terrorist attack, environmental incident, or claims as to the personal character traits of particular contestants – can have a disproportionate impact. As the turnout is split between several main parties, the mandate of those put into office can be very low.

For the political elite, this disengagement of the masses from the electoral process is highly problematic. It exacerbates their own sense of isolation and insecurity, as their political legitimacy become questionable. This has been made worse by the loss of any clear vision and direction (Saatchi 2006), which became particularly pronounced through the gradual demise of the political divide between Left and Right (Giddens 1994). Today, these categories have been expunged of their traditional associations and meanings (Furedi 2006). Voters are often unable to distinguish between the pronouncements of the various major parties.

'*De-politicisation*' must be distinguished from the apparent '*politicisation*' of debates relating to both science and security. Political interference in these disciplines is quite different from engaging society in democratic debate. Indeed, what is portrayed as '*politicisation*' is often, in fact, a narrow form of '*managerialism*' or professional intervention by supposed '*experts*', that has replaced the pursuit of social goals through political principle with more technically-oriented operational targets.

'*De-politicisation*' demands new ways for politicians to re-connect with and manage their electorates. Accordingly, new regulations have been sought to protect people, increasingly through so-called '*public dialogue*' (Durodié 2003b). But this dialogue is an instrumental goal which, apart from not always being appropriate, serves more to create the semblance of engagement and cover for an absence of principled debate over purposes and goals.

Consequences

These two trends – '*individuation*' and '*de-politicisation*' – emerged quite gradually over the course of the twentieth century, being kept largely in check through the exigencies of the Cold War, which presented the Left as a threat to the state both externally and internally. As relations became resolved over the course of the 1980s however, rather than opening society up to a new realm of possibilities, so these twin processes have encouraged an almost catastrophic

crisis of confidence among the elites, encouraging them to repackage themselves in a more populist guise (Walden 2002).

After a brief period of triumph spanning the years between the publication of Francis Fukuyama's *End of History* essay in the National Register in 1989 and his expansion on the theme into a book in 1992, only now did academics such as Robert Putnam at Harvard begin to survey more rigorously the process of individuation. His exposition of the erosion of informal social bonds; *Bowling Alone: America's Declining Social Capital* appeared as an essay in 1995, and was similarly expanded upon and published as a book in 2000.

At the same time, other writers were beginning to explore the consequences of a world from which traditional political associations and meanings had been expunged (Laïdi, 1994). And, as we shall see in the next section, these conceptual changes were replicated almost precisely by the trends that occurred in the risk management literature over the same period, thereby confirming their existence as more widespread social shifts.

These developments have profoundly altered the cultural context within which debate now occurs – a culture more worried about possibilities than probabilities and which, increasingly has led society to reorganise itself around the concept of risk. The precautionary principle in science and its corollary, pre-emptive action in relation to perceived security threats, are examples of this that I examine in my

work. But by enforcing these politicians and officials have often exacerbated the trends identified above.

Above all, these processes have given rise to two of the more striking manifestations of the '*risk perception society*' – the creation of an identity for people as '*vulnerable victims*' to make effective claims within the new political domain, and the demand for intervention by '*professional experts*' promoted by an elite desperate to re-connect and discover a new purpose for themselves. It is these aspects that form a unique contribution to the literature by my work.

CHAPTER 3

Literature Review

This review focuses primarily on the risk management literature, as other, more conceptual literature informing my articles and context statement have been covered in the theoretical framework section.

The Rise of Risk Management and Communication

The evolution in our understanding of risk – as well as how this embodies changes in society and leads to particular forms of risk management and communication – is probably best captured in the publication of two reports by the Royal Society, almost a decade apart (Royal Society 1983 and 1992). Both study groups were chaired by the eminent chemical engineer Sir Frederick Warner. But, reflecting a change in emphasis over this period, the second of these had many more panellists from social science related disciplines who drafted specific chapters on these aspects.

Confirming my theoretical framework that such shifts represent broader social trends and are not just the preoccupations of particular individuals, an almost identical sequence of events occurred in the US, over a largely similar period, across two publications on risk produced by the National Research Council, the latter edited by Paul Stern and Harvey Fineberg (NRC 1983 and 1996).

The first report, from 1983 in both cases, in keeping with the origins of the concept of risk – which primarily emerged from the development of the insurance industry (Bernstein 1996), as well as having considerable use in engineering – put forward what some may consider to be an overly objectivist account. This largely takes the form of a mathematical equation proposing that *risk* can be measured and quantified as the product of *likelihood* and *impact*. Depending on the literature, other factors may be taken into account, such as threat and vulnerability, but these are harder to quantify.

While serving as a useful heuristic, the limitations of this formulation are well documented. Primarily these consist of difficulties in obtaining repeatable and commensurable data in order to derive probabilities, as well as problems in quantifying impacts, which can be highly subjective in character. Rather than dealing with risk management, where data is required to appreciate likelihood, many cases are actually dealing with uncertainty, the term used when such figures are unavailable.

Regardless of these inherent limitations, the dominant paradigm for risk management, as exercised by many organisations in both the public and private sectors today, can be characterised by attempts to quantify likelihoods and impacts, with a view to developing a hierarchy of risks necessitating attention. These are then situated in the kind of matrix shown below;

CUMULATIVE RISK MATRIX

LIKELIHOOD	IMPACT
A RARE	1 INSIGNIFICANT
B UNLIKELY	2 MINOR
C POSSIBLE	3 MODERATE
D LIKELY	4 MAJOR
E CERTAIN	5 CATASTROPHIC

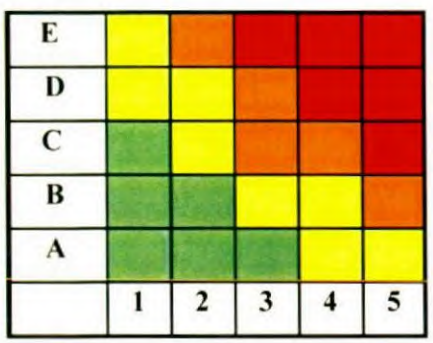

Figure 1 – typical 5 x 5 cumulative risk matrix mapping onto 'traffic light' diagram

Management is then charged with dealing with the various risks placed into such a grid according to their relative importance as highlighted by the traffic light colour scheme. The possible actions are described as; *treat*, *transfer* or *tolerate*, with treatment consisting of either *reducing* the likelihood or *mitigating* the impact of the risk under consideration. Transfer consists either of insurance or passing responsibility to another entity, although the latter can appear as an abdication of responsibility. There is a vast literature replicating such schemas for all-manner of organisations.

The other standard tool in the objectivist risk manager's repertoire is described as the '*risk management cycle*'. This usually consists of a four-part process of (1) identifying risks – a qualitative assessment leading to the creation of a '*risk register*', (2) assessing risks – a quantitative task yielding a sense of priorities, (3) managing risks – an active task requiring political judgement, and finally (4)

reviewing what has been achieved with a view to starting the whole process all-over again, as shown on the diagram below;

RISK MANAGEMENT CYCLE

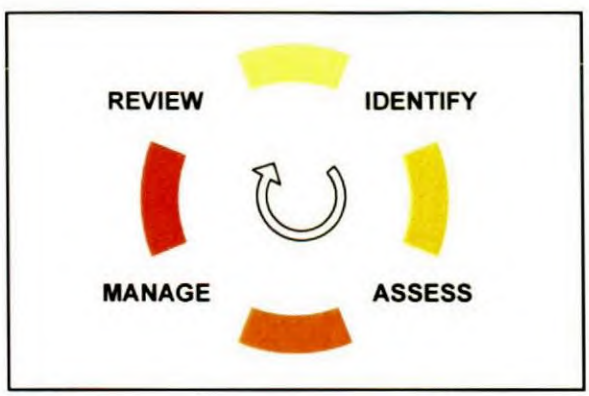

Figure 2 – typical schematic of risk management cycle

Typically, technical experts undertake risk assessments, whilst bodies broadly accountable to elected representatives are charged with risk management or making the final decision, based upon the advice or assessments they receive. These elements are usually separated from one another due to widespread concern as to the dangers of conflicting interests and values should one body control both aspects.

Risk assessment is assumed to be the *objective* or *evidence-based* part of the process, whilst risk management is considered to include a more *subjective* element. Risk management decisions may, or may not, reflect the advice provided in risk assessments. This is because ultimately, the degree of risk

people are prepared to accept is *culturally determined* and it is assumed that this is best reflected by the views of their elected representatives rather than appointed experts.

Such a distinction however, is not quite accurate (Stern and Fineberg 1996). After all, even if the *process* of risk assessment were to be broadly objective – itself a possibility disputed by some – the *decision* to perform a risk assessment in the first place may be driven by social and cultural concerns.

Cultural, Psychological and Sociological Considerations

Although risk management has never pretended to be a value-free or purely technical process it was not until the 1980s that a growing number of critiques, emanating from various directions, started to demand that such values be made more explicit.

The German academic, Ortwin Renn and others have examined the limitations of what they describe as '*the rational actor paradigm*' (Renn, Jaeger and Webler 2005), as well as mapping the contours of alternative risk theories and models. Foremost amongst these are cultural, psychological and sociological influences.

As others have reviewed the strengths and limitations of these, it is not my intention to do so here again, other than in a perfunctory way. Needless to say, it

is largely from the latter school, as represented primarily by the likes of John Adams (1995), as well as Frank Furedi (1997), that my analysis draws upon.

Cultural theory ensued largely from the work of the British social anthropologist Mary Douglas (Douglas and Wildavsky 1980), and has further been developed by her former research student Steve Rayner (1992), and others. As Renn notes, while this approach – based on a typology of social groups according to particular roles and outlooks – yielded some interesting insights, it is not obvious how to apply this in a predictive manner.

Psychological models of risk have been far more influential and are currently extremely fashionable (Hilson and Murray-Webster 2005). These derive mainly from the work of the American, Paul Slovic who, over a period encompassing five decades, has conducted countless experiments into risk appetite and behaviour according to various psychological and fixed social indices, including sex, race and socio-economic grouping (Slovic 2000).

In essence, Slovic identified a number of factors that affect people's attitudes towards, and propensity to take, risks. Foremost amongst these are; control, dread and equitability. So, for instance, people prefer to take charge of a situation, even when this presents greater risks, than be at the behest of others, as evidenced by the inordinate response witnessed subsequent to rail accidents, whereby people immediately take to the roads.

Similarly, cancer, terrorism or some other such '*high salience*' issue produces responses disproportionate to the actuality of the dangers involved. Likewise, a risk that targets a particular social group, such as children or people with a particular gene, is also usually dealt with differently to situations where, even though the risk may be absolutely larger, it is perceived to be fairer in its targeting or distribution.

While there is nothing inherently wrong with these conclusions, they have, over recent years, come to form an unquestioned mantra seeking to explain all variation in risk-taking attitude in society. But in fact, while these may have some explicatory powers as to variation between individuals, they do not begin to address the huge rise in risk awareness and risk management across society identified earlier, which emerged in less than a generation.

For this, we need to use sociological insights to clarify how people themselves have changed. These show how social institutions, and accordingly identities, mores, values and expectations, were transformed in the period leading up to and subsequent to the end of the Cold War in 1989.

In fact, as I identify in one of my papers, the rise of psychological explanations and models in the contemporary period is entirely predictable and explicable. I suggest that; '*there is now very little awareness of the extent to which many phenomena are shaped and determined by social forces. Instead, there has*

emerged a growing emphasis on nature and individuals as the presumed root of most issues' (Durodié 2005a, p.4).

This, I go on to propose, further diminishes our view of ourselves and our willingness to act with a view to transforming the world as; '*such an outlook presents our world and our responses to it as being increasingly determined by impulses either entirely external to us, or so innately internal that there is little we can do about them*' (ibid). I continue with an exploration of how these forces came to shape contemporary attitudes towards science.

It is our reduced sense of agency which in turn leads to the elevation by some of supposedly '*natural*' processes and products over the '*man-made*'. This also explains the recent focus in risk management on hazard – the potential effect of a situation – as well as uncertainty, over risk and knowledge. Essentially, the former downplay our understanding, competence and will, and ignore the fact that we can only ever move towards an appreciation of what we do not know by actively starting from what we do know.

It would be remiss of me to conclude this section without some mention of the work of the German environmental sociologist, Ulrich Beck, who has been hugely influential in the development of this field, if not always in a positive way. Beck largely rose to prominence subsequent to the translation of his book '*Risk Society*' into English in 1992. This coincided with a greater questioning of the

received paradigm of risk and so fed into countless debates at the time and since.

There are numerous critiques of Beck's outlook and work (Mythen 2004), but I shall restrict myself to simply making one point. That is, that through his fatalistic celebration of nature, as well as chaos and ambiguity, Beck effectively feeds into a growing anti-human discourse that became dominant in the closing years of the twentieth century. This *fin-de-siecle* pessimism, as identified above, merely reflects social reality today. But rather than offering any way through this, Beck prefers to laugh at our '*optimistic futility*' (2006).

On occasion his analysis appears unbelievably simplistic, as for instance, when he suggests a simple probabilistic duality whereby terrorists either acquire weapons of mass destruction, or they do not (ibid, p.335). At other times, his loose writing style allows some important insight into the modern world to slip out, whether he means this to or not. So, when he suggests that; '*In risk society relations of definition are to be conceived analogous to Marx's relations of production*', he points to a need for identity and meaning, which takes the form of attempts to construct a '*new narrative*' by others (Omand 2006).

Ultimately, as his work can be read through the prism of whatever priority a particular researcher wishes to apply, and indeed as he himself seems to oscillate playfully between the various polarities he identifies or imagines, his

work cannot be considered as a constructive framework upon which to base research.

In closing, what should have emerged from the last two sections is a sense that risk is not simply something that can be quantified and dealt with, but that its very expression today is socially contested. Inevitably, as society changes so too does its attitude towards risk, reflecting an assessment, conscious or otherwise, as to our role in shaping the future. Unfortunately, this reflexivity of risk, has allowed certain presumptions to prevail in the contemporary period, the consequences of which may serve to further erode our optimism towards the future and hence serve to encourage a negative attitude towards risk.

Politicisation and Professionalisation

Management suggests the need to come to terms with problems, rather than to resolve them. As a discipline it has come of age in proportion to the decline of the old political frameworks, both reflecting the loss of a broader, strategic vision for society and further reinforcing this.

In my papers I suggest that; '*The management of risk fulfils the need for a new organising principle. Politicians, concerned as to their legitimacy have then sought to repackage themselves as societal risk managers*' (Durodié 2005d). In

other words risk management provides contemporary politicians with political capital through a new, if somewhat fragile, form of moral purpose.

The need to be *seen* to be doing something – anything – in relation to perceived contemporary problems, is paramount today, leading, as noted earlier, to a constant churning of policy in the absence of firm principles. Of course, whether any of the measures implemented are truly effective, in an age when image would seem to matter somewhat more than insight, remains to be determined.

Risk management has also become big business, with considerable profits to be realised. This combination of both political and economic value has important consequences for risk communication. As shall be discussed, there is a fine line to tread between assuaging concerns and driving them by highlighting problems in order to promote purported solutions.

At a meeting I attended at the Royal United Services Institute in 2002, I was informed by a representative of a security company that; '*the supply side of respirators*' (that is gas-masks to ordinary people), was '*all ready and waiting*'. All that was '*needed*' now was '*for the demand to be stimulated*'.

This unguarded comment reveals the tension and confusion between private profit, or political gain, with what is in the public interest, that lies at the heart of many of the examples explored through my case studies. Others have noted the

proliferation of '*snake-oil merchants*' or '*junk science*' that now exists in such debates.

It is not my intention here to deconstruct these labels, but rather to note that the reason these may abound is due in no small part, as identified in the papers that ensue, to the growing confusion and conflation of risk assessment with risk management, the dangers of which were noted earlier.

This elision of technical goals with political purpose, driven primarily by the absence of the latter, is what has allowed the politicisation of both science and security, as examined through my work. No doubt, market forces have facilitated this process, but it is primarily driven by political forces – or to be precise, the absence of these.

Politics, in the sense that I use it here and throughout my work, is taken to be the process of mobilising majorities, usually through a battle of ideas, in order to effect change. Sadly, as identified by much of the literature I use as the theoretical underpinnings of my work, the popular perception of the term today is rather different. In the absence of ideas, or any ambition for change, it has come to represent petty and often personality-oriented squabbles.

Burgess talks of this in his work as '*symbolic politics*' (2004), in other words an attempt to appeal to the mass of ordinary people by identifying with their

apparent concerns, rather than seeking to convince them otherwise. In my own work I have talked of the increasing use of '*totemic gestures*' (Durodié 2005d), used *to be seen* to be placating people's assumed concerns. Both of these serve to conceal the real absence of principle at the heart of such debates.

Much of my work also explores how marginal concerns or, as shall be identified, rare and extreme events, have become the driving force for policy change. This results from a combination of not having any other policy, due to an absence of vision, and the fact that such events or minor preoccupations, often promoted by unrepresentative lobby groups, fit a pre-determined outlook. This latter aspect is explored in the next section.

Failing to lead and to win over the majority to a particular point of view, only further promotes the drive towards shallow technical, regulatory or legislative solutions. An example of this, explored in my work, has been the case of animal testing, whereby dissent, rather than being debated, is simply countered through increasingly draconian measures.

As I suggest; '*Without forcing a broader public debate on the matter and engaging wider support, the authorities will continue to lack real resilience in the face of a handful of activists and cave in too easily*' (Durodié 2004d). More recently, in a different field of activity, the writer John Gillott (2007) has identified

the need for scientists to engage in a robust debate about their work if they are to be able to pursue it.

Another conclusion of my work is that when communication with the public is not bypassed, or reduced to a simplistic formulation in order to be *accessible* and *inclusive*, then it reveals an incoherence of aims that reflects both the absence of direction from the top and the conflation of different aims and modes of communication targeted at different audiences.

Precaution

In a recent contribution Sir Lawrence Freedman, Professor of War Studies at King's College London, has noted that; '*advocates of particular strategic choices develop theories of vulnerability to rationalise their preferences and then seek intelligence estimates which add weight to their theories*' (2004). This approach, identified as '*advocacy research*', is confirmed in a number of my papers. It is, in effect, a conclusion in search of data.

It is a basic error in both science and the social sciences and yet, in many of the cases I have examined, it had remained unidentified, no doubt because the dominant assumptions appeared so persuasive. Accordingly, '*hypothesis confirmation*' as opposed to hypothesis testing, exerts inordinate sway in the world of security, as well as in scientific policy-making.

But not questioning the framing of basic assumptions can serve to harden existing prejudices and, at the same time, fail to challenge the core of an argument. I have shown in one paper the manner in which, even the scientists of the Royal Society have been misled and, in turn, further entrenched popular fears, by just such a fallacious approach (Durodié 2006b).

False framing has been the root to numerous failures, both in the worlds of science and security (O'Brien 2000). In both these arenas, intelligence is best understood as a product of both information and the interpretation of that information. In many instances it is not the former that is lacking, but the latter that is fundamentally flawed. Accordingly, problems are increasingly confronted at face-value, rather than rigorously interrogated with a view to understanding, analysing and eventually treating their real cause, or meaning.

At the same time, the '*act now, find the evidence later*' imperative of the precautionary principle has further clouded matters. In many policy areas this has now become the guiding framework of our times. As noted in my work, this approach migrated from the realms of environmentalism, where it was first formulated in the 1970s (Lofstedt 2002), towards increasingly encroaching into every other field of human endeavour.

The precautionary principle captures perfectly the convergence of the old political left and the old political right in the new, post-Cold War, world order. The logic

and language used by those who talk of the need for pre-emption being identical to that of precaution.

As I have noted elsewhere (Durodié 2004e), at the heart of the precautionary approach lies the uninterrogated assumption that invariably prevention is better than cure. But preventative measures are, of necessity general and long-lasting, whereas cures tend to be targeted and discrete. In addition, prevention is only better than cure when the probability of what you are seeking to prevent is high and the proposed preventative measures are effective.

In most of the risk debates in this collection neither of these last two requirements is met, nor are they more generally. My work has coincided with a time frame whereby a growing number of critiques of the precautionary principle have emerged (Marchant and Mossman 2005, Sandin et al. 2002), and defensive ripostes have emerged accordingly, although it is worth noting that at the beginning of this period this was not at all so.

A less remarked upon aspect of this phenomenon which I examine in my work has been the growing use of self-regulation over government controls. This reflects the widespread climate of anxiety that encompasses everyone in society, not just the authorities wishing to impose diktats from above. Apart from impacting adversely on science policy-making this is also likely to have very

serious consequences for freedom of expression, which it is my hope to go on to explore aspects of in the future.

Trust and Resilience

I have explored the issue of trust in a number of my contributions (Durodié 2003d). The essential point to be made here is that genuine trust requires the suspension of reciprocal calculation between parties. Acting in codified or predefined ways does not allow for the granting of trust. Rather, real trust requires recognition of the freedom of others to act as they wish. In short, as I suggest; '*trust is a fundamental part of risk-taking*', and accordingly it is unsurprising that a society that has become obsessed with regulating risks is unable to grant or to restore relations of trust.

Unable or unwilling to trust the public, or even its own experts, society increasingly reorganises around its presumptions as to how people are likely to behave in particular situations (Poortinga and Pidgeon 2003). Invariably, this is viewed in negative terms. Yet, as identified in a contribution not contained here, Simon Wessely and I have explored how assumptions about, for instance, panic in adversity, are simply not borne out by the actual evidence (Durodié and Wessely 2002).

What is far more corrosive however, is the gradual heightening of levels of anxiety that poorly managed risk communication can engender. Belief systems have a profound impact upon, not only how people view and understand the world, but also their level of well-being within it. I have shown how, for instance, cases of '*Gulf War Syndrome*' were effectively socially constructed through a process of presumed vulnerability, amplified by elite confirmation by both the legal and medical professions (Durodié 2006a).

Such '*free-floating*' anxieties can, at the margins, make people truly ill and at that stage all attempts to provide reassurance are likely to prove to be counter-productive. Returning to the previous section, it is the overall framing of the problem that needs to be challenged if people are to develop a more proportionate appreciation of the risks they face.

In other words, effective communication should encompass both, the objective evidence as it is best understood, and an explanation as to why our subjective appreciation of this may be heightened through the process of social fragmentation I have described. But in an age when challenging people's perceptions and beliefs is held to be unnecessary if not offensive, this is unlikely to occur in many instances.

Real resilience, as described in my work (Durodié 2005b), is the ability of an individual, institution, system or society to recover from, and develop subsequent

to, some kind of shock, in order to continue or expand upon their intended trajectory. This encapsulates more than the processes of preparing for, responding to and recovering from adversity as it is commonly understood by others. Resilience also requires the need to identify and shape a course well before any difficulty arises.

It is this latter, conscious element that is missing from engineering and environmental definitions of resilience (Holling 1973). But it is these formulations that have migrated into contemporary use subsequent to the terrorist attacks in America of 11 September 2001. The preparedness element has largely been shaped through the prism of risk management, but is almost entirely technical in its content.

But the will to recover from a shock and continue is necessarily dependent upon cultural attitudes. Clarity of aims and purposes are just as important to ensuring societal resilience as are degrees of preparedness and competencies in an emergency. It is this clarity that is most lacking in many debates about risk management today. Unfortunately, by acting to tackle what appears to be the immediate problem at hand, much risk management and its associated processes of communication fails to address the real issues at hand.

It is worth reflecting upon how the world came to be as it is today without an army of risk managers and communicators advising us on how to do everything. Aside

from the greater tolerance towards adversity, which undoubtedly was forced upon people in the past, I suspect the key transformation has been in terms of our orientation to the future based upon how we view humanity.

In the past, the ability to deal with risks emerged as a by-product of a desire to expand our horizons and enhance our abilities. By facing forwards towards an unknown future we uncovered many problems, but also acquired new tools for dealing with these.

Today, we seem to be facing history backwards, fixated upon the risks that we have uncovered and concomitantly unable to move forwards, thereby developing new methods for handling risks, we seem paralysed by our fears and accordingly our already low view of the human project is further reinforced through our inability to shape change.

CHAPTER 4

Contribution to Knowledge

My primary contribution to knowledge emerges from the articles appended to this context statement as part of my overall contribution. This largely consists of a critique of risk management and communication as it currently exists. By examining existing debates within the fields of science and security through an alternative analytical framework, I have demonstrated that much of what is discussed as a '*risk*' issue is largely a '*risk perception*' issue framed by a crisis of confidence affecting particular sectors of society.

Rather than repeating the specific elements of my literature here, I have chosen to examine how the problem is understood in one of the more recent government related publications on the matter. This helps me to draw out the key findings and contributions of my work – that are similarly identifiable in the appended articles – in a more practical and policy-oriented manner.

Preamble

In October 2006, the Better Regulation Commission – an independent advisory body to the UK Government – issued a document entitled; *Risk, Responsibility and Regulation – Whose risk is it anyway?* (BRC 2006). This examined the increasing pressures put upon government to regulate risks, and pointed to problems and purported solutions to alleviate these.

It followed soon after the widely reported and somewhat exasperated sounding comment urging people to '*get a life*' made by Bill Callaghan, Chair of the Health and Safety Commission, at the launch of his Executive's publication; *Five Steps to Risk Assessment* on 22 August 2006 (HSE 2006). This argued to the effect that people should learn to take '*sensible*' risks.

On one reading then, it would seem that a number of significant institutional players in the risk management process, including the Prime Minister (Blair 2005), have, over the recent period at least, woken up to the possibility that an exaggerated perception of risk has emerged within society, leading to excessive expectations and regulation that are counterproductive for people and government alike.

At the same time however, one could point to a wealth of examples pushing in the opposite direction. Just one that emerged over this period was the request by Bristol City Council sent in a letter entitled '*Health and Safety Issues – Hazardous Mats*' to all of its many thousand properties, that tenants remove such items – held to have caused numerous tripping and slipping injuries – from doorways by 18 September 2006 (Butt 2006).

So just because the Better Regulation Commission, Health and Safety Executive and others have identified a problem, does not mean that they are necessarily in

a position to rectify it, especially if, as I shall suggest, their analysis as to the causes of the problem are deeply flawed in the first place.

Rather than viewing debates over risk management and communication as representing some fundamental tension between competing government agencies, the public and the media – a conflict represented by the '*something must be done*' brigade at one end of the spectrum, and those who oppose a '*nanny state*' at the other – the papers in this collection point to all sides reflecting similar core trends and attitudes in society.

Accordingly, this opening section will explore the limitations of the analysis put forward by the Better Regulation Commission. This will allow me to examine the theoretical underpinnings of this discourse and to then introduce the core themes identified in my own work over a seven-year period.

Risk Management – the Official View

According to Rick Haythornthwaite, the Chair of the BRC (Better Regulation Commission); '*We have all ... been complicit in a drive to purge risk from our lives and we have drifted towards a disproportionate attitude to the risks we should expect to take*' (BRC 2006, p.3).

His *Foreword* to his organisation's publication goes on to emphasise; '*the importance of resilience, self-reliance, freedom, innovation and a spirit of adventure*', as well as the need for '*separating fact from emotion*' in assessing levels of risk (ibid).

Whilst we may well agree with the sentiments expressed in these latter points, it is instructive to understand the processes and agents he holds to be responsible for the former. After all, if the analysis presented by the BRC is found wanting in its interpretation as to causal drivers, then it is most likely that its conclusions, or recommendations, will also be limited, if not downright problematic.

As in many of the instances of risk management and communication I explore elsewhere in this submission, it is the solutions proposed that often exacerbate the situation as the interpretative framework for the initial problem is weak.

Notably, the BRC '*do not seek to blame the Government for where we are today*', indicating that; '*The Government may not have led us single-handed into this situation*', and proposing that it would be for Government to '*take the first definitive steps to lead us out*' (ibid).

Unsurprisingly then, the Better Regulation Commission appear to be arguing for – better regulation – although ironically, this is likely to take the form of new, in other words more, regulation. So much for regulatory streamlining then.

More significantly though, it is the process identified by the BRC whereby the current state of affairs has come to pass that ought to be of interest. This is outlined on pages 7 and 9 of the document, and fleshed out throughout, including across a number of interspersed case studies.

In essence this '*regulatory spira*l' is characterised as a '*no-win*' situation for politicians and summarised in a small number of steps, of which the key elements are held to be that; (1) perceptions of risk emerge over time, (2) misperceptions are amplified by the media, (3) the public look to government to manage the risks, (4) the government responds to public pressure and, (5) the government is then blamed, either for unnecessary interference, or for the unintended consequences of its actions.

The solutions then proffered include the need to; (a) provide more information, (b) provide more training for all parties on the assessment, communication and management of risk, and (c) target those held to be '*most at risk*' – also labelled '*the most vulnerable*' – for support.

An Orwellian-sounding array of plans, panels and procedures are then put forward as the logical means for reorganising society around these newly identified needs. These include; (i) a Fast Assessment of Regulatory Options Panel, (ii) an Annual Simplification Plan, and (iii) an Administrative Burdens Measurement Exercise.

It may seem cynical at this stage to suggest that the road to hell is paved with good intentions but, in light of the weak analysis presented by those charged with reducing the regulatory burden on society, which nevertheless is held to necessitate such far-reaching organisational consequences, it is hard to conclude otherwise.

Miscommunicating Risk – Some Lessons

Usefully, the Better Regulation Commission document highlights a number of failings which are examined at greater depth through the various articles appended to this context statement. A number can be highlighted here as these point to the theoretical underpinnings of the dominant literature on risk management, as well as the limitations of these.

1. Agency

The first step assumed by the BRC in its '*regulatory spiral*' is that '*risk perception emerges*'. This is a remarkable formulation of the problem pointing to a passive understanding of social processes, which explains little. Why would perceptions emerge? Where from? And, do they emerge any faster today than previously?

In his work on risk, the sociologist Frank Furedi has identified the evolution from an understanding of risk as an active engagement with reality, in the sense of

'*taking a risk*' (which may yield opportunities and benefits as much as problems and costs), towards the more passive formulation of simply '*being at risk*' (a condition that requires us to reduce the likelihood, or mitigate the consequences, of particular threats), as one of the defining features of our contemporary consciousness of risk (Furedi 2002a, p.xiii).

This in turn reflects a wider shift that has occurred among the general public from being active citizens, engaged in the political arena, to becoming passive consumers, increasingly more focused on privatised concerns, as evidenced by a wide variety of social, cultural and political indices.

The articles in this PhD submission draw on such conceptual insights as elaborated in the work of Richard Sennett (1977), and Christopher Lasch (1979). But while these writers identified the *potential* for a radical shift in our sense of personhood as early as the late 1970s, it was not until the unfreezing of the post-Second World War – Cold War – world order, a decade later, that such trends could be given full vent and become manifest at a broader societal level.

Accordingly, risk perceptions have not simply '*emerged*'. The idiom '*nothing ventured, nothing gained*' has not straightforwardly been replaced by that suggesting that we are '*better safe than sorry*'. Rather the very meaning and content of what it is to be human at the beginning of the twenty-first century has changed, and this, in turn, has shaped perceptions.

One of the key outlooks encompassed by all of the accompanying articles is that a diminished sense of social solidarity, as finally shaped by the exhaustion of the political left and the political right at the end of the twentieth century, as well as the more gradual erosion of other community networks and bonds that used to provide a coherent sense of identity, purpose and meaning, has left individuals with an exaggerated sense of insecurity stemming from their real isolation.

It is not simply a distorted and disproportionate sense of risk that stems from these conditions, but more importantly *a diminished sense of self.* When people no longer conceive or project themselves as being the subjective agents of their own history, then they can become the passive objects of it (Heartfield, 2002). From this it is an easy step to identifying risks as simply emerging. But what such an analysis misses is the fundamental transformation in society and our own self-consciousness that has shaped it.

As indicated in one of my articles; '*What may really have changed is not so much the scale of the problems that we face, but the outlook with which society perceives its difficulties, both real and imagined*' (Durodié 2003a, p.396). Accordingly, as I suggest elsewhere, '*it may be that, rather than living in a* Risk Society, *we now live in a* Risk Perception Society' (Durodié 2005, p.2).

The solution to this will not be one that criticises risks or even risk perceptions by taking them at face-value, but rather one that appreciates the deeper social undercurrents that produce both these and the discourse that ensues.

2. Mediation

The second step presented by the BRC in their '*no-win*' schema is that of media amplification. This concept draws upon the work of Roger and Jeanne Kasperson who have examined a process they identified as the social amplification of risk (1996). This has further been developed by the former in association with Nick Pidgeon and Paul Slovic (2003).

But while the media does appear to have a disproportionate significance and influence in contemporary society, such an insight again fails to identify why this is so, or how it has come about in such a relatively short period of time. Whether people believe the media at any particular moment in time is dependent upon other factors.

In fact, it is because all of the other social and cultural institutions (such as families, communities and neighbourhood networks, political parties, trade unions and religious congregations, as well as out-of-hours clubs, teams and associations – which used to provide people with alternative sources of

information and meaning) have been so eroded, that the role of the media now seems dominant.

Rather than blaming the media, and looking for ways to attenuate the impact and domination of its various components, it is the sublimation and weakness of all of the other social networks that really needs to be addressed. What is required is to build-up such alternative webs of authority and action, not to lambaste the last institution left standing.

While the media undoubtedly do have a role in amplifying and promoting particular fears, they are only rarely the instigators of such debates. It is usually nervous elites and their weakened institutions that are identified in my articles as the original culprits. Their fears and concerns then resonate with those of an isolated and individuated public.

In addition, as identified in my review of Adam Burgess's book (2004), a diminished sense of self leads people to seek to create new forms of identity for themselves. Journalists are no different to other people in this regards and the staunch, socially-responsible campaigner provides a readily assumed persona for those who do not want their careers shaped by the need to cover celebrity gossip.

Likewise, some of the other articles presented here examine the search for identity – in what some have characterised as becoming; 'a *world without meaning*' (Laïdi 1994) – from various other perspectives; regional institutions trying to establish themselves as alternative poles of authority to central government (Durodié 1999), military personnel identifying themselves as having been victims of '*gulf war syndrome*' (Durodié 2006a), and young men with no connection to the Middle East or beyond keen to be part of a '*global jihad*' (Durodié 2007).

This '*search for meaning*' (Frankl 1959), is raised here as an essential component of my conceptual framework. Failing to understand how individuals have changed in a very short period of time leads the BRC, and others, to presume a growing influence from social institutions, such as the media, whereas in fact it is our weakened sense of identity, as well as a growing sense of purposelessness in our concomitant organisations, that have allowed the media to appear, and on occasion to be, so dominant.

However, if we are not to miscommunicate risk, by counter-posing one perceived fear with another – as was the case in relation to UK government attempts to fend off fears over having children inoculated with the MMR vaccine by highlighting the consequences of not being vaccinated – then we need to understand how real risks are mediated through fragile individual and institutional identities.

These need to be built-up if we are to regain a proportionate sense of risk and not drive people's fears through a process of poor, reactive and unnecessary communication.

3. Pressure

One of the key factors which the BRC identify as putting governments under pressure to respond is that; '*Action is often based on emotion*' (BRC 2006, p.11). This is undoubtedly true in many instances, although again, this fails to identify why this should be any more so the case today than it would have been in the past. Is it that somehow we have become a more emotional society? Or have the forces of rationalism, which would previously have encouraged a greater sense of objective distance between incidents and policy, somehow been forced into abeyance?

In another of his key works, upon which the papers in this collection draw upon for intellectual insight and inspiration, Furedi (2002b) has examined the processes through which this has come about.

Undoubtedly, individuals in a more atomised society develop a heightened sense of their own frailty, and this has encouraged a greater focus on their immediate self, accompanied by an elevation of emotion. Other writers have noticed this

trend too, and have examined the new moral codes that have developed in a society that seeks to trade transparency for trust (Rosen 2004).

It is certainly true that a society that fails to perceive itself as such has great difficulty with a concept such as that of the '*public good*'. Indeed, this may go some way towards explaining our heightened sense of horror towards those who are prepared to sacrifice themselves as '*suicide bombers*' in pursuit of what they see as greater goals and objectives.

Over the course of the period spent preparing the papers for this PhD, I appeared in the BAFTA award-winning BBC documentary series, produced by Adam Curtis (2004); '*The Power of Nightmares: The Rise of the Politics of Fear*'. It is worth quoting my closing remark there in full;

> '*In a society that believes in nothing, fear becomes the only agenda. Whilst the 20th century was dominated by a conflict between a free-market Right and a socialist Left, even though both of those oullooks had their limitations and their problems, at least they believed in something, whereas what we are seeing now is a society that believes in nothing. And a society that believes in nothing is particularly frightened by people who believe in anything, and therefore we label those people as fundamentalists or fanatics, and they have much greater purchase in terms of the fear they instil in society than they*

truly deserve. But that's a measure of how much we have become isolated and atomised rather than of their inherent strength'.

It is also the case that prioritising emotions (Sjöberg 2000) accompanies another of the clear trends and conclusions identified in my work – that is, a tendency in contemporary culture to focus on extreme, though highly unlikely events. But while it is reasonable for those with specific risk mitigation responsibilities to *consider* improbable events or public concerns, it is not evident that this should form the *basis* for formulating policy aimed at informing the actions of millions (Cox 2007).

Most of the papers in this collection identify a shift in policy-making from being shaped by '*what is*', or probability-based evidence, towards a more speculative focus, on '*what if?*', or possibility-oriented worst-case scenarios.

It is now the case that governments and local authorities are expected to prepare their risk management strategies to deal with the worst that can be imagined (Durodié 2005e). This is the logical outcome of demands to dwell on the '*unknown unknowns*' of risk, a formulation which, as noted elsewhere, is now favoured by both American neo-conservatives and the environmental movement (Durodié 2004e). The fact that there is nothing new about uncertainty or unknowns, and indeed that these may yield opportunities and benefits as much as problems and costs, seems to escape them.

A focus on extremes according to Furedi (2005), '*suggests the absence of a meaningful way of comprehending an event*'. It is also, not only potentially alarming, but also serves to distract attention and divert resources from where they might more fruitfully be deployed.

One of the lessons from my work is the need for social science and policy to move away from analysing and reacting to extreme or difficult cases towards a greater focus on less glamorous norms. Otherwise we risk normalising extremes and marginalising normality.

4. Response

If, as the BRC indicate, government then feels itself obliged to respond to public pressure (or, to be more precise its perception or projection of public pressure), this would suggest a remarkable crisis of confidence and leadership that receives little comment in the mainstream discussion of these issues and which hopefully, the papers presented here will go some way towards redressing.

The pertinent contributions here are those examining the contemporary trend to demand so-called '*public dialogue*' in matters pertaining to scientific policy and decision-making. As I identify in my critique (Durodié 2003b);

'the public are neither particularly insightful in such matters and nor are they particularly stupid. They are quite often ignorant of the facts and usually unmediated in their responses to them, displaying an understandable proclivity to prioritise emotion over reason. We should accordingly neither condemn or dismiss them; nor, however, should we celebrate their views or pander to them. The greatest respect you can pay anyone in any form of debate is to challenge their understanding with a view to transcending it or moving it on'.

However, in this, and a number of other instances, it would appear that the government and its experts have increasingly lost sight of any broader goals or aims that they are pursuing. Accordingly, it is easier, and apparently more democratic, to be seen to be listening to, and incorporating the concerns and prejudices of the population at large into policy. In reality, this form of populism, as opposed to popular support, represents a quite remarkable abdication of responsibility and leadership.

Responsiveness then, fills the gap where strategic vision and purpose ought to lie. Dissenting views are either marginalised or encouraged to leave (Ball 2005). And, as has been identified, the dominant framework for risk management – a process of risk identification, assessment, management and review – both allows and encourages a narrow, technical view of risk which, while suited to auditing

and meeting narrow targets, does not encourage any broader sense of political direction to emerge.

An example of this occurred in the aftermath of the bombing of the British Consulate in Istanbul in November 2003. The Foreign Office launched a risk management exercise to examine the security of its 230 overseas missions. Like the Americans before them, subsequent to attacks on their offices in Nairobi and Dar es Salaam in 1998, this was expected to lead to the relocation of a number of embassies (Durodié 2004f).

But, in effect, this allows a risk management process to dictate policy. If this approach were to be taken to its logical conclusion, British diplomats would have little choice but to come home, for their own safety. This would simply encourage all-manner of cranks, loners, hoaxers and '*wannabe*' terrorists to have a go. It also reveals the fact that at the heart of any risk management process there ought to be the strategic imperative to clarify one's overarching objectives.

Unfortunately, this trend to allow either the public or the process to shape the agenda does not look likely to go away any time soon, despite clear public opposition to it (Eurobarometer 2007). In a recent opinion piece, about the rising frequency and diminishing period between Government policy U-turns, I commented that what this approach reveals is; '*a government increasingly*

organised around endless streams of fleeting and reversible policies rather than a small number of firm and enduring principles' (Durodié 2007b).

It is not that the Government are overly-responsive, as the BRC and others now critical of our exaggerated consciousness of risk now see it, but rather that policy without strategy is doomed. Populism and focus groups cover for an absence of vision and direction. But they are also fickle and readily have a change of mind or can be undone.

5. Blame and Consequence

There is a burgeoning literature on blame that views it either from the perspective of some kind of rational game between competing policy actors (Hood 2002), or that seeks to examine, and occasionally critique, what is now seen as a rising culture of litigation in British society that is held to hamper the ability of government and other agents to take calculated risks (Lee 2002).

However, the scale of this may be exaggerated, leading more to a chilling effect on innovation than to large-scale claims. This has allowed others, who see compensation as a new, radical form of democratisation to dispute its significance (Monbiot 2004).

The papers in this collection do not go into any detail on such matters, although it is worth noting here that Furedi (1999), whose conceptual framework has been adopted throughout, holds the cost of compensation culture to be difficult to quantify as it operates largely, through out-of-court settlements, at an informal level by those reluctant to see their reputations damaged.

This point was confirmed over the course of my studies through the attempt by the European Commission to ban the inclusion of non-edible products (primarily toys wrapped in cellophane) from food-items, such as cereals and crisps. Based on a very small number of uncorroborated and somewhat dubious instances, major food manufacturers preferred to settle claims discretely than have the evidence verified in Court (Durodié 1999, p.15).

Furedi considers blaming and claiming to be primarily another consequence of the erosion of those other social networks which, in the past, would have offered support and meaning to those in adverse situations.

As others have noted, there is now an emerging cultural reluctance to accept random adversity. Famously, the *British Medical Journal*, discussed in June 2001 whether to ban use of the word 'acc*ident*' in future articles (Adams 2002). It was proposed to replace this by reference to '*preventable injuries*', a change which presumably would put; '*Acts of God*', at risk of being banished by the insurance industry too.

That government regulation should yield '*unintended consequences*' is not a new insight (Turvey and Moiduszka 2005). However, rather than treating these as; '*risk versus risk tradeoffs*' (Graham and Wiener 1995), what is proposed here is that such regulatory responses further drives people's concerns rather than assuaging them. As I noted in relation to the phthalate plasticizers debate, if left unquestioned such fears '*will simply be transferred onto their proposed solutions*' (Durodié 1999, p.3).

A confirmation of this was identified by Burgess (2002), who in response to the establishment of the Independent Expert Group on Mobile Phones to placate concerns relating to the deployment of mobile phone telecommunications technology, noted that; '*even balanced public information on negligible risks tends to increase anxiety, on the assumption that there must be something to worry about if the government is taking action*'.

Indeed, another astute commentator at the time suggested that; '*in its rush to be open about communicating risk to the public, the government has simply forgotten that there was no risk to communicate*' (Kaplinsky 2000).

A more recent example of the same process at work occurred in relation to the scare surrounding the accidental inclusion of the banned Sudan 1 dye in food items in the UK in 2003. The widespread product recall and consumer alert put in place by the Food Standards Agency seemed to bear no relation to the actual

scale of the risk presented which, according to most experts, was either negligible or non-existent.

The strength of these respective sociological analyses into such matters, including my own, is revealed by the fact that it is only now that some of these insights are being corroborated scientifically, a recent survey confirming that government risk communication can make matters worse, not better (Barnett et al. 2007). But it takes time to organise such robust evidence.

This shows the use of my social science methodology in being able to understand and explore trends that have yet to be explained and accepted through more rigorous scientific methods.

CHAPTER 5

Discussion

The erosion of collective forms of social association, both in the formal sphere of political conviction and participation – '*de-politicisation*' – as well as in the informal sphere of everyday life – '*individuation*' – have had a dramatic impact upon how people view themselves and the world around them (Giddens 1991).

In the past, social networks and norms may have imposed seemingly arbitrary or authoritarian structures and rules upon people, but they also provided meaning, conferred identity, and facilitated social processes. Being less connected leaves people less corrected. It allows their subjective impression of reality to go unmediated or unmoderated through membership of a wider group or trusted community. Without a sense of the possibility of social solutions, and divorced from trusted networks or webs of association by which to provide meaning and a sense of belonging for themselves, people can increasingly become inclined to view events as being random, out of control or inevitable.

Views which, in the past, would have been filtered and scrutinised through various layers of public knowledge and private insight, often come today to form unchallenged personal frameworks for understanding the world. In such a climate, individual obsessions can grow into all-consuming worldviews that are rarely open to reasoned interrogation or debate. In part, it is this that explains the recent proclivity to emphasise or exaggerate all of the supposed risks that are held to confront us.

From BSE (bovine spongiform encephalopathy, more commonly known as '*mad-cow disease*') to GMOs (genetically modified organisms), from the assumed risks presented by mobile phones or their telecommunications masts to the purported link between the MMR (measles, mumps, rubella) triple-vaccine and childhood autism – many developments are now viewed through the prism of a heightened and individuated consciousness of risk. Nor are our fears restricted to the realms of novel scientific or technological products and processes. Many age-old activities and agents have also been reinterpreted through our growing sense of social isolation and fear. Abduction, bullying, crime, doctors, the environment and food, form just the first few letters of an ever-expanding lexicon of new concerns. Even relationships and sex are viewed as risky, and assessed and managed using an instrumentalist form of risk calculus – to the detriment of both.

But, rather than the world changing any faster today than in the past, or becoming a more dangerous, unpredictable or complex place, it may be that a diminished, more fragile and isolated, sense of self has altered our confidence to deal with change and the problems it gives rise to. Far from it being the inevitable reflexive consequences of manufactured risks in a '*risk society*' impacting upon us (Beck 1992), it is our sense of isolation, absence of direction and associated distorted perceptions that lend themselves to identifying everything as a risk.

The erosion of a social perspective may also lead to a diminished sense of the possibility that if there truly is a problem needing to be addressed then it is

together – with others – that this can best be altered or challenged (Heartfield 2002). In turn, these developments reduce the likelihood of our acting for some greater common good and end up making us less resilient, both as individuals and as a society.

All of these developments have a quite devastating and stultifying impact upon society. The breakdown of collectivities has, in the absence of any coherent replacements, enhanced the sense which isolated individuals have of themselves, as being frail and vulnerable. And an exaggerated perception of risk lends itself to increasing demands for greater regulation and social control (BRC 2006). Accordingly, people increasingly look to those in authority to enhance their sense of security by mitigating the worst effects of the natural world and human society, as well as the actions of those who seek to change these.

In an age characterised by an absence of political vision and direction, the politics of fear, or risk-regulation, have provided a hesitant and isolated elite with an agenda and a new, if limited, sense of moral purpose. The authorities have willingly embraced this role (Altheide 2002). Latching onto the generalised climate of isolation and insecurity, politicians have learnt to repackage themselves as societal risk managers.

But whilst there is a growing understanding that governments have, over recent years, increasingly made use of such a politics of fear, there is little appreciation

of quite how widespread this has become (Furedi 2006b). Usually, the phrase is related to certain actions and proposals – such as extending periods of detention without charge, deporting detainees to their countries of origin, introducing identity cards or increasing airport security – for dealing with the on-going '*war on terror*'. These measures have all been discussed, at various times, in terms suggesting a degree of suspicion towards those seeking to introduce them. Politicians and officials are presented as having an interest in inflating the perceived risks posed by terrorist attacks in order to push through what, at any other time, would have been seen as being unpopular legislation.

But that is only the half of it. What critics miss is the extent to which the same arguments have been deployed right across all policy agendas today. The '*act first, find the evidence later*' logic of precautionary thinking has been mainstream in environmental and public health circles for quite some time (Morris 2001), where it is widely supported by the same individuals decrying its use in relation to terrorism.

As has been noted elsewhere, when Donald Rumsfeld famously talked of the difficulties he faced in dealing with '*unknown unknowns*', he was in fact using language that was already widely used by those at the opposite end of the political spectrum (Durodié 2004e). The demand that science should emphasise uncertainties and unknowns is now widespread, despite the fact that these are

not new and that we can only ever learn about what we don't know by starting from what we do know.

Radicals too now often view the state as an enabling mechanism of social protection. People who might have been expected to seek to organise their own affairs and build their own institutions – in the absence of any sense of social solidarity or an ability to deal with problems collectively – now turn to the state to resolve matters on their behalf. Even those environmental and consumer lobby groups with the most vehement anti-state rhetoric, look to the state to act as the ultimate regulator and enforcer.

Accordingly, politicians pose as the people who will protect us from our fears and regulate the world accordingly. But the demise of any positive sense of the possibility and desirability for social transformation has also led to a reduction in what it is that politicians actually offer the public today. The petty lifestyle concerns they focus on, reflected in incessant debates about smoking, smacking, eating and drinking are unlikely to inspire and engage a new generation of voters (Durodié 2004g). Nor – at the other end of the spectrum – do doom-laden predictions relating to global warming and terrorism.

Indeed, the more such concerns are highlighted, the more it becomes difficult for the authorities to satiate the insecurities that they have helped to create. Hence, alongside disengagement and alienation, has come a concomitant

disillusionment and mistrust in all forms of authority, whether political, corporate, or scientific, as these invariably fail to live up to new expectations (Seligman 2000). This corrosion of trust may replace healthy skepticism with unthinking cynicism.

As expertise itself has, in certain quarters, come to be perceived as elitist, and knowledge as biased or unattainable, in many situations today, the public are encouraged, and have become accustomed, to assuming the worst and presuming a cover-up. In the absence of the old structures this has generated new demands for the attribution of blame and compensation (Guzelian 2004). Image and rumour come to dominate over insight and reason. Myths and conspiracy theories increasingly abound, encouraged by the demand to include public perceptions in decision-making.

Focusing on people's perceptions has become the new mainstay of governments, activists, the media, and even risk consultants. These suggest that our perceptions of risks are as important – if not more so – than the actuality of the risks we face, as perceptions often determine behavior. Thus, it is held, that irrespective of the basis for such fears in scientific fact, their effects are real in social consequence, leaving governments with little choice but to take such concerns on board and to regulate accordingly (Worcester 2006).

Such an approach benefits from appearing to take ordinary people's views very seriously. In an age when few participate actively in political life, it seems commendably inclusive and democratic. It is also a godsend to governments bereft of any broader dynamic or direction. But, assuming or adapting to popular perceptions is as contemptuous, and as patronising, of the public, as dismissing them outright. It may also be more damaging.

CHAPTER 6

Conclusion

In a recent contribution to the literature, Burgess (2006, p.334) noted that '*it would appear to be the exhaustion of the traditional social and political forms that has allowed risk culture to flourish*'. This supports my analysis.

Each article included as part of my submission includes its own conclusions, either explicitly or implicitly within the text. In addition to these, I would make the following generic remarks that derive from my work;

1. The erosion and fragmentation of key social bonds has encouraged the development of an exaggerated consciousness of risk driven by a diminished sense of self.

2. The diminished sense of self has impacted on the coherence of all key social institutions thereby enhancing the import and impact of the media disproportionately.

3. An absence of clear aims and purposes established through robust democratic dialogue leaves government reacting overly-responsively to emotional or extreme events.

4. Processes of dialogue with the public have encouraged the influence of unrepresentative interest groups, as well as presenting evidence in an overly simplistic form.

5. Risk communication to the public often emerges as a means to deflect blame but also ends up further driving social fears as the roots of problems are rarely questioned.

6. Dominant models of risk management are conscious of, but still allow the confusion and conflation of technical risk assessment with political risk management.

7. There has been a shift in recent years towards understanding that risk has an important cultural dimension, but the diminished sense of social forces encourages psychological framing.

8. The advent of the precautionary principle confirms the convergence of left and right wing politics, as well as further diminishing our sense of the human potential.

9. A crisis of trust has emerged as a necessary concomitant of the regulation of risk, thereby accentuating tensions between governments, experts and the public.

10. The dominant framing of contemporary risk issues assumes aspects of problems that ought to be interrogated and confuses professional advice for political direction.

Ultimately, a more proportionate approach to dealing with risk will only emerge in a more confident society. The building blocks of this are purposeful individuals who necessarily encompass and reflect broader values such as autonomy and the freedom to experiment.

The '*Risk Society*' or to be more precise the '*Risk Perception Society*' is just one manifestation of a wider crisis affecting society and the individuals within it. It is to these that I hope to turn my attention to in the future.

APPENDIX 1

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APPENDIX 2

Full List of Previously Published Work Included

1. Durodié, B. (1999). Poisonous Dummies: European Risk Regulation after BSE. Cambridge: European Science and Environment Forum.

2. Durodié, B. (2002a). 'The Demoralization of Science'. Paper presented to Demoralization: Morality, Authority and Power Conference at Cardiff University.

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13. Durodié, B. (2005b). 'The Limitations of Risk Management in Dealing with Disaster: Building Social Resilience'. Politik. 8, (1), p.14-21.

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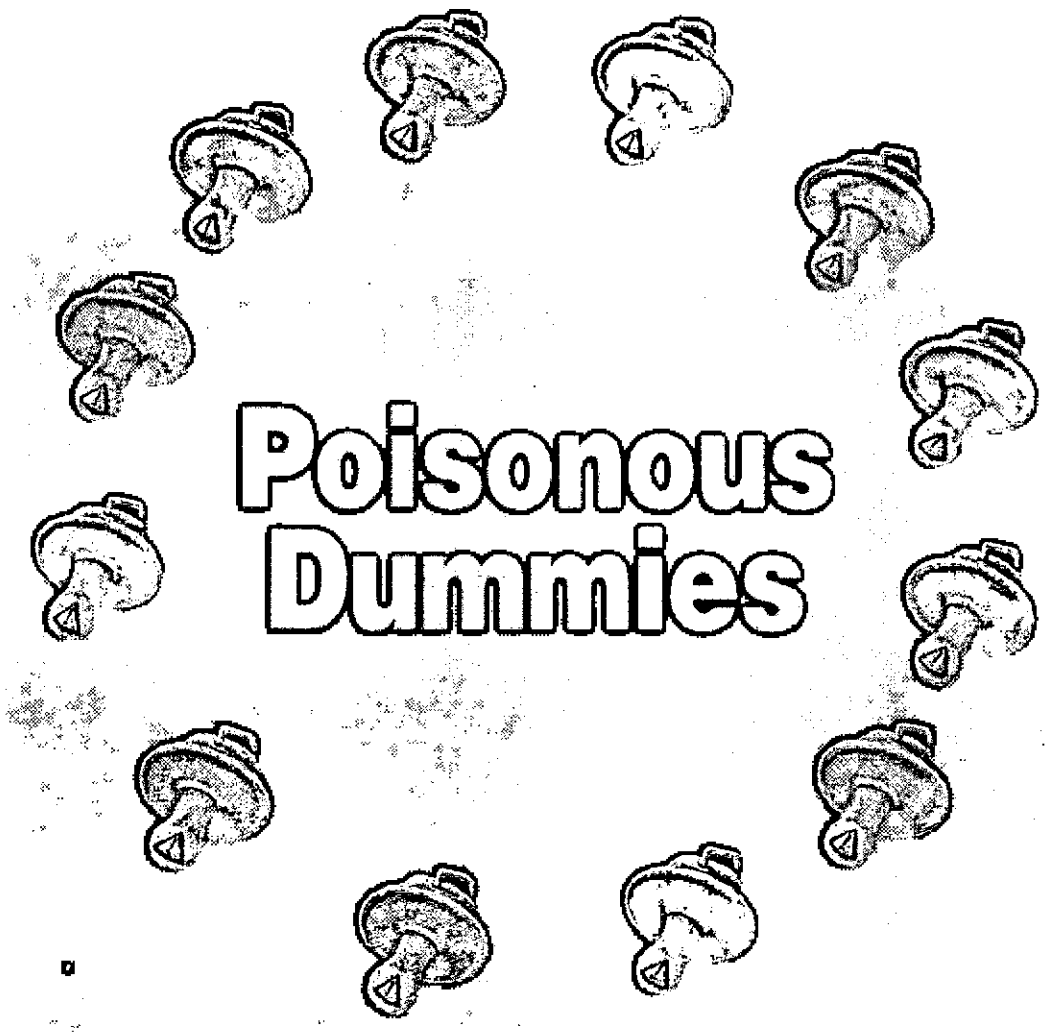

Poisonous Dummies

European Risk Regulation after BSE

By

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Executive Summary

Environmental activists and consumer protection groups claim that phthalates, organic compounds added to hard PVC to make it more flexible, are responsible for numerous adverse health effects, including cancer and damage to the human reproductive system. Governments, the European Commission, the media and retailers have taken these claims seriously. In this latest European Science and Environment Forum working paper Bill Durodié, researching at the London School of Economics and Political Science, shows how using a carefully timed and crafted sequence of stunts, press releases, and often unsubstantiated scientific papers, campaigners have managed to play off these major interested parties against one another. As a consequence, reams of scientific and statistical documents have been commissioned and produced in evidence, raising concerns and unnecessarily exacerbating fears amongst consumers. Yet in more than 40 years of phthalate use, no researcher has ever demonstrated any harm.

More broadly he situates this campaign, along with another opposing the inclusion of toys in food products such as crisps, cereals and chocolate eggs, within the context of the far-reaching reactions to the European BSE ('mad cow') debacle. The paper examines the work of the European Commission Scientific Committee for Toxicity, Ecotoxicity and the Environment, and its Committee on Product Safety Emergencies, which met twice to discuss these issues in 1997. The rise of a more consumer-oriented social agenda is discussed, along with the growing use of the 'precautionary principle' in assessing environmental health risks. Both are held to be problematic, assuming in the former that consumers hold homogeneous interests, whilst the latter reverses the burden of scientific proof, thereby effectively paralysing social

development.

Suggesting a common dynamic to these matters stemming from claims that everyday activities, or products, are problematic, he explores how campaigners gain support for their views by generating waves of adverse publicity. Then through a process he labels as 'advocacy research', which often produces unspecified and uncorroborated evidence, the problem can be redefined or expanded. This 'evidence' is usually used to confirm that it was correct to identify the problem in the first place thereby encouraging self-regulatory behaviour amongst a target audience, and in turn using this to pressurise others into introducing more formal restrictions.

A number of tentative conclusions are drawn and recommendations made, ranging from a critique of the increasing trend to pre-publish research outcomes to the need for the media to acquire and promote higher levels of scientific and technical expertise. Further, it is shown that the cost to society of not heeding these warnings will be far greater than a narrow economic one. Already the campaign against phthalates in children's toys has turned into one opposing their presence in medical devices such as intravenous tubing and blood bags. Whilst many companies are now being pressed into using alternatives the inevitable logic of these irrational ideas is coming to the fore: the European Commission has instigated investigations into the toxicologically less-well documented replacement products, thereby showing that the fear of phthalates will simply be transferred onto their proposed solutions. The conclusion drawn is that it is a broader loss of trust within society which will need to be addressed, if a generation of young people are not to be brought up questioning the ability of science and reason to cast light upon their lives.

1. Introduction

On 29th March 1999 three Greenpeace campaigners were freed from a Japanese jail. They had been arrested 11 days earlier for abseiling down the side of a building at the Tokyo Toy Fair to unfurl a banner that read 'Play Safe, Buy PVC Free'[1]. This repeated a stunt played out the previous year on 13th February, at the opening of the

International Toy Fair in New York, and became just the latest high profile twist in a two year worldwide campaign by environmentalists and consumer protection groups against esters of o-phthalic acid, more commonly known as phthalate esters, or phthalates. Phthalates are liquid organic compounds which are added to hard polyvinyl chloride, or PVC, to act as softeners or 'plasticisers'. These make the compound more malleable and hence more versatile.

Despite substantial scientific evidence to the contrary, the activists' claims that phthalates are responsible for numerous adverse health effects, including cancer and damage to the human reproductive system, have been taken seriously by governments, the media, retailers and even by the increasingly defensive plastics industry. Co-ordinated and well-crafted stunts, press releases, often promoting unpublished scientific papers, have enabled the campaigners to play off all the major interested parties against one another. As a consequence reams of scientific and statistical documents have been commissioned and produced in evidence, raising concerns and unnecessarily exacerbating fears amongst consumers.

Yet phthalates have been in widespread use for almost 50 years, and have had particularly close scrutiny and attention paid to them over the last 25 of these.[2] Due to their low cost and excellent performance characteristics, including flexibility, which they impart to PVC, they are found in products as common and diverse as medical devices, particularly fluid containers, tubing and gloves; children's toys including teethers, rattles and bathtime rubber ducks; and household and industrial items such as wire and cable coating, flooring and clothing. The vast majority of phthalates (about 97%) are used in the production of flexible PVC. The remainder are used in conjunction with other polymers and to a small extent in the production of printing inks and perfumes. Now, regardless of the quality of the evidence in their favour, and as a direct result of the campaign against them, several formal and informal bans are coming into operation across the world.

This paper seeks to explore how this could have come about, focusing upon the specific role of the European Commission, and in particular its Committee on Product Safety Emergencies, which met twice in 1997. Among other issues, this Committee discussed the issue of softeners in plastic products intended for children, as well as the supposed problems related to an entirely separate matter, that of non-edible items in foodstuffs.[3] Both these investigations are examined here in some detail, in order to explore those mechanisms that have encouraged a tendency towards self-regulatory behaviour.

The examples suggests a common dynamic stemming in part from the new credence afforded to environmentalists and consumer protection groups in the aftermath of the European BSE ('mad cow') debacle. In the first instance such groups claim an everyday activity, or product, to be problematic. They then gain support for their views by generating a wave of adverse publicity. Evidence is produced, through a process probably best defined as 'advocacy research'. This 'research' is often unspecified and uncorroborated, allowing for the redefinition or expansion of the problem, if needed, at a later date. In each case however, findings are used as an affirmation that it was correct to identify a problem in the first place. Finally, self-regulation begins amongst a target audience, and this in turn is used to pressurise others into altering their behaviour.

That such a frenzy could have been stirred up around phthalates, which from a health and environmental viewpoint must qualify as among the most studied and understood family of compounds, should serve as a dire warning to scientists and industrialists, and even retailers and consumers. It would appear that the real poisonous dummies in the whole affair are not necessarily the plastic teethers which so many are still seeking to ban.

2. Mad cows

2.1 The stampede

The impact upon the contemporary European imagination of the scare surrounding the suggestion of possible links between bovine spongiform encephalopathy (BSE), commonly known as 'mad cow disease', and its transmission to humans in the form of new variant Creutzfeldt-Jakob disease (nvCJD), should not be underestimated. Subsequent to parliamentary statements giving credence to a possible link by the then health secretary, Stephen Dorrell, who quoted from an official report by the Spongiform Encephalopathy Advisory Committee (SEAC) in the UK House of Commons on 20th March 1996, (a view then echoed by agriculture minister, Douglas Hogg), attitudes to consumer protection and public health services across Europe have undergone a momentous and total transformation. It would be fair to say that the issue of British beef herds occupied much of the European Commission's time over the course of 1996 and 1997.

Grasping the impact the then British prime minister, John Major, speaking at the height of the mad cow panic in April 1996, described it as 'the worst crisis a British government has faced since the Falklands'.[4] For the European Community's agriculture and rural development commissioner Franz Fischler, speaking in September 1996, it was 'the biggest crisis the EU had ever had'.[5] According to Scott C Ratzan, introducing an authoritative collection of papers on the subject, the BSE/CJD problem was 'arguably one of the greatest human-made disasters in history',[6] whilst for food policy professor Tim Lang, it 'provided an object lesson in how not to manage risk'.[7]

Regardless as to the evidence of the proposed link to CJD,[8] (after all the jury in the form of the BSE Enquiry is still out on the matter, and there are also a small number of dissenting voices),[9] it is undeniable that the scale of reaction was quite unprecedented, revealing a new low in levels of public confidence. At the time a death rate as high as 500,000 per annum was predicted – to date the actual figure has been 39. Also, the cumulative total of confirmed BSE cases in Great Britain has now

reached 174,433, however, only 38,975 of those have been subsequent to the introduction of the ban on ruminant protein in cattle feed,[10] suggesting to some that the actions taken by ministers and officials prior to the panic had already been wholly sufficient.[11]

The debacle has acted as a catalyst for a more profound reorganisation of the industry and beyond. Subsequent developments, referred to by the European Commission variously as 'farm to fork', 'plough to plate', or 'stable to table', to indicate how all-encompassing they are expected to be, will allow for faster and tougher responses to perceived problems, food-related or otherwise. They look set to have far-reaching implications long after the destruction of the last suspect beef herd has been completed.

2.2 The Commission's reaction

The European Commission, the executive body of the European Community, is generally regarded as the guardian of European treaties and the interests of the Community. It was shocked into action by BSE. Over a two year period hardly a single speech by the president at the time, Jacques Santer, numerous commissioners and their officials, failed to refer to the crisis. These speeches all pointed towards the need for substantial organisational and legislatory reform. This reorganisation was then formally established on 12th February 1997,[12] and publicly launched by Jacques Santer who made 'a plea for the gradual establishment of a proper food policy which gives pride of place to consumer protection and consumer health'.[13]

The potential for the Commission to intervene more within the fields relating to human health protection, consumer protection and the environment, had been contained within Articles 129, 129a and 130r respectively of the 1992 Treaty on European Union (Maastricht Treaty). The BSE crisis triggered these into action. It has been argued for instance that 'nobody could have predicted how public health at EU level would be plucked from obscurity and thrust into the political spotlight as a result of the BSE affair'.[14] Now, a new, more substantial Article 153, within the 1997

Amsterdam Treaty, further expanded the remit, placing consumer policy and health protection more centrally as 'rights',[15] although this has been criticised 'as a sudden and political response to the BSE crisis'.[16]

The Consumer Policy Service at the Commission which had itself only became established as a new directorate-general (DG XXIV) in 1995 was, on 1st April 1997, expanded to take on health protection matters and has since witnessed a truly astonishing pace of transformation. The number of staff has risen from 96 to 322 officials, absorbing 94 staff from other areas, including the Food and Veterinary Office, which relocated to Dublin.

Under the stewardship of high-profile commissioner Emma Bonino, the directorate, which expects to further rise to a full staff complement of 350 before the end of the millennium, became responsible for providing scientific advice, risk analysis and control, whilst other directorates maintained their legislatory roles.

Over the course of 1997 a wave of landmark documents was produced, including, on 30th April, a communication on 'Consumer Health and Food Safety',[17] and a Green Paper on 'The General Principles of Food Law in the European Union'.[18] An 'Inter-Services Operations Manual establishing cooperation procedures between Directorate General III, V, VI, and XXIV' followed on 4th July. This represented the interests of the industrial policy; employment, industrial relations and social affairs; agriculture and rural development; and consumer policy and consumer health protection, directorate-generals respectively.

A Multidisciplinary Scientific Committee (MDSC) set up in 1996 to deal specifically with BSE,[19] was replaced by a Scientific Steering Committee with a far broader mandate.[20] Some 131 leading European scientists (selected from a pool of 1,126 who had applied),[21] were then co-opted to sit on its eight new scientific sub-committees,[22] thereby replacing the six former scientific committees.

Most notably the Commission established a Rapid Alert System and a Risk Assessment Unit within DG XXIV, and overtly adopted the 'precautionary principle' as the basis of its approach to all future investigations. The latter is popularly understood to imply that in all matters involving uncertainty, one is to err upon the side of caution. More recently a unit responsible for international affairs has been created,[23] indicating no doubt the desire to have an even more global reach.

2.3 The UK parallels

Similar adaptations and transformations have occurred within the UK, which has also had to handle a well-publicised fatal outbreak of the e-coli bacterium over the same period. The Ministry of Agriculture, Fisheries and Food, and the Department of Health Joint Food Safety and Standards Group (JFSSG) was formed on 1st September 1997. A Risk Communication Unit has been established within this, and decisions were already being based on a 'safety first' principle prior to the establishment of a national Food Standards Agency,[24] which whilst substantially delayed in its genesis, is still expected to further transform the British regulatory landscape.

3. Choking fears

3.1 Triggers

In February 1997 the Belgian authorities notified the European Commission of two (non-fatal) incidents involving children choking on parts of toys contained in food products. By Royal Decree from 27th May 1997, Belgium banned all such non-edible items from inclusion in food products.[25] The introduction of this new national technical standard required the Commission to be notified as it created a non-tariff barrier to the free movement of goods within the internal market.[26]

This reached the Commission's Committee on Product Safety Emergencies which had been set up in 1992 through the directive on General Product Safety,[27] and had during the course of 1996 relocated from DG III (industrial policy) to the new DG XXIV (consumer policy and consumer health protection). Now, subsequent to its 30th June 1997 meeting it decided to issue a 'serious and immediate risk to health'

warning. It requested all 15 member states to examine the risks associated with the inclusion of unwrapped non-food articles mixed with food products, (typically toys in chocolate eggs, crisps and cereal packets), review national policy on such matters, and report back to the Commission by September 1997 so that it could consider 'further steps' at its October meeting.[28]

Little over a year earlier the Belgian minister for public health, Marcel Colla, had already tried to ban similar items after the (on this occasion fatal) suffocation of 68 year old pensioner, Susanne de Rieck from Gentbrugge, on a 'flippo' (or 'pog') contained in a packet of crisps.[29] At the time this had led to a satirical response, which compared the regulatory haste to ban 'flippos' in crisps with the minister's more lethargic and bureaucratic approach to what were considered to be more pressing health issues.[30]

Over the intervening period however, BSE had exploded onto the scene followed by its concomitant expansion of activity to DG XXIV and relocation of the Committee on Product Safety Emergencies. The public mood was now more attuned to safety issues, and the relevant Commission staff more numerous, prepared and expected to react. But there is little evidence relating to incidence and incidents of choking which could justify the measures now being sought.

3.2 Incidence

Research presented to the Commission into the actual numbers of such choking events included a key paper by Dr. Elena Petridou of the University of Athens Medical School from April 1997, entitled 'Injuries from Food Products containing Inedibles', (FPCIs). Dr. Petridou indicates that 'accidents represent now the most important cause of childhood morbidity and mortality', a sentiment echoed by the Commission communication of 14th May 1997 establishing a Common Action Programme relating to the prevention of injury.[31]

But the figures, based upon the Emergency Department Injury Surveillance System developed by the Athens-based Centre for Research and Prevention of Injuries, which specifically recorded such incidents from September 1996, are unconvincing. They suggest a mortality rate from FPCIs lower than 2 per annum across the EU, which tallies with research commissioned in 1996 by the UK Department of Trade and Industry.[32] The latter built upon a previous four-country analysis conducted by the Child Accident Protection Trust, as well as data from the Home Accident Surveillance System. It encompasses all the European Community's member states with the exception of Luxembourg, and provides a rich source of counterpoints against overreaction.

Whilst choking fatalities are undoubtedly tragic, they are fortuitously rare. Of the over 550,000 deaths per annum in England and Wales for example, 6,000 involve children under the age of 10. Three quarters of these are under the age of one. Of the total deaths 16,000 can be attributed to external factors, and after excluding road accidents and suicides there remain approximately 6,000 accidental deaths among people of all ages, of which about 5% involve choking. Approximately 200 of the accidental deaths involve children under 10 and 15-20% of these (some 30 to 40 cases a year) are the result of choking.

Unsurprisingly perhaps, the vast majority (84%) of deaths by choking involves food items. Sweets, peas, sausages, bananas, apples and nuts are all cited as potentially hazardous. Of the non-food items leading to choking incidents, coins form by far the largest single category. 'The remaining accidents are caused by a wide variety of items not many of which involve toys'.[33] Cotton wool, conkers, stones, silver foil, tissue paper, even a child's dummy and half a penicillin tablet have proved fatal. Very few incidents ever involve toys, let alone toys associated with food products.

3.3 Incidents

In the UK for instance there have only been three recorded child fatalities relating to toys enclosed with food items over the last 15 years: Roddy Breslin from Northern

Ireland, aged 3 in May 1985, Jennifer Ashton, from Birmingham, also aged 3 in November 1989, and Caren Day from Beighton, near Sheffield, aged 4 in November 1991.

The association between the toy and the food item was not even central to each of these. For instance, the first was caused by the wheel and axle of a toy lorry which had already been assembled by the child's father, and mostly cleared up by his mother subsequent to having been broken during play. As was argued by the responsible Minister in response to Parliamentary questions on the matter at the time, all fatalities are regrettable, but the world is full of small objects which can cause death by choking.[34] While the death of the little boy was very regrettable, it would be of no consequence to prohibit the sale of such products.

During Court proceedings surrounding the second incident caused by the foot of a Pink Panther model, Ferrero, manufacturers of Kinder Surprise eggs, pointed to worldwide sales in excess of 4,600 million since 1974, 218 million of which had been in the UK, and 58 million of those in the preceding 12 month period.[35] It was suggested that Birmingham City Council, which had issued a suspension notice against the eggs, had reacted emotionally rather than rationally. Legislating on such matters would prove futile as well as being irrational.

It is just such reasoning which ought to have led the Committee on Product Safety Emergencies to conclude that there was little risk and no need to issue a warning to all member states in the first instance.

3.4 Precautions

Of course due caution is taken in preventing choking incidents where possible. Children under 3 years of age are particularly vulnerable as, after 1 year when they learn to use their thumb and first finger as a pincer, they experiment by placing objects into their mouths, yet do not have a coughing reflex or a fully developed cricoid (the narrowest part of the larynx and trachea), until they are over 2 years old.

In this regard reasonable actions have in the past been taken, such as the labelling of toys containing small parts as unsuitable for those under 36 months of age, or the creation of ventilation holes in the tops of pen caps. The 'small parts cylinder test' provides a reliable guide as to the potential hazard proffered by such items.

As the DTI report pointedly indicates, 'putting objects in the mouth is an important part of learning and should not be restricted',[36] and further that it is 'unrealistic to segregate toys at all times, and in all circumstances'.[37] With respect to those children who are outside the main danger zone, the report asks the question, 'is it realistic or practical to stop three and four year olds from playing with marbles, small building bricks or tiddlywinks?'.[38]

3.5 Confusions

Dr. Petridou's paper however suggests that 'a minute probability is never negligible', and, presumably concerned by the small numbers recorded due to 'reporting limitations', proposes that in future there should be 'epidemiological investigation of events, that are more frequent than those that represent major health risks but sharing the same risk profile (in the way near misses are studied to identify risk factors for the very rare air-crashes).'

She remarks that 'there is little information concerning the incidence of non-fatal injuries because most injury classification systems in existing large databases in the European Union have been developed before these objects became widely used'. For instance the European Health and Leisure Accidents Surveillance System (EHLASS) had, until 1997, recorded incidents involving FPCIs within the category for incidents involving non-identified objects.

However scientifically, it is vital to clearly differentiate choking incidents, caused by the ingestion of a food or non-food item from other similar yet substantively different problems. In particular these are, (a) choking on a regurgitated food item, (b) external

blockage of the nose and mouth, (c) external compression of the chest, and (d) blockage of the oesophagus leading to a restriction on the passage of air.

The first of these is usually not disaggregated from other causes of choking in morbidity statistics, whilst the others are commonly confused with choking in non-fatal accidents which do not necessitate a post-mortem. Choking itself involves the prevention of the passage of air to the lungs. When fatal the victim is usually unconscious within one minute, and by two minutes will have suffered irreparable brain damage. They would be dead shortly after.

Such differentiation is extremely important if Elena Petridou's suggestion of recording 'near misses' is to be considered, especially as in addition the swallowing of foreign bodies or their complete inhalation into the lungs, which is rarely fatal, are also commonly confused with choking amongst accident reports. These latter are, 'less serious, even trivial, and, though alarming to a parent, are probably not life threatening',[39] and further 'from the descriptions in HASS it appears that accidents are often classified as choking when a foreign body or piece of food in the mouth causes concern or discomfort even if it has no more than very temporarily obstructed the airway.'[40]

The recording of 'near misses' then, far from providing a wealth of new scientific evidence, would only serve to confuse the issue and raise anxieties. Choking is extremely rare and sometimes fatal; most other incidents involving ingestion of foreign bodies are neither choking nor potentially fatal. These sets of circumstances should never be allowed to become confused, yet it is easily done, even by medically trained professionals, when there is no need for a post-mortem.

3.6 Concessions

When the Committee on Product Safety Emergencies met to discuss the outcome of their investigations they concluded that sufficient protections were already in place. For a number of years already, non-edible items contained in food products within

most European states, had been separately wrapped, and those countries outstanding were soon to harmonise their procedures.

However despite the evidence, consumer groups vowed to continue their campaign to see all such products, including those under wraps, removed from the market place. More recently the parents of the three UK child fatalities have been encouraged to petition the European Parliament to introduce mandatory safeguards.[41]

Similar pressures have elsewhere already led to the introduction of self-restriction, as evidenced by the withdrawal from the American market almost two years ago of 'Nestlé Magic', a chocolate ball containing Disney characters, even before any ruling had been reached as to whether it satisfied the far more stringent food regulations already in place there.[42]

Despite the product, whose parts are substantially larger than those found in 'Kinder Surprise' eggs, subsequently being found to satisfy Food and Drug Administration requirements and the Consumer Products Safety Commission who undertook 'small parts' and 'use and abuse' tests on it, protests against it had come from the Consumers Federation of America and the US Public Interest Research Group, amongst others.

More recently it would appear that Nestlé has agreed to pay out $1.5 million in compensation after being approached by 13 attorneys representing the families of children supposedly distressed through choking incidents related to the product.[43] However there appears to be little evidence for such purported incidents, especially as 'Nestlé Magic' continues to be widely available outside the United States. Further, as has been well exposed elsewhere, the settlement of claims is often a defensive reaction by businesses unwilling to be exposed to adverse publicity, even when they feel confident in their product.[44]

Such developments should serve as a salutary warning to others such as Kellogg, Smiths, Ferrero and Westimex, who may also find themselves on the receiving end of

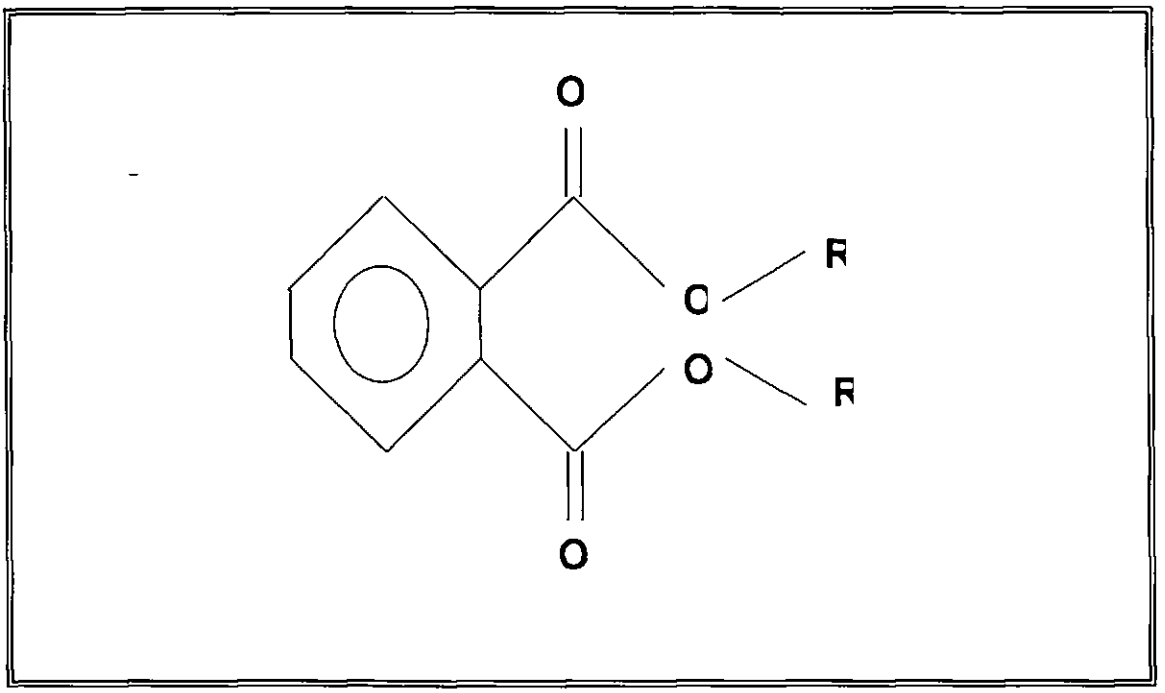
an irresistible wave of demands for self-restraint marshalled by the increasingly vociferous and self-appointed representatives of consumer interests.

One can only be left wondering how it was possible for previous generations of young children to have survived being brought up by the apparently thoughtless parents who encouraged them to hunt for the three-penny coins once concealed in traditional British Christmas puddings, or the fève in the French Galette des Rois!

4. Poisonous dummies

4.1 Phthalates

Polyvinyl chloride or PVC is a rigid material which can be made soft by the addition of plasticisers. These compounds generally have a high boiling point and, when incorporated into polymers, cause a greater workability of the material, by increasing the flexibility of the individual polymer chains. The most commonly used compounds for this purpose are esters of o-phthalic acid, which are more generally known as phthalate esters or phthalates. Several of these are used as plasticisers in PVC and their general structure is shown below, where the group **R** is usually the same aliphatic (carbon chain) or aromatic (carbon ring) side chain, varying in length for different compounds.



Name	Acronym	R
Dibutyl phthalate	DBP	n-C_4H_9
Dipentyl phthalate	DPP	n-C_5H_{11}
Butylbenzyl phthalate	BBP	n-C_4H_9 and -C_6H_5
Di(2-ethylhexyl) phthalate	DEHP	-C_2H_4 (C_2H_5)C_4H_9
Di-iso-octyl phthalate	DIOP	-C_8H_{17}
Di-n-octyl phthalate	DNOP	n-C_8H_{17}
Di-iso-nonyl phthalate	DINP	-C_9H_{19}
Di-iso-decyl phthalate	DIDP	-$C_{10}H_{21}$

Phthalates, including DEHP, DINP, DIDP, DNOP, DBP and BBP, which became the objects of the European Commission's investigations, have been in widespread use for almost 50 years. Particularly close scrutiny and attention has been paid to them over the last 25 of these.[45] Due to their low cost, and the flexibility they impart to PVC, they are found in products as common and diverse as medical devices, particularly fluid containers, tubing and gloves; children's toys including teethers, rattles and bathtime rubber ducks; and household and industrial items such as wire and cable coating, flooring and clothing. They are also used to a more limited extent in printing inks and perfumes.

As a result of their diverse and widespread use and relative resistance to degradation, phthalates are ubiquitous in the environment.[46] Yet, compared to many other commonly used products, such as solvents, they can readily be removed by photochemical, oxidative and biological processes.[47] They also break down in low oxygen environments such as sediment, but at a lower rate,[48] and levels in natural waters are reported to be decreasing.[49]

The quantity of phthalate plasticiser added to a PVC product can be determined by measuring weight loss after diethyl ether extraction. For example, at the Laboratory of the UK Government Chemist over 100 plastic teethers and toys have been assessed for plasticiser content. In these, and other investigations including those by Greenpeace, losses of up to 50% are found to be fairly common, with DEHP, DINP and DIDP identified as major components, (DNOP is not produced on a commercial scale and is difficult to detect in the presence of the multi-component product DINP). DBP and BBP are usually found at levels below 1% and are taken to arise as impurities or by-products not intentionally added. However, whilst it is not difficult to extract phthalates from PVC using a suitable solvent, it is problematic to determine the level of migration of phthalates from PVC into saliva.

4.2 Concerns

Since August 1996 Greenpeace has been contacting major toy manufacturers around the world requesting meetings to discuss concerns about PVC toys.[50] This formed part of a wider Greenpeace agenda against PVC in particular and the chlorine industry in general. Then, on 23rd April 1997, the European Commission services were approached by the Danish authorities regarding three emergency notifications taken out five days earlier upon the recommendation of the Danish Environmental Protection Agency,[51] and concerning various teething rings manufactured in China for the Italian company 'Chicco – Artsana'.[52]

According to these notifications the analyses carried out showed that the articles released certain phthalates in quantities considered to be unacceptable for babies. The

Danish importer had thus withdrawn these products from the market. The manufacturers, who considered that the teethers were in conformity with Community legislation,[53] and did not present any danger, nevertheless on a preventative basis, and awaiting the results of their own analyses, also decided to voluntarily withdraw them from the market. The results of their analysis, which took into account the latest working draft proposing a test method to determine the migration of phthalates in articles destined for child-use and care, conflicted with those of the Danish authorities.

Reactions by other member states to these notifications indicated important differences regarding test methods used to measure phthalate migration, focusing specifically on such assumptions as period of exposure, contact area, and type of stimulus. An experiment in the Netherlands which led to reported doses marginally above the tolerable daily intake (TDI) has been criticised by others for its methodology of mimicking chewing through the use of an ultrasonic bath which produces a 55,000 Hz vibration.[54] Not what one would expect from a child's mouth!

Some took account of the TDIs fixed by the Scientific Committee for Food, in its Opinion on phthalates in infant formulae, expressed on 7th June 1996.[55] However Belgium and the UK in particular, required the Commission's services to ask for the opinion of experts and/or relevant scientific committees at the European level, prior to proceeding with the matter.

Hence unable to issue a 'serious and immediate risk to health' warning, as it had done over the issue of non-food articles mixed with food products, the Committee for Product Safety Emergencies would have to refer the matter on to the new Scientific Committee on Toxicity, Ecotoxicity and the Environment (CSTEE). Due to reorganisation, this did not meet for its first plenary session until 17th November 1997.

4.3 The Greenpeace campaign

Encouraged by the Danish notification to the Commission and its impact upon the Italian owned distributors, as well as the results of the Dutch 'in vitro' experiment and longer standing Swedish concerns regarding PVC use, Greenpeace began approaching the Commission on the matter.[56] Frustrated by the prevarication caused, unnecessarily in its view, by the need to substantiate and corroborate scientific data, Greenpeace continued independently to approach politicians and officials in member states at a local, regional and national level, as well as manufacturers and retailers and their professional associations. It sought to use the various notifications, voluntary withdrawals and early investigations as proof of a wider concern.

On 17th September 1997 – 100 days before Christmas – Greenpeace launched the 'Play Safe' campaign in New York and London.[57] This included a list for parents of PVC and non-PVC infant toys as well as a message outlining the supposed adverse health effects – purported to be liver and kidney damage leading to cancer, the mimicking of sex hormones and reproductive abnormalities.

The campaign was set to target major toy manufacturers such as Mattel, and retailers such as Toys 'R' Us, who were refusing to conform to the scare which had by now affected a number of retailers in Denmark, the Netherlands and Sweden, as well as clients of the Italian suppliers in Spain, Portugal, Greece and Italy itself.

Greenpeace claim that they 'first drew attention to the problem by releasing a scientific study'.[58] This actually amounted to no more than a Technical Note identifying the types and amounts of phthalates contained in PVC.[59] But the level of phthalate contained by a compound is not an indication of the amount which actually leaches from it, and even if this latter quantity can be determined, it remains to be proven whether this poses a risk to human health.

By October however, no doubt concerned by increasingly alarmist pronouncements and responses, a number of prominent politicians entered the fray. Austrian

Consumer Affairs minister, Barbara Prammer, stated that 'based on precautionary consumer protection, PVC toys are not desirable',[60] whilst Belgian minister for Public Health, Marcel Colla (who had previously tried to ban 'flippos' from crisp packets), urged retailers to 'voluntarily discontinue marketing these products'.[61]

This added further pressure upon retailers in those countries, such that subsequent Greenpeace direct action against Toys 'R' Us in Austria led to the company's top management agreeing to withdraw ten specific PVC toys from the shelves,[62] although these were subsequently reinstated at the behest of their US head office. In Belgium, FEDIS, the retail federation, agreed to immediately withdraw all soft PVC products designed to be chewed by young children.[63]

Each of these steps however, simply fuelled further activity and alarmist press releases by the campaigners. In Italy activists entered the Ministry of Health in Father Christmas costumes carrying boxes full of PVC toys.[64] Three weeks later Health minister, Rosi Bindi, was also encouraging manufacturers to look into alternative materials.

In Germany it was the Association of Toy Retailers, Vedes, which in December took the lead and called upon its members to withdraw such products, whilst the Federal Institute for the Protection of Consumer Health and Veterinary Medicine, BgVV, urged manufacturers and industry to act responsibly by doing likewise. This was then predictably followed, with statements from the Ministry of Health and the Ministry of Family Affairs suggesting that it would be highly desirable for industry to voluntarily refrain from selling such products.[65]

Nor was it simply to be trade and retail associations, in addition to Greenpeace, who would now put pressure upon national ministries. The municipality of Bilbao, in Spain, introduced its own ban,[66] a measure to be widely repeated amongst other local and regional assemblies, including many in Italy, no doubt keen to be seen to be taking a greater interest in their electorates' well-being, than that taken by central government.

Revealing its own uncertainties, the European Commission itself, in February 1998, removed all soft PVC teething toys from its childcare facilities,[67] prompting a new and understandable round of calls from campaigners that if the products were not good enough for the Commission, then they should not be inflicted upon the rest of the population.

Relentless pressure by Greenpeace, including the placing of adverts in newspapers seeking to 'name and shame' firms who would not comply led individual businesses such as Dutch retailer, Bart Smit, to order its shops to remove all listed soft PVC toys.[68]

Effectively governments and retailers across Europe had removed soft PVC products from their shelves and markets on a voluntary basis recognising, in one instance at least, that whilst the claims against such products had 'not been scientifically substantiated' nevertheless 'we choose to give our customers the benefit of this doubt'.[69]

4.4 The CSTEE investigation

It is within this evolving climate that the European Commission had invited its new Scientific Committee on Toxicity, Ecotoxicity and the Environment (CSTEE), at its first plenary meeting in Brussels on 17th November 1997, to give its opinion as to;

- the impact on children's health of the use of soft PVC containing phthalates in child-care articles and toys, which children of a young age could put in their mouth;
- the limits which ought to be respected in relation to the migration of phthalates from these products;
- the test method to be followed and the standards or parameters that should be taken into consideration to measure the phthalate migration level.

The CSTEE established a working group which first met on 8th December 1997 and formulated a preliminary position expressed at the Second CSTEE plenary meeting held in Brussels on 9th February 1998. This related to the six phthalates; DEHP, DNOP, DINP, DIDP, DBP and BBP found in infant teething rings, and was based on the documents and literature available to it at that time. This confirmed the existence of different methodologies and highly variable results for the estimation of emission of phthalates from toys. Nevertheless, true to the precautionary approach, it used the highest reported emission levels as a baseline and sought to homogenise all available research evidence to an equivalent exposure dose.

The exposure dose was initially based upon the maximal amounts extracted over 12 hours, from a phthalate containing PVC-toy surrogate of 10 square cm, by a saliva solution under dynamic conditions, and assuming an infant body weight of 5 kg for the risk assessment. This was changed at the time of the expression of its formal opinion on the matter by the CSTEE at its third plenary meeting in Brussels on 24th April 1998, to a more realistic extraction for 6 hours using an infant body weight of 8 kg.

A margin of safety was estimated for each phthalate by dividing the No-Observed-Adverse-Effect-Level (NOAEL) values obtained through animal experimentation, by the worst predicted exposure dose. A level of little concern was assumed for exposure situations with margins of safety in excess of 100. This figure is taken to derive (according to a recent US study)[70] from allowing an extra factor of 10 for variation between species, and a further factor of 10 for variation between individuals.

A further opinion expressed as answers to four new questions put to the committee on the occasion of the CSTEE fourth plenary meeting in Brussels on 16th June 1998, emphasised the need to wait for the outcome of an 'in vivo' Dutch study using adult human volunteers, expected later that year. This was expected to provide more realistic estimates for the quantities of phthalate leached, as well as the duration of exposure.

Predictably however, Greenpeace used the launch of investigations by the Commission and the publication of preliminary opinions as a further stick to beat recalcitrant governments, manufacturers and retailers. Under increasing pressure to be seen to be taking action,[71] the Commission agreed the need for a directive specifically to address soft PVC toys intended for young children and babies.

Consumer Policy and Consumer Health Protection commissioner, Emma Bonino, drew up proposals for an emergency ban, reducing its scope to objects designed to be put in the mouth.[72] However fearing that an outright ban might be successfully challenged in court, the Commission voted against it on 10th June 1998, adopting instead a non-binding recommendation on 1st July 1998.

The recommendation covered child-care articles and toys made of soft PVC containing phthalates and intended to be put into the mouth by children under the age of three.[73] It invited member states to take appropriate safety measures whilst Community legislation for permanent protection was under way. Indicating that such products 'are considered to be liable to provoke negative health effects at high level of exposure', it also requested member states to check levels of phthalate migration, comparing these to limits now proposed by the CSTEE. It also effectively conceded the importance of non-scientific factors by indicating that; 'Other Member States had announced that they would act on their own if the Commission does not find a Community solution'.[74]

4.5 The moving safety margin

One of the major problems throughout this process has been the adoption of continuously shifting baselines and data. The margin of safety, arbitrarily considered as needing to exceed 100, is determined by dividing the NOAEL value by the exposure dose. Yet each of these quantities has varied according to particular experiments or has been the subject of systematic revision or reinterpretation. Even samples from parallel batches of PVC and using identical techniques, yield low

correlative precision due to the uneven release of phthalate particles from within them.[75]

In all instances the worst data or the worst-case approach was adopted in order to err on the side of caution, even if this meant variations as great as four orders of magnitude (5 10,000) between experimental data! Such an approach was considered reasonable as no account was being made for exposure to more than one phthalate in a toy, and for additional exposures through food, air or dermal contact. Nor was there any allowance for the assumed enhanced sensitivity of young children to these products. The possibility that the phthalates could be hydrolysed or broken down by saliva into simpler compounds was also not considered,[76] nor the fact that young children do not swallow all their saliva.

The various opinions did recognise however, that where calculable, intake from toys was not the only, nor indeed the major, source of exposure. A European Committee for Standardisation draft report in 1997 estimated exposure from toys to be 10% of total exposure for a given phthalate.[77] For at least one such compound (BBP), 'Food is by far the major source contributing over 90% of intake'.[78] A UK Ministry of Agriculture, Fisheries and Food (MAFF) information sheet indicates that far from being caused by plastic containers or wrapping, the presence of phthalates in food is due to general environmental conditions, as core content levels of phthalates in food items often exceed surface content levels.[79] Indoor air provides most of our remaining exposure to phthalates.

In all, well over one hundred documents have now been presented to the CSTEE in evidence over the issue of phthalate toxicity. Whilst some are merely member state notifications of intended action, others are of a more scientific nature. One of the key, and shifting, areas for debate and experimentation has been over what is assumed to be the critical end point of phthalate toxicity. This means an indication as to the type of adverse effect to be expected from each compound.

NOAEL values are determined by administering phthalates in varying concentrations to the diet of test animals, usually rats. Typically concentrations go up in factors of ten, and after a specified period the animals anaesthetised, terminated, and analysed for abnormalities with respect to a control group. The NOAEL value is then taken to be the highest dose producing no statistically significant variation, whilst the critical end point is the type of variation first noticed. In certain instances Lowest-Observed-Adverse-Effect-Level (LOAEL) values were taken, where appropriate data did not exist. These were for the two phthalates DBP and BBP, which occur as contaminants at low levels, and in consequence a further factor of 5 was incorporated in determining their safety margins.

From early on in the proceedings the two phthalates to come under most scrutiny were to be DEHP and DINP. This is because they had been the most commonly found phthalates in toys and various child-care articles, but also because they each had a margin of safety determined right from the start as being below 100. These particular margins were based on the least reliable available data, provided by Greenpeace and the Danish authorities who had initiated the matter, and varied by a factor of 2,500 and 10,000 respectively from other experimental sources.

Initially DNOP also produced a margin of safety below 100 and in its preliminary position 9th February 1998 the CSTEE declared all three phthalates as giving cause for concern. Later revisions to NOAEL values and exposure doses removed DNOP from the list. By the time of the formal opinion expressed on 24th April 1998 the CSTEE had concluded that only the very low margin of safety for DINP (8.8) caused concern, 'since humans appear to be less sensitive towards the critical effect of DEHP (hepatic peroxisome proliferation)[80] identified in rats'.[81]

4.6 Are phthalates carcinogenic?

DEHP has been found to be hepatocarcinogenic (liver cancer inducing) in rats and mice,[82] and it is accepted that after long-term exposure, peroxisome proliferation (an increase in those parts of cells which generate or break down hydrogen peroxide),

whieh is the most sensitive ehange found,[83] acts as an early indieator of this. However there is a marked species variation in response to peroxisome proliferation. Rats and mice are very sensitive, whereas guinea pigs and monkeys appear to be relatively insensitive or non-responsive at dose levels that produce a marked response in rats. There is no indication of human sensitivity.[84]

Yet now, based upon figures 2,500 times greater than from other sourees, scaled up by a further safety margin of 100, using the most sensitive eritieal end point of dubious relevance, and despite the faet that a 1996 risk assessment of DEHP, which reviewed more than 500 studies, concluded that the threat of human liver cancer is extremely unlikely under any anticipated exposure dose,[85] DEHP was considered as giving cause for concern.

Campaigners against phthalates have attached great importanee to the fact that the US Environmental Protection Agency (EPA) classified DEHP as a 'probable human carcinogen'.[86] But this decision was taken over 10 years ago and has not formally been re-evaluated sinee. Not only has the relevanee to humans of liver tumours in rodents indueed by peroxisome proliferation beeome more questionable, but our understanding of carcinogenie proeesses themselves have evolved. Nevertheless in the mid 1980s the US toy industry had removed DEHP from ehildren's products to maintain consumer confidenee until further scientific researeh could be eonducted.[87]

Regulation of carcinogens in the United States is still based on the 'no-threshold' assumptions adopted over thirty years ago.[88] Since then however, not only have we beeome more conscious of the various non-zero doses whieh the body can tolerate, but our understanding of the biologieal processes involved, particularly in relation to mitogenic and mutagenie eareinogens,[89] have allowed for a far more sophisticated view than the 'one hit, one cancer' approach which used to determine EPA poliey.[90] In addition aeording to the biochemist who developed the primary test for carcinogenic substances, Dr Bruce Ames, about one-half of all chemieals tested, both natural and man-made, are toxic when tested at high doses in either rats or mice.[91]

Recently the head of the EPA's Science and Policy Staff stated in a section of an article published in the Journal of Regulatory Toxicology and Pharmacology that, 'No evidence exists to suggest that these agents (peroxisome proliferators) are carcinogenic in the human liver'.[92] Health Canada has classified DEHP as 'Unlikely to be Carcinogenic to Humans',[93] the European Commission's own official decision states that DEHP, 'shall not be classified or labelled as a carcinogenic or an irritant substance',[94] whilst the World Health Organisation (WHO) Environmental Health Criteria document for DEHP concludes: 'Currently there is not sufficient evidence to suggest that DEHP is a potential human carcinogen'.[95]

For DINP there is a recognition that 'different commercial products may vary in composition',[96] which might explain the factor of variation in excess of 10,000 between experiments to measure the exposure dose. It has also been found to cause hepatic peroxisome proliferation in rats, but an even more sensitive critical end point has been established. This is an increase in liver and kidney weight after feeding significant dietary levels of DINP for up to 2 years.[97] Scaled up to human levels this is equivalent to a child consuming a sizeable chunk (50 grams) of plastic each day.[98] As Michael Fumento, senior fellow at the Hudson Institute, has said, 'If your child EATS toys, phthalates are the least of your worries'![99]

4.7 Are phthalates endocrine disrupters?

If the potential carcinogenicity of phthalates, in high doses and over long periods of time on rodents, were not relevant to obtain desired restrictions upon their use, campaigners had already prepared themselves to move onto a more emotive critical end point. This shifting of the argument had begun through focusing media attention onto the most extreme possible outcome, presenting phthalates as so-called 'endocrine disrupting chemicals' (EDCs), calling them 'gender benders',[100] and claiming that they mimic oestrogen. This approach successfully generated shock headlines such as 'Human sperm count could be zero in 70 years',[101] and 'Sex change chemicals in baby milk'.[102]

The endocrine system is held to be that complex of processes whereby a number of fundamental bodily functions are kept in check through the action of an appropriate balance of hormones. An endocrine disrupter is then held to be any chemical which interferes with the synthesis, secretion, transport, binding, action or elimination of the natural hormones which are responsible for homeostasis, reproduction, development and/or behaviour.[103]

The popularity of this hypothesis, and the belief that artificial hormones released into the environment through human activity are responsible for the identification of unexplained phenomena upon the endocrine systems of various organisms, in particular aquatic-related life forms, stems from the publication in March 1996 of 'Our Stolen Future' by Theo Colborn, Dianne Dumanoski, and John Peterson Myers.[104]

This book, built upon previous work by Colborn with some of her earlier collaborators,[105] has a foreword by US Vice President Al Gore, and has now been cited as the first reference to the recently released CSTEE Opinion on EDCs.[106] Yet its so-called scientific content has been extensively refuted by those who, amongst others hold that 'none of the authors is a real scientist who conducts scientific research or publishes peer-reviewed studies'.[107]

A review of 'Our Stolen Future' by Professor of Environmental Toxicology, Michael Kanvin, at Michigan State University, appeared under the title 'The Mismeasure of Risk', in the September 1996 issue of *Scientific American*.[108] This described the book as 'not scientific in the most fundamental sense', arguing that 'the authors present a very selective segment of the data that has been gathered about chemicals that might affect hormonal functions', and further that 'it obscures the line between science and policy to the detriment of both', echoing a view expressed some months earlier in *Business Week Magazine* where it had been suggested that 'with its selective use of data, dubious logic and relentless hype, 'Our Stolen Future' ends up doing a serious disservice to its own cause'.[109]

Nevertheless based upon the Colborn book, Greenpeace released their own version a month later under the title 'Taking Back Our Stolen Future: Hormone disruption and PVC plastic'.[110] This also repeated a widely criticised study published in the *British Medical Journal* earlier that year which claimed to provide evidence of a serious decline in the quality of human semen in the UK.[111] Yet even if this widely disputed claim were to be proven true,[112] it would remain to be demonstrated whether this had any causal connection with the release of artificially produced endocrine disrupting chemicals.[113]

The authors of the 1992 study considered to provide the most conclusive evidence of declining sperm counts, Niels Skakkabaek and Richard Sharpe, have since indicated that the implications of their work have been overstated. In the July 7, 1995 of *The Independent* newspaper, the two accused Greenpeace of 'taking something which is a clearly stated hypothetical link and calling it fact'.[114]

Others meanwhile have indicated that 'the major human intake of endocrine disrupters are naturally occurring oestrogens found in foods (Safe, 1995). This exposure is several orders of magnitude higher than the exposure to pesticide EDCs'.[115] Such naturally occurring phyto-oestrogens, commonly found in plants and vegetables such as soya, hops, peas, beans, sprouts and celery, appear to be overlooked by environmental campaigners. Yet Safe calculated daily human intakes of such oestrogens, based on potencies relative to 17 β-oestradiol. Oral contraceptives are found to represent 16,675 μg equivalent per day, and postmenopausal oestrogen therapy would provide 3,350 μg per day. By contrast oestrogen flavonoids in food represent 102 μg per day, whilst daily ingestion of environmental organochlorine oestrogens a mere 0.0000025 μg![116]

Rather obviously then, substances designed to be endocrine disrupters, such as the contraceptive pill, are, whilst those which are not, such as phthalates, are not. However, presumably recognising the sensitivities of potentially alienating over half the constituency they seek to influence, Greenpeace and other environmentalists

chose tactically, not to highlight the extent to which the presence of such substances in the environment, in addition to naturally occurring substances, actually stems from the widespread use of oral contraceptives.

The supposed oestrogenic properties of phthalates have recently been thoroughly examined, both 'in vitro' and 'in vivo'.[117] This research indicates that whilst some of the shorter chain esters (e.g. DBP, BBP) display a weak effect in some 'in vitro' assays at high concentrations,[118] none of the eight phthalates elicited 'in vivo' oestrogenic effects based upon both uterotrophic and vaginal cornification assays, which determine the response of the uterus to hormones as well as their ability to induce the oestrous cycle. This suggests that metabolic events may inactivate the oestrogenic activity of certain phthalates, thereby indicating that whilst 'in vitro' assays may allow prioritisation for further testing, they should be used as a complement to 'in vivo' testing which can more accurately model sensitive processes and interactions.[119]

In addition, numerous multi-generation fertility studies have been carried out on several different phthalates. Again phthalates with short carbon chains include known reproductive toxicants and have produced teratogenic (causing birth defects) and embryotoxic effects at doses well in excess of the NOAEL in continuous breeding studies upon mice, which are known to be more sensitive than rats.[120] Very few teratogenicity studies have been performed in other species. However the most recent two-generation studies demonstrate that exposure of rats to DINP and DIDP in utero, during lactation, puberty and adulthood does not affect testicular size, sperm count, morphology or motility, or produce any reproductive fertility effects.[121]

4.8 The CSTEE Opinion on EDCs

The European Commission's Scientific Committee on Toxicity, Ecotoxicity and the Environment (CSTEE) within DG XXIV has set up a Working Group which published in March 1999 its own 'Opinion on Human and Wildlife Health Effects of

Endocrine Disrupting Chemicals, with Emphasis on Wildlife and on Ecotoxicology Test Methods'.

Unfortunately the tone of this document is set from its opening line; 'There is growing concern on possible harmful consequences of exposure to xenobiotic compounds that are capable of modulating or disrupting the endocrine system'.[122] Thus 'growing concern' of 'possible' effects now suffices to obtain Commission level action, a trend more recently repeated elsewhere.[123] Indeed the document somewhat self-consciously justifies itself in part on the basis that 'the media and consequently the public at large have (therefore) developed an interest on the subject'.[124]

Apart from citing the widely discredited work of Theo Colborn, the document also lends further credence to the disputed claims over falling sperm counts and the rising incidence of prostate cancer. No doubt Greenpeace and their allies, who have been responsible for a substantial element of the 'growing concern', will draw upon the document itself as further evidence as to the objectivity of their claims.

Whilst the original intention of the work, as revealed through the various CSTEE plenary meeting minutes, was 'to finally produce a report that covers human health and environmental effects of EDCs',[125] the final product placed a far greater emphasis upon wildlife, 'due to the fact that it is where the greatest impact is felt. The human health effects part was therefore correspondingly reduced'.[126] In other words unable to come up with sufficient evidence for effects upon humans, the committee simply decided to play this down rather than highlight the fact.

The document accepts that for humans 'a causative role ... has not been verified', and that 'for most reported effects in wildlife (however) the evidence for a causal link with endocrine disruption is weak or non-existing',[127] adding further that 'the mechanisms of pollutant-induced reproductive toxicity observed in wild mammalian species generally remain unclear but could also involve endocrine disruption'.[128]

Needless to say, many of the purported effects upon wildlife are themselves speculative. Two recent studies in the journal *Science* for example, have concluded that defects found in frogs throughout the Western United States, cited in the CSTEE document,[129] may be caused by a trematode, a simple parasitic flatworm, which infects tadpoles and leads to multiple or malformed hind legs.[130] No doubt some will now argue that chemical pollution was responsible for the increase in water snails which act as a key host of the parasite. But this is to reveal such views as based upon simple association, rather than the scientific analysis necessary to provide insights into causal mechanisms and metabolic pathways.

4.9 Reactions to the Dutch 'Consensus Group' study

The only logical outcome of adopting the precautionary principle is to accommodate the lowest common denominator. This effect was perfectly exposed by reactions to the outcome of the Dutch 'Consensus Group' study into the oral leaching of phthalates by adult human volunteers.[131] This coincided with a review of other data made available to the CSTEE subsequent to April 1998, such as an Austrian investigation which appeared to corroborate the results of the Dutch study, and a US Consumer Product Safety Commission report on DINP which showed that the high levels of release that had previously been used could not be reproduced.[132]

The final report by the Dutch 'Consensus Group' study, indicated that the possibility of a baby exceeding the recommended limits was 'so rare that the statistical likelihood cannot be estimated'.[133] It also revealed that previous estimates as to the amounts of time spent chewing on soft PVC products by children had been grossly exaggeratcd reducing this from 6 hours to a maximum of 3 hours exposure. A joint press release issued by Toy Industries of Europe, the European Council of Plasticizers and Intermediates, and the European Council of Vinyl Manufacturers, assumed that their position had now bccn vindicated.[134]

The Greenpeace view on the Dutch study at this stage was predictably antagonistic, arguing not only that it had failed in its task to develop a standardised procedure for

measuring the quantities of phthalates leached from PVC, but also, and more pointedly, questioning the integrity of the study group for having representatives from both the toy industry; Mattel, and the chemical industry; Exxon, upon its technical committee.[135] Exxon production facilities in particular had been systematically targeted by activists during their campaign, due to the company being the world's single largest producer of phthalates.[136]

A little over 2 months later however, the CSTEE announced its own views on the new research,[137] and now Greenpeace announced itself to be in full agreement.[138] A new and less extreme determination of the NOAEL value for DINP had been made available,[139] but as this yielded a value four times greater than that derived from the earlier research,[140] the CSTEE decided 'from a precautionary standpoint',[141] to maintain its use of the pre-existing value in its revised assessment. In other words the new evidence was quite simply ignored.

In addition, a study which had examined the effects of exposing female rats to DEHP in drinking water from day 1 of pregnancy to day 21 after the delivery, indicated damage to the testes of the offspring.[142] Despite water intake not having been accurately measured, the NOAEL derived was taken to substantiate an earlier low NOAEL value which had, at the time of the 24 April 1998 opinion, been ignored in favour of that derived from 'a well-performed study'.[143] Now however, the critical effect was taken to be the testicular effects which, although known at the time of the earlier opinion, had not been used.[144]

The recalculated margin of safety for DINP, whilst providing improvement due to the reduction in exposure time, remained below 100, thereby suggesting continued cause for concern. That for DEHP was now both lower than the previous value and also had a critical end-point assumed to be of greater relevance than hepatic peroxisome proliferation, thus actually raising the level of concern. These views were submitted to the DG XXIV Risk Evaluation Unit who in January 1999 suggested 'that the Commission should be looking for a phase out of phthalates as soon as possible'.[145]

4.10 Ever decreasing circles

The official view from the Commission was, by now, hardly contentious as a number of member states had, since the issuing of the last formal opinion on the matter in November 1998, finally been convinced by the various voluntary restrictions in operation, as well as pressed through the actions of environmentalists and consumer groups, to take matters into their own hands. They had started notifying the Commission of their intentions to introduce formal restrictions on such products, particularly those aimed at children under 3 and intended to be placed in the mouth. These included Austria, Denmark, Finland, Greece, Italy, Norway and Sweden, who were all expected to have formal bans in place by the middle of 1999.[146]

Whilst not the subject of this essay, it is interesting to note how the gradual collapse by member states across the European Community increased the pressure on America to follow suit. Despite one commentator's view that, 'Multinational companies are under attack everywhere – but nowhere more than in Europe',[147] it may yet prove to be the case that Europe is just a stepping stone to actions further afield. In the US the Greenpeace campaign took a longer time to become effective, in part due to the fact that DEHP had already formally been withdrawn as a precautionary measure in 1986. Also most pacifiers on the American market are made of latex rather than PVC.

Nevertheless concerned by the direction of events in Europe, the US Ambassador to the European Community, Vernon Weaver had sent a blunt letter to the EU Directorate General for External Affairs in February 1998, stating that 'a sudden ban on products which have been sold for years and which is based on incomplete and perhaps erroneous information could cause trade misunderstandings between the US and the EU'.[148]

With widespread restrictions in place across most of Europe by the autumn however, Greenpeace accelerated its American campaign, releasing a new report on phthalates in November 1998. This amounted to little more than a press release with

footnotes,[149] but led to a flurry of toy manufacturers, including Toys 'R' Us, issuing assurances, as to their intentions to phase out the products.[150]

Three days later, Health Canada, a Government consumer protection body, issued an advisory calling for soft PVC teethers and rattles to be removed from shelves and calling on parents and childcare facilities to immediately dispose of these toys.[151] Then, on 2nd December 1998, when the US Consumer Product Safety Commission (CPSC) released its latest results of a study on DINP which showed that 'the amount ingested does not even come close to a harmful level', it also requested industry, 'as a precaution while more scientific work is done', to remove phthalates from soft rattles and teethers.[152]

In those countries where there had been regulatory successes against toys, the campaign now moved onto medical devices. PVC softened with phthalates provides amongst other products flexible tubing, intravenous bags, catheters and protective gloves. It allows hospitals access to quality disposable items which are durable, flexible, inexpensive and safe.[153]

Yet building upon their earlier gains Greenpeace and others, such as Health Care Without Harm in the US, are seeking to limit or prohibit the use of PVC in healthcare facilities despite there being no evidence as to adverse effects, even amongst patients receiving dialysis for kidney disease, the group most exposed, and hence supposedly at risk, from such products.[154]

PVC plasticised with DEHP is the only flexible material approved by the European Pharmacopoeia for life-saving medical devices such as blood and plasma transfusion equipment.[155] The safety of these materials has been confirmed by more than 40 years of use, with five to seven billion patient days of acute exposure and one to two billion patient days of chronic exposure without any indication of adverse effects.[156] But again companies with a vital interest at stake, both private and public, have proven to be remarkably defensive in their stance.

Baxter Healthcare's own environmental manager in Sweden, Birgitta Lindblom admits for example that 'It's unfortunate that [the Stockholm County Council] have taken a decision that may have tragic consequences for many people. We probably have to shoulder part of the blame ourselves as we have not succeeded in informing the politicians in the County Council about the necessity for PVC in medical products'.[157] Yet Baxter, a world leader in healthcare products, has come under increasing pressure to develop alternative materials to PVC by its own shareholders,[158] despite seeking to indicate that 'in many applications, PVC remains the material of choice'.[159] Unfortunately one of those new materials is currently recognised as having odour problems and causing skin irritation.[160]

Unsurprisingly therefore the European Commission's CSTEE has already initiated investigations into the potential problems associated with their possible replacements.[161] Both adipates and citrates which have started to be used as substitutes in countries where phthalates are no longer available, have been criticised, not least for appearing to offer little toxicological documentation in the literature.[162] In this, the inevitable logic of the precautionary principle has come to the fore. The fear of phthalates has simply been transferred onto the supposed solution.

Finally, it should be noted that the campaign against phthalates forms part of a wider Greenpeace agenda against PVC specifically and the chlorine industry in general. Greenpeace has made it clear that it has no intention of calling a halt to its campaign subsequent to the demise of phthalates, having argued explicitly that 'PVC is a poisonous plastic – replacing phthalates won't solve the problem'.[163]

These views are based upon the fact that through the technical synthesis of certain chlorinated organic compounds, dioxins can be produced as a by-product. These have often been referred to as the most toxic man-made chemicals known, although this accolade is considered by many to be a gross exaggeration.[164] Only exposure to quite substantial doses has ever posed a threat to human health.

Substantial scientific evidence supports the view that dioxin contamination in the environment has dramatically decreased over the last twenty years to their lowest levels this century,[165] despite a three-fold increase in PVC production.[166] This has been helped by the more advanced technology now used for cleaning the products of combustion prior to release into the atmosphere.[167] Nevertheless part of the campaign against PVC medical products consists of highlighting the contribution which hospital waste purportedly adds to atmospheric dioxin levels. In fact PVC forms but a minor contribution, as the vast majority of dioxins are released through natural burning processes, such as forest fires or other wood combusting processes.[168]

5. Retreat from reason

5.1 The consumer agenda

In her speech to the Joint European Parliament and Commission Conference on Food Law and Food Policy in Brussels on 4th November 1997, Consumer Policy and Consumer Health Protection Commissioner, Emma Bonino, placed great emphasis on the increasingly important agenda-setting role of consumers. Suggesting that 'pressure from public opinion and interested bodies has often appeared to be the strongest driving force to guarantee that all necessary measures to protect public health are effectively taken',[169] she endorsed the enormous boost which such organisations had received over the course of the BSE debacle.

Earlier that year Agriculture and Rural Development Commissioner, Franz Fischler, had actively encouraged this approach in direct relation to BSE, indicating that, 'It is time we heard from the consumers. These are the most important people of all in this equation'.[170] Environment Commissioner, Ritt Bjerregaard, too has echoed this line, commenting in addition that, 'Retailers can play a crucial role. They are ecological gatekeepers'.[171] Clearly then, the consumer voice, in all its guises, is actively being sought and promoted across the board.

But whilst the advent of a better informed and more questioning attitude by consumers could be welcomed as long overdue, there appears to be a lack of serious

debate as to who 'the consumers' actually are. Such views appear to express an inherent assumption that there is a singular, or at least majoritarian, consumer voice or interest, which finds expression through existing consumer groups. It is worth noting that support for this approach as being either potentially effective or truly representative is not without criticism.[172]

Also, the broader climate within which the new structures, roles and procedures are arising should be recognised as one which prioritises caution over production, and risk over opportunity.[173] This is not to suggest a wilful desire to engender panics or impose restrictions, but rather that society as a whole has become increasingly risk-conscious, and even risk-averse.[174]

It has been argued that, 'We no longer choose to take risks, we have them thrust upon us',[175] and further that, 'Society becomes a laboratory, but there is no one responsible for its outcomes'.[176] As a consequence the drive to regulate, or re-regulate, to restore a form of moral responsibility, has become a strong one in the 1990s. But there is also a growing aversion to official regulation, which suggests that to be effective regulation may need to occur more informally, at the level of the firm or the individual, through self-imposed restrictions, which may be externally-monitored.[177]

Echoing this mood, Emma Bonino herself has suggested that, 'there are times when legislation does not happen, and we need to ask ourselves whether it is better to have nothing at all or self-regulation in some form or other'.[178] Again, in a similar vein, the *Financial Times* columnist Lionel Barber has astutely observed in relation to the Commission, that 'the flood of EU legislation accompanying the single market has slowed to a trickle. Today, Brussels is using peer pressure and voluntary codes of conduct to encourage minimum standards of compliance'.[179]

As a consequence a climate has been created whereby social control is increasingly exercised, or moderated through self-restraint, and marshalled by the explosion of highly vociferous, and inevitably self-appointed representatives of consumer interests. If left unchecked this can only lead to instances of overreaction and

unnecessary interference, justified through an appeal to a supposed consumer mandate.

5.2 The decline of rationality

Of even greater concern however, is the suggestion that 'consumers are not easily convinced by scientific evidence and advice'.[180] Indeed the Commission's own Consumer Committee,[181] responded to the 'Green Paper on The General Principles of Food Law' by proposing the application of the precautionary principle 'even where there is no known scientific uncertainty'.[182] Furthermore it argued that when the scientific evidence, which it recognised to be necessary, was available, that 'too great an emphasis on this may be undesirable from the consumer's point of view'.[183] These views again raise questions as to who 'the consumers' are, and how their interests are to be represented.

More damagingly they present science as just one of many 'readings' of the world. This suggests that no amount of experimentation or evidence would ever suffice to determine the outcome of an issue, and effectively recognises that the assessment of risk is a social, rather than a scientific, exercise. Such an approach merely extends that proposed by the official Commission documentation itself, which had called for the precautionary principle to be highlighted, and had even gone so far as to suggest that, 'there may be demands ... to go further in the area of the health protection measures than the scientific evidence suggests is necessary'.[184]

The 'First biannual BSE follow-up report', communicated to the European Parliament in May 1998, took this approach to its logical conclusion, suggesting the need for 'the possibility of taking into account minority scientific views',[185] in other words of accepting worst-case scenarios regardless of what the majority of scientists say. But when hard facts and analysis are replaced by individual views, emotion can take over from reasoned debate, and in a climate of heightened sensitivity to risk, the only possible outcome is to adapt to the lowest common denominator.

Reflecting the growing confusion and what has elsewhere been dubbed a 'retreat from reason',[186] Jim McQuaid, Director of Science & Technology for the UK's Health and Safety Executive, has suggested, in a general guest editorial about risk for a new journal, that 'there are then great difficulties in seeking a rational debate – rational in the sense of being based on a consensus on the evidence that matters and on the implications for a course of action that will engender support'.[187]

But a notion of reason as depending on 'consensus' and 'support', is not one which would have been recognised by Galileo or Darwin. It effectively allows for the eventual rejection of science altogether. The hard-done-by consumer has become the alternative voice which now has to be taken into account within all decision making. Such views, supported by the supposed authority of the precautionary principle, and endorsed by environmentalist and feminist critiques of science, have increasingly become accepted by all social actors. They look set to have a profound impact upon the scientific community, as well as the business and social worlds dependent upon it.

If scientific reason based upon quantifiable and repeatable evidence, is just one amongst a number of competing views, then it need no longer be the arbiter for decision-making, particularly when the concerns of consumer-groups or environmentalists have been raised. As Environment Commissioner, Ritt Bjerregaard rhetorically asked in a speech given at a brainstorming workshop on chemicals in the EU, 'Should a lack of sound scientific evidence stand in the way of action?'[188] This echoed a similar call for action expressed by Dr. Ann Soto, an early collaborator of Theo Colborn, during a 1996 BBC Horizon programme on EDCs, when she exclaimed, 'The stakes are so high here that I don't believe we can wait'.[189]

5.3 The precautionary principle

The precautionary principle departs from the usual scientific rationale in that it reverses the burden of proof. Science proceeds on the basis of evidence, which is a positive finding that is reproducible. The precautionary principle on the other hand, postulates that all assumptions can be considered valid unless the contrary has been

demonstrated. This negative proof is impossible to ascertain. The precautionary principle thus contributes to the deconstruction of the process leading to scientific opinion, since it distances conclusions from evidence-based rationale. It further considers that valid decisions can be made on beliefs without requiring solid evidence.

An international agreement on the precautionary principle was reached during the United Nations Conference on the Environment and Development (UNCED) in Rio de Janeiro in 1992, becoming part of Agenda 21. This is laid down for environmental matters within the European Community, in the Maastricht Treaty under Article 130r. Recently the Commission's Consumer Committee has argued for the principle to be extended into the realm of food law.[190]

A Commission communication of December 1996,[191] announcing the review of directive 90/220/EEC concerning the deliberate release of genetically modified organisms into the environment now seems set to bring a much needed process of clarification about these issues to a head. A detailed communication on the precautionary principle is also expected shortly.

The principle is subject to much debate, particularly in relation to the tension between demonstrated actual risk and anticipated plausible risk, as well as the problems associated with enforcing what are inevitably variable standards.[192] A further problem of using the precautionary principle is that all results inevitably become provisional.[193] Targets are relative, and no conclusive outcomes can ever be reached, as situations continuously await clarification through further analysis. In this respect the investigations into phthalate toxicity have been perfect exemplars.

Such an approach has also inevitably encouraged the release and use of results prior to peer reviewed publication. In addition, frank and open discussions held by interested parties are increasingly entering into the public domain through a desire for greater 'transparency'. But the views expressed through both of these means are not the same as reasoned reflection or verified evidence, and should therefore not be used

in the establishment of policy, as was for instance the case in the then UK Agriculture Minister's decision to ban beef on the bone.[194]

Of more direct concern to the main subject of this paper has been the fact that some supposed research into the endocrine disrupting properties of phthalates was released through the media, rather than the academic literature. Indeed in one such high-profile instance, a full peer-reviewed version of the work had still failed to appear over two years after raising significant concerns through articles in the popular press,[195] despite assurances that the work 'is still in the phase of being written up'.[196]

Dr. André Prost, Director of Non-Communicable Diseases for the World Health Organisation Headquarters in Geneva, has also expressed reservations as to the use of the precautionary principle arguing that, 'precaution becomes a political instrument used on a selective basis by certain sectors of society in support of their own beliefs'.[197] He goes on to suggest that situations can only be made worse through the advent of a 'victimisation culture', concluding that, 'If the dilemma facing the policy-makers results in a systematic application of the precautionary principle, it will lead to abstention and paralysis in innovation and technology development'.

Implicit within the Commission's approach however, is the assumption that the precautionary principle is a zero-cost, or something-for-nothing option. In reality, apart from the narrow economic costs to those businesses directly concerned, there is a far greater social cost which has yet to be taken into account. At an immediate level replacing plastic medical devices or toys, opens the door to the dangers of injury and infection from replacement materials, which are either less flexible or have been subject to less scrutiny. Phthalates are amongst the most understood of organic compounds. There is simply not a single shred of evidence that they have ever harmed any human being. Similarly, banning toys from chocolate eggs or crisp and cereal packets would quite simply make bad law. The statistical evidence and logic show that it is the food items themselves which should be banned, or alternatively all small objects.

More important has been the amount of time and effort, let alone cost, expended by all sides of this dispute. Whilst the attention of large numbers in the scientific community and others has been turned onto these products countless numbers of people, right across the globe, continue to die of diseases for which cures might be found if only the resources expended elsewhere were to be made available.

Finally, the panic and hysteria which has been created around these issues reflects a far wider loss of trust within society rather than any inherent problem with the products themselves. The real cost will be that of a generation of young people brought up to live in fear from the dangers posed by harmless products, and questioning the ability of science to cast light on such issues. A broader climate of fear is being created which in turn will lead many to an even more misguided assessment of risk and greater inflexibility towards innovation and change.

6. Conclusions and Recommendations

1. A widespread and paralysing sensitivity to 'risk' has entered the consciousness of politicians, public officials, the media, manufacturers and retailers. The continuous elevation of risk over opportunity, and caution over production, can only damage business, reasoned debate and ultimately, consumers. Further research into, and public debate about, this phenomenon, to which there can be no easy solutions, is needed with a view to countering it.

2. The BSE debacle has catalysed a sea-change in the way that the European Commission handles consumer policy and consumer health protection matters. In particular the 'precautionary principle' has explicitly been adopted as a guide to analysing such issues, but this is not a zero-cost option either financially or socially. An urgent, multi-national and public critique is needed to explore the usage, limitations and costs of this approach.

3. Growing aversion to official regulatory interference is creating a climate whereby social control is increasingly exercised, or moderated, through self-restraint. This 'hidden' self-regulatory framework is beginning to have an affect as real as its

formal legal counterpart. Efforts need to be made to measure and assess the impact of this, both in quantitative and qualitative terms.

4. The attack upon scientific rationality stemming largely from environmentalist and feminist critiques needs to be rigorously examined. In particular, more investigations need to establish the limitations of consensus, the plausibility of holding simultaneously competing views on an issue, and the relationship between individuals, society and the natural world.

5. There is a growing tendency, amongst a range of social agents, to pre-publish outcomes of scientific inquiries (some of which never achieve peer review), or to release the frank and open deliberations of scientific committees in the pursuit of 'transparency'. If we are not to curtail such discourse, the views thereby expressed need to be more clearly promoted as opinions rather than as facts.

6. In the absence of a wider and more polarised political debate, the media has found itself promoted to a role of increasing social significance as a source of comment and opinion. As a consequence, far higher standards of journalistic competence are to be expected than previously, particularly within areas requiring technical and/or scientific expertise, if the media is to be perceived as establishing a degree of objectivity.

7. Existing consumer groups are far from representative and therefore the agenda they express needs to be weighted accordingly. Research is needed to present alternative and counter-balancing arguments from those who perceive the benefits of development. This would prevent consumers from being used as an ideologically driven stage army and, in many instances, allay unnecessary anxieties.

8. The interests of private firms have increasingly come under the scrutiny of public bodies, and their behaviour affected in accordance. This process is 'one way', as attempts by the private sector to influence public debate are perceived as self-

serving and hence unbalanced. Attention needs to be given as to how counter-balancing views from private actors and agencies can effectively enter into public discourse.

9. The existing civil liability system should be reviewed with a view as to its appropriateness for dealing with those instances when firms are found to be acting negligently with respect to consumers. This system should handle matters efficiently and at a scale commensurate to the problems created. Any proposed new regulatory mechanisms should first be examined for their hidden social, as well as economic, costs.

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THE DEMORALIZATION OF SCIENCE

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'*[W]henever society is in trouble it begins to moralize*'. (1)

The title of this paper may seem perverse. It could be argued that both science and the scientific establishment today are more moral – or at least conscious of the need to become so – than at any previous time in their history. It has been suggested that the old paternalistic formula labeled DAD (decide - announce - defend), is gradually being replaced by a more inclusive approach that seeks to engage with the public on science and scientific decision making issues at all levels.

Calls for greater inclusion of public views or 'values' within the scientific process have come from many quarters including, in the UK; the Royal Commission on Environmental Pollution (2), the House of Lords (3), the Parliamentary Office for Science and Technology (4) and the authors of an influential Economic and Social Research Council publication (5). Such inclusivity, it is held, will make for ideas and institutions that are more people-centred and ethical in their outlook.

More recently MPs on the Commons Science and Technology Committee announced that they were to examine the Royal Society over allegations that Britain's top scientific body is too 'elitist' and 'out of touch' (6). A plethora of new ethics committees, commissions and codes of conduct have also been established to assess both the content of the science that is carried out as well as the purposes of those who undertake it.

Science, it appears, is breaking out of a reductionist paradigm to examine more global, holistic processes pertaining to its interface with society. Parenting, pollution and public health form as much an element of the content of scientific investigation today as do genetic engineering, inorganic chemistry or particle physics. These, more social and ethical orientations, are held to be both good for society and good for science.

But the consequences of this sea-change in outlooks and attitudes has yet to be assessed. Some have questioned the purported effectiveness of negotiated dialogic processes (7). Others have argued that these changes have been driven in large part by fear and confusion rather than confidence and direction. If so, then they may end up contributing to a more widespread disorientation and demoralization in science and society, rather than generating a new sense of purpose and trust.

Science and Society

Technological change, enhanced longevity and social development are all testament to the tremendous impact science has had upon society. In addition modern societies are necessarily dynamic and science is often at the forefront of upsetting the status quo. But – even when its benefits are questioned – the emphasis usually given as to the importance of science for effecting social change is one-sided (8).

Science, as well as transforming society, is itself a product of society. Newton understood this when he wrote in his famous letter to Hooke of 1676; 'If I have seen further it is by standing on the shoulders of Giants' (9). Science comes with a history. Its advances, as well as being limited by material reality, are circumscribed by the state of the society it develops within – including its ambition and imagination – or lack of these.

The world of antiquity yielded many intellectual insights, but constrained by its social structures these proved to be of limited practical consequence (10). Then, from 400 AD to 1000 AD Europe was, in scientific terms, a backwater. Some of the high points of Greek science were kept alive and developed in the Arab world but the feudal order was largely static, positing a relationship between humanity and nature that was conceived as fixed for all eternity (11).

It was the Italian Renaissance that first began to change and then challenge the old order. Built largely upon the development of trade, it raised new demands on individuals and society, encouraging invention through the merger of intellectual activity with practical needs. With the discovery of America in 1492 trade routes began to shift to the Atlantic seaboard. England, Holland and France now began to accelerate as important centres of innovation driven by their own commercial interests.

Within a few centuries in addition to the development of the use of perspective in art and the construction of Brunelleschi's Dome in Florence, the world had been circumnavigated, its largest continents discovered, the compass, telescope and printing press invented. The world would never be the same again (12).

By 1660, when what was to become known as the Royal Society was founded in London, the ecclesiastical domination of the Holy See in Rome had been broken, whilst the trial and execution in 1649 of the monarch, Charles I, was fresh in people's minds. Accordingly, its founders adopted the Latin phrase; 'Nullius in Verba' ('On the Word of No One'), from the Roman poet Horace – the son of a freed slave – as their motto.

This was a bold statement of intent, as well as reflecting the political mood of the time. The champions of the new philosophy wished to emphasise the 'Experimentall Learning' that was central to their outlook – but also their reluctance to take any pronouncement upon trust. The dogma of Pope and King once dispensed with, acquired insight could henceforth truly aspire to replace received authority (13).

Science now formally established itself as a new source of authority. As well as delivering remarkable achievements it was to be a practical battering-ram with which to challenge perception, prejudice and power. But this was a reflection and pronouncement of faith in humanity itself rather than merely in science. Social development had raised human expectations as to what was possible. It had given humanity confidence in the power of its own reason – a factor that then proved of significant importance to the development of science.

The Scientific Revolution represented the triumph of rationality and experimentation over the superstition, speculation, diktat and domination that had gone before. It was more than simply an advance in scientific knowledge – it was part of a wider shift in attitudes and beliefs. The Scientific Revolution was the product of dynamic social progress, as well as becoming an essential contributor to that progress. But just as the initial dynamic behind science was social change, so social change, or more particularly the lack of it, could circumscribe it too.

The vision of nature and humanity now developing, was driven by aspirations for freedom and equality. These concepts represented the needs of a new elite – the commercial, and later industrial, capitalist class. But as such, society would now encounter new constraints, both from the on-going and vociferous rejection of the old religious and monarchical orders it had supplanted, as well as from the inherent limitations of this new social system and the particular world view of its proponents.

From 1789, at the time of the revolution in France, and later due to a growing threat from the dispossessed, promises of freedom, equality and progress came to be seen as highly problematic as they highlighted the failure of society to live up to those promises. The new establishment, in addition to social and political reformation, now needed to circumscribe the claims and effects of scientific enquiry, reason and progress upon society.

A model of science developed known as positivism, which consciously sought to facilitate the restoration of order (14). Reflecting the simple mechanical processes emerging in industry, it posited that science operates on objective, absolute and ascertainable facts connected by rigid links of cause and effect (15). But this view of a clockwork universe with its uniform rules and truths being revealed by pristine individuals disinterestedly recording the underlying workings of invariable natural laws does not stand up to simple scrutiny.

It was a model of science still worthy of esteem – but robbed of any association with historical change and development. The link between the advance of science and that of society was lost. Many of today's confusions about science stem from the misapprehension that this approach, rather than being a limiting constraint, somehow continued the Enlightenment tradition.

Through the Victorian age a compromise was effectively reached whereby science could still develop – quite rapidly at times – but it no longer systematically challenged the old authorities. Darwin's secular universe cohabited that of the bishops but did not seek to tread on their patch. Scientists were held in high regard, but science was now decoupled from the political aspiration to transform society – although its consequences continued to do so.

Over the course of the twentieth century, philosophers of science gradually placed greater emphasis on the uniqueness of individual experience. This corresponded intellectually to the tremendous changes, impasses and uncertainties they found themselves caught up in. Two world wars, a depression and continuing poverty and conflict in the developing world generated doubts as to the possibility of universal human progress and a 'fear of the future' (16).

Accordingly, those seeking to defend science – including many in what we might now consider to be the scientific establishment – sought to separate it further from social and political transformation by increasingly placing it into a narrowly technological or reductionist straitjacket. Harnessed to the pursuit of American security through the Manhattan project and the Apollo missions, science also created opponents for itself amongst its old allies. The political left, that had traditionally supported the liberatory potential of scientific advance, now came to view it with increased suspicion.

They argued that aspiration itself, rather than its failure – as evidenced in the collapse of confidence in social progress – had turned nature into 'mere objectivity' for humanity (17). This attitude could then be found reflected in the subordination of people and countries and was increasingly facilitated through the use of instrumentalist technologies. Science was seen as the amoral steamroller of a dispassionate new modernity crushing communities and tradition.

What is so poignant about the modern disenchantment with science is that it has emerged at a time when its achievements are without precedent. But without social progress the direction and purpose of science has become uncertain and once science had slowed down in relation to what it could do, society began to lose faith in it. Behind the current crisis of science, lies a collapse of confidence in humanity and the possibility of social progress.

Risk and Morality

Clearly, science is far from being value free. It invariably reflects the dominant values of the historical period it finds itself in. But if, as Marx would have it; 'The ideas of the ruling class are in every epoch the ruling ideas' (18), then it is worth reflecting upon what might happen to a society within which the establishment no longer holds distinct ideas and values. The unprecedented convergence of the political left's loss of faith in science and social transformation with the political right's traditional misgivings have lent themselves to a pessimistic outlook leading to the rise of an exaggerated risk consciousness (19).

Despite being two sides of the same coin, risk is now continuously emphasised over opportunity and as a consequence safety and precaution have become new organising principles. Although the world has become more complex and the pace of change much faster, the perception of losing control has been accentuated by a society that rejects uncertainty and change.

The convergence of left and right and the ensuing depoliticisation and demise of political debate has also coincided with and facilitated the breakdown of many forms of social organisation. With the decline of families, neighbourhoods, communities, religious congregations, informal associations, trade unions, political parties or other institutions to be part of, it has become far easier for people's subjective impressions of the world to hold sway (20).

Some have argued that old style moral panics driven from the top-down with a view to cohering society appear to have been replaced by more nebulous social anxieties involving a wider range of public interests and constituted by a vast number of free floating threats, 'with new threats always lurking in the background' (21). Unsurprisingly therefore, the authorities increasingly seek to provide assurances against those they believe to be self-serving or incautious, from profit-seeking multinationals down to feckless individuals.

It is commonly assumed that the media have a significant role to play in such matters by making us more aware than previous generations of the various hazards we face. Certainly, in the absence of political debate, the media do have a more prominent role, but what is often overlooked is the extent to which it is politicians, regulators and even scientists themselves who – charged with ensuring our safety – have now adopted a more ambiguous attitude to the value of scientific evidence as against public opinion.

Our heightened awareness of risk now latches on, not just to new products and processes, but also reinterprets age old activities that were once unquestioned. The sheer range and number of issues now perceived as risky – from beef to bullying and from sex to sun-screen lotions – suggests an underlying process beyond their intrinsic properties that we should seek to understand. It would appear that such problems are in abundant supply, limited only by our imagination.

Social and institutional erosion is often presented in an uncritically positive manner as a celebration of identity, choice and personal preference. Patronage and conformity have, quite rightly, been consigned to the past. But there is now a danger that the old culture of unthinking deference will be replaced by an equally incapacitating culture of unnecessary fear. Without the discipline of, and an active engagement in broader concerns, individuals have also been left incredibly isolated. This social and political disengagement has been reflected in and further fed public disenchantment with science.

This mood of cynicism has in turn driven official concerns. But rather than recognising that a healthy scepticism in science is born of an active body politic, there is now a conscious attempt to artificially restore trust in science and scientists through enhanced participation with a view to relegitimising democratic processes across society. Foremost amongst the new mechanisms proposed to regulate society and attenuate our fears has been the precautionary principle. This latter suggests that in the absence of definitive scientific evidence to the contrary, measures to protect the environment or human health should be taken whenever any threat of serious or irreversible damage to either may be present.

Critics have countered that, as scientific certainty is never possible and that irreversibility is inevitable, the application of the principle is a recipe for paralysis. Further, defining the extent of evidence necessary to justify concern, as well as what measures should be invoked and by whom, are considerations lending themselves to significant political, commercial and non-governmental manipulation. Nevertheless, due to the inflated perceptions of risk, the principle is set to play an ever-increasing role in scientific decision-making.

Unsurprisingly perhaps, under permanent attack and held open to constant questioning, many institutions and experts now seem to lack self-belief, or even a clear vision or purpose. This has led many into overzealous reactions to events or perceived fears. Policy reversals appear increasingly commonplace, thereby sending confusing signals to an already sensitised public.

The Slovenian philosopher and psychoanalyst, Slavoj Zizek, has characterised 'endless precautions' and 'incessant procrastination', as 'the subjective position of the obsessional neurotic'. Far from indicating a respectable 'fear of error' he suggests, this approach 'conceals its opposite, the fear of Truth' (22). But a pursuit of truths, however temporary, lies at the very heart of scientific inquiry. Scientists do not just record and measure, they assess, infer and prioritise as well as experimenting and transforming. It is these active and judgemental modes that are most at risk of being dissolved and lost today.

Ironically, to the extent that social life has increasingly become reorganised around risk, it has recreated a limited sense of moral purpose (23). By using the technical language of risk assessment this new morality does not announce itself as such. Whilst not preaching in an old fashioned way, the new prescriptions for personal and professional conduct administered by unaccountable agencies and regulatory bodies are no less intrusive than the moral codes of previous generations. Unlike scientists however, these new bodies have a more direct relationship to the state and by encouraging caution and self-limitation they set themselves against the very motive force of science – a desire to explore and experiment.

Equivocation and Inclusion

Nowadays, even when the scientific evidence is fairly categorical, scientists have learnt to be much more equivocal about the outcomes of their research. Emphasis is increasingly placed upon the uncertainties rather than the potential benefits of products and procedures. This has occured because of the onslaught of calls for scientists to show 'more humility' than in the past. It is also due to the perceived need to incorporate 'lay and local knowledge' as well as 'wider social interests and values', as identified earlier (24).

Such developments had been evolving steadily over the previous decades but were catalysed to a new level by the BSE (bovine spongiform encephalopathy) debacle of the mid-1990s. They were then consolidated through the process of preparation and prompt endorsement of *The Report of the BSE Inquiry*, also known as the Phillips report (25). In the interim a number of other major risk episodes achieved public prominence and notoriety, including the Stewart inquiry into the safety of mobile phones, the release of genetically modified organisms (GMOs) into the environment and, more recently, the furore over the MMR vaccine.

The Phillips report marked the acceptance of the precautionary principle as a central tenet of future scientific policy making within the UK. Irrespective of which formulation is used (26), the precautionary principle has the consequence of emphasising worst case scenarios thereby encouraging a tendency to overreact to events and, more insidiously, elevating public opinion over professional expertise and subordinating science to prejudice. Accordingly, debates over 'strong' or 'weak' versions of precaution, or over whether it is a 'principle' or merely an 'approach' fall wide of the mark (27).

BSE is remarkable for acting as the basis and justification of much that has happened since, in many other, often unrelated areas. Yet, to this day both the evidence and the outcomes remain essentially inconclusive. In the history of the relationship between humanity and nature this episode is unlikely to merit more than a footnote. Domesticated animals have been a potent source of infectious disease before, with measles, mumps, whooping cough, smallpox and tuberculosis all crossing the species barrier at some stage with intermittently catastrophic consequences and mortality rates of around 90 percent (28).

The link between BSE and variant CJD (Creutzfeldt-Jakob disease), a degenerative brain disorder in humans, has yet to be proven and what little evidence there is suggests there to be no connection. It is almost as if, desperate in their attempts to show the public their willingness to act, both the government and many leading scientists sought to pander to the popular mood in the belief that this would restore some kind of trust. Thus, since neuropathologist Sir Bernard Tomlinson announced in December 1995 that he had stopped eating hamburgers and health secretary Stephen Dorrell announced a possible link between BSE and vCJD to the UK House of Commons in March 1996, concern about contaminated beef has been rife.

Significantly, public concerns about BSE and its transmissibility to humans bore little relation to its actual incidence. The Phillips report itself recognised that actions taken by Ministers as early as 1988 had – if not necessarily being comprehensive or completely enforceable – stemmed the epidemic. Thus the ban on ruminant protein in cattle feed led to the number of BSE cases by year of birth falling from a peak of 36,861 in 1987 to 1 in 1996, the year of the panic (29). Despite early predictions of as many as 500,000 cases of vCJD per annum there have to date been approximately 120 cases with evidence of a tailing-off. It is also not entirely evident that all of these can be directly attributed to eating beef.

In a remarkable article in the British Medical Journal on 13 October 2001, George Venters a public health consultant from Scotland queried much of the prevailing orthodoxy (30). Using the standard epidemiological criteria of plausibility, strength of association, consistency, quality and reversibility – analytical tools established by Austin Bradford Hill and Richard Doll's famous observations on the link between smoking and lung cancer in the 1960s – Venters questioned much of the evidence for a link between BSE and vCJD.

If anything, experiments have suggested there to be a barrier between the transfer of prions from cattle to humans, whilst the incidence of vCJD would have been expected to rise anyway since systematic monitoring for it first started in 1990. The authors of the Lancet article that first described the new variant recognised this latter point, noting that the 10 index cases 'would not ordinarily have been referred to our Unit' (31).

Venters has suggested that there was 'a process of hypothesis co*nfirmation* rather than hypothesis *testing*' and further that 'evidence that has been awkward or contrary, has either been played down or just outright ignored', accusing scientists and health experts of falling for 'the belief that multiple pieces of suspect or weak evidence provide strong evidence when bundled together'. 'It is' he continues, 'almost like they made up their minds about a link between BSE and nvCJD and so they set about confirming it' (32).

Irrespective of the evidence then – or the lack of it – both government and scientists reorganised their operations according to the worst predictions. *The Report of the BSE Inquiry* is quite explicit as to this, arguing that despite the lack of evidence for a link between BSE and vCJD, 'The importance of precautionary measures should not be played down on the grounds that the risk is unproven'. Certainly BSE acted as the catalyst to a major restructuring and policy reorientation both at the heart of the European Commission and within the UK and the new approaches developed therefrom have already begun to encroach into other areas (33).

But such an approach will itself have a dramatic social cost. As the US risk expert Chauncey Starr argued in a recent article; 'some of today's hypothetical fear-based issues could develop into long-term doctrines that will be politically enduring, difficult to modify, and seriously destructive', comparing these to historical situations 'arising from the amplification of a minor popular concern into an apocalyptic dogma' (34).

One of the other distinctive features of the BSE inquiry was the prominent role it gave to the relatives of the victims of variant CJD. Though this innovation attracted little comment and less criticism, it was a significant development, reflecting the preference for sentiment over rationality. It is not at all clear how the experience of losing a relative yields a privileged insight into the nature of a disease, or any great wisdom into how to prevent or treat it. While official recognition of the families of victims reflects public acknowledgement of the particularly distressing effects of CJD, their involvement in the wider aspects of the inquiry implicitly devalues scientific, clinical – and even political – expertise.

These two key features – an appeal to worst case scenarios and the inclusion of lay views – were paralleled in the Stewart inquiry into the safety of mobile phones, to quite a striking degree. In a soon to be published comparative study of national responses to perceived health risks from mobile phones, researcher Adam Burgess notes that; 'Almost by definition, what is a risk 'issue' is itself determined by the extent and character of government reaction', continuing; 'There is also a more particular sense in which official risk responses potentially animate and cohere diffuse anxieties' (35).

According to this analysis, far from heading off potential accusations of complacency through a proactive strategy to 'keep ahead of public anxiety' (36), the UK government's precautionary response through the establishment of the Independent Expert Group on Mobile Phones led by Sir William Stewart, actually stimulated risk concerns, which increased subsequent to the inquiry. This is, according to Burgess, because 'even balanced public information on negligible risks tends to increase anxiety, on the assumption that *there must be something to worry about if the government is taking action*'.

In a manner akin to the Phillips inquiry, Stewart and his panel acknowledged that 'the balance of evidence does not suggest that mobile phone technologies put the health of the general population ... at risk', but nevertheless the study called for a £7 million programme of further research and for leaflets to be included in future purchases of mobile phones warning of the possible risks. This latter led one commentator to conclude that 'in its rush to be open about communicating risk to the public, the government has simply forgotten that there was no risk to communicate' (37).

Whilst not identifying any risk, other than that of using a phone whilst driving a vehicle, these leaflets suggest that the best way to reduce risk is to use the phone less. They also advise taking note of the specific absorption rate (SAR) of phones, which measures their heating effect. This is despite all sides to this argument accepting that such heating is not the problem. It would suggest that recording anything that was easy to measure became the key concern irrespective of the fact that it did not relate to the still to be demonstrated 'non-thermal' effects.

Again, the conclusions of the Stewart inquiry make remarkable concessions to the need to incorporate perceived public concerns and prejudice. Following the recommendations in the report it will now be the case that future research will be required to take account of non-peer reviewed and anecdotal evidence. Indeed, the inquiry itself went a considerable way to acknowledging and accommodating to such concerns by extending its remit beyond a review of the latest scientific knowledge on mobile electromagnetism to the non-scientific terrain of concerns pertaining to the siting of masts or base stations.

In a similar fashion the latest Royal Society study into the safety of genetically modified (GM) crops, elevates these same two features – the exaggeration of risk beyond the available evidence and the by-now almost mandatory concession to the inclusion of public concerns within such assessments. Despite the report finding that 'there is no reason to doubt the safety of foods made from GM ingredients that are currently available, nor to believe that genetic modification makes food inherently less safe than conventional counterparts' the Royal Society gave prominence to new hypothetical concerns in an attempt to improve its standing in the eyes of the public. This prompted a recent review of the study to comment that 'it would appear that the Royal Society has not become more hesitant about the safety of GM crops and food – just more hesitant about saying so' (38).

Despite some of the members of the working group that produced the report raising their concerns as to the 'extraordinarily selective' media coverage it elicited, it is the case that this emphasis was triggered by the Royal Society's own press release, which was in turn influenced by the hesitancy of the report itself. It would appear that the scientists concerned now want to have it both ways, saying to fellow scientists, government and industry that there is no reason to think that GM is unsafe, whilst assuring the public that safeguards should be strengthened. This incoherent approach is far more likely to backfire than reassure and recreate the trusting relationship they desire.

Many other examples of equivocation and obsessions with the inclusion of assumed public concerns by senior government officials and scientists abound. They are now the norm rather than the exception. Cases range from the Royal Society report into 'Endocrine disrupting chemicals (EDCs)' (39), through the European Commission's restrictions on phthalate plasticisers (40), to the official inquiry into the Bristol Royal Infirmary children's heart surgery unit (41). Variously they cite 'purported effects' or 'public concern' as their instigators before exploring the limited evidence available as to any real problem and concluding with some kind of cautionary comment or call for public engagement.

The trend towards encouraging the public to decide on all matters scientific reached its logical denouement with the refusal of parents to allow their children to be vaccinated with the MMR (measles-mumps-rubella) jab. Triggered by the exaggeration of a bold research paper that proposed a link between the vaccine and autism, the public understandably demanded to be able to opt for separate inoculations, which were not readily available through the UK National Health Service. Whilst highlighting the vast differential between a national immunisation programme and an uncorroborated study based on a dozen cases, the fact that if the measles element of MMR was problematic then a separate measles jab might be too was rarely questioned.

Instead, hoist by its own petard of criticising scientists and the medical profession, as well as promoting the assumption of personal choice in a health-care market, the government were faced with the first significant outbreak of measles for many years in south London where vaccination rates had fallen significantly below those that could guarantee a herd immunity (42). The government then had to set about educating parents as to the real risks and issues involved, often in an exaggerated manner, despite having done much to undermine public confidence in science in the first place.

But one of the real problems facing both government and scientists today is that the public tend to be bombarded with too much, rather than too little, information. And, having projected their own insecurities onto the public, it is not at all evident that the latter will trust reassurances coming from any proposed altemative system of regulation any more. The promotion of the virtues of the risk society as a new moral framework for the 'third way' society would appear to have its limitations.

Values and Costs

Whilst science is necessary to inform democratic decision-making within society, it is not in itself democratic. The contemporary preoccupation with the need for 'public participation' within scientific decision-making threatens to erode this distinction and demoralize scientists.

Rather than embracing uncertainty and change as did previous generations, today we appear to reject them and highlight the risks. What has really changed is not so much the scale of the problems that we face, but the outlook with which society perceives its difficulties, both real and imagined. These issues, whilst different, cannot really be described as greater than those facing previous generations, nor are they uniquely insurmountable. But our collective will and imagination to resist and overcome them appears to be much weaker.

The challenge to the old elites of society is possibly understandable but the form it has taken – an attack on expertise per se – is inexcusable. Dependent on the particular inquiry concerned this challenge has been expressed in various forms, though largely reflecting a similar language. The BSE inquiry condemned the 'culture of secrecy in Whitehall', whilst the Bristol inquiry under Professor Ian Kennedy attacked 'club culture' within the medical profession and outside the world of science the Macpherson report into the murder of a black teenager, Stephen Lawrence, in a south London street challenged a 'canteen culture' within Britain's police force.

Irrespective of these particular labels, the specific prescriptions have all proven to be remarkably similar – the need for greater openness and transparency through the inclusion of members of the public or public 'values' into the decision-making process. But whilst consensus-seeking may go down well amongst woolly-minded bureaucrats in Whitehall and Brussels, it is a process largely unsuited to the needs of scientific inquiry.

Indeed, whilst civil servants, doctors and scientists have been denigrated, what has been less discussed is the extent to which alternative sources of authority have accordingly been elevated. It is ironic that those who would not trust scientific expertise now have to invest their faith in a new breed of expert, who are not required to submit their work for peer review or other ways of establishing the authenticity of their claims, and whose pronouncements are not open to any kind of experimental verification whatsoever.

What's more ethics committees and special agencies have their members directly appointed by the UK government and are thus even less accountable to the public than politicians. While it postures as radical and democratic, this outlook invites a more authoritarian style of government over a more fatalistic, nervous society.

Clearly, there is a tension between those who wish to include the public in order simply to keep them informed or on-side (43), as opposed to those who genuinely hold that the public voice is a missing element for establishing scientific objectivity or accountability. This latter view appears to present a narrowly empirical model of science whereby truth, or an approximation to it, is to be reached through an averaging out process of competing interested parties.

One significant difficulty for all concerned is as to how to include an increasingly disengaged public into such processes. The claims of various advocacy groups to being representative of this wider audience has increasingly been questioned (44). At best such bodies have a passive membership comprising a few percent of any national population (45). Whether directly belonging to such a lobby, or being a hand-picked and carefully vetted outsider, such an approach remains broadly unsatisfactory, especially as there appears to be a remarkable convergence of views between officials presiding over such processes and those of the public who participate within them.

To get around these limitations, there has in recent years been much greater emphasis placed upon the use of quantitative research, such as polls and surveys, as well as qualitative research, including more in-depth interviews, focus groups and other stakeholder dialogue forums. The danger here is well documented. It includes projecting views and values through question-framing and/or selectively finding those selfsame views and values amongst the responses. Even identifying 'what is not being said' (46) requires prejudicial priorities amongst interviewers.

Hence, there is a great danger that, rather than recording the wishes of the majority, the inclusion of public views or 'values' merely records a small subset of these, which researchers find reflected back at them. Indeed, in the past, much of this research would have been called public opinion. Opinions are open to being challenged, interrogated and altered. Labelling these as 'values' seems to have been a conscious attempt to set them apart from further inquiry.

Ironically, in many instances, it is now corporations, governments and the scientific establishment itself, which appear increasingly willing to take on board public concerns into the decision-making process. The reasons for this may be varied, including a misguided attempt at obtaining greater stability despite the likelihood that policy determined according to popular prejudice will be far more precarious. Another clear and perverse motive or outcome is an unwillingness or inability to be held independently to account. This reflects an abdication of leadership and responsibility and a preference to deflect, diffuse, shift or share the blame should things go wrong in the future (47).

Adhering to an increasingly cautionary and restrictive approach under the banner of inclusion may also preclude wider social changes that require ambition and experimentation.

It is precisely because the appearances of nature are deceptive that we need the methods of science – which commonly yield findings which contradict popular impressions and established traditions. Science is not about making us feel good. Many of its findings can be disconcerting, yet we owe much to those who took a stand against public perceptions and challenged prevailing prejudices. These principles are jeopardised by the philistinism of the contemporary political elite – a trend towards which many scientific authorities are, unfortunately, acquiescent.

Far from adding to the richness of scientific inquiry, lay views tend to focus on the immediate, rather than a more mediated or critical appreciation of available evidence. The ability to understand or transcend issues requires rather more diligence and discipline than inclusion and inspiration. To relegate the experienced and considered judgements of scientists to being just another point of view suggests that they merely represent a form of sectional interest. This forces an emphasis on quantity over quality in science that allows for manipulation through subjective impressions and vested interests.

Re-labelling private views as public 'values', and insisting that these should be included into the policy-making process simply aggrandizes what remains personal opinions. These dilute the science, denigrate the scientists, and both patronize the public and pander to the conceit of those who claim to represent such 'values'. The elevation of opinion over professional expertise subordinates science to prejudice. Official recognition of these perceptions and beliefs then implicitly devalue the insights acquired through detailed experimentation and detached consideration. This undermines the confidence of scientists and marginalizes excellence.

Far from being egalitarian, this is an affront to a real democracy based upon reason. Real exclusion begins when prejudice or opinion are taken to be a sound basis for decision-making. Tragically, it would appear that many individuals and institutions within the scientific establishment have themselves abdicated their responsibility to judge and be criticized. Far from relieving them from pressure, this paralyzing diffidence will only further discredit and demoralize their profession.

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The Precautionary Principle in the 20th Century: Late Lessons from Early Warnings
European Environment Agency. Earthscan Publications, London, 2002. ISBN 18-5383-893-4

Issued under the auspices of the European Environment Agency (EEA), *Late Lessons from Early Warnings* uses a series of 14 case studies—in the main examining the action of synthetic chemicals on human health and the environment—to argue that products and processes that at one time appeared essentially benign were later proven to be harmful.

In particular, the authors suggest that had indications as to possible problems been heeded in a precautionary manner at the earliest opportunity, society would have been spared ensuing costs and difficulties. They conclude with a call to learn 12 "late lessons" to guide scientific and regulatory policy in the future. These include the need to act more swiftly, to incorporate "lay and local knowledge" as well as "wider social interests and values" into the decision-making process, and for scientists to show "more humility."

According to the EEA News Release of 10 January 2002, "The report should help to improve mutual understanding between Europe and the United States on the use of the precautionary principle in policy-making." Certainly, it already appears to be having an impact on such discussions and this looks set to increase further now that the report has been republished as a book by Earthscan Publications. However, whether something is actually true simply because it is well presented and repeated often enough, or because society acts as though it were real, is the key point for consideration.

The editors are alert to possible problems, choosing to highlight for themselves the limitations of having only explored "false negatives" (assumed harmless—found harmful), as well as rather self-consciously describing their authors as "active participants" and noting in passing the need to avoid "the luxury of hindsight." Nevertheless, there is a distinction to be made between drawing our attention to these issues and acting upon them.

One methodological problem of merely examining "false negatives"—if that is indeed what all these cases are—is that the many instances of concern expressed in the past that turned out to have no consequence in the present are inevitably ignored.[1] If science or society were truly to act at the first suggestion of any problem, it is unlikely that we would have witnessed much technological or social development.

The report identifies, for instance, how "the possible therapeutic value" of X-rays derived in part from "the increasing number of reports of radiation injury."[2] This suggests not only that it is impossible to seek to mitigate against all error, but that to do so is to preclude our ability to learn. If we are not to act until we know, then we preclude action altogether, for knowledge is itself necessarily reliant on action in the first place.

Far from abusing the advantages of hindsight, many of the authors appear simply to have projected modern day sensitivities into the past. The fact that many of the instances of fatalities recorded in this volume—which it is argued should have acted as "early warnings"—occurred during the first half of the last century seems to gloss over the historical reality of those times. Certainly, there were many inexcusably

[1] Point made by Professor Ortwin Renn to Dr. Malcolm MacGarvin, one of the report's authors, at the workshop, The Application of the Precautionary Principle in the European Union, held May 9–10, 2001 at the Centre of Technology Assessment in Baden-Württemberg, Germany.

[2] European Environment Agency. (2001). *Late lessons from early warnings: The precautionary principle 1896–2000* (p. 31). Environmental issue report No. 22, ISBN 92-9167-323-4. Luxembourg: Office for Official Publications of the European Communities.

dangerous activities practiced but this ignores the fact that the precautionary principle itself is very much a product of our times.[3] One can also not help but wonder whether the statistics cited could have had much of an impact in a period that witnessed a Depression and two World Wars.

Constant references to chaos, complexity, intractability, irreversibility, and interdependence would seem to be used as a means for confusing and confounding issues, rather than clarifying or providing insight. Similarly, the cliché that absence of evidence is not the same as evidence of absence, ignores the fact that absence of evidence is precisely the only evidence we can ever expect to accumulate for the absence of harm.

For a collection of essays preaching the virtues of humility, it is striking that few of the authors leave much room for doubt as to their own conclusions and that these should all agree with one another. The conclusions are somewhat predictable, having been flagged up in the title and rehearsed on many previous occasions.[4] It appears almost as if the outcomes were agreed *a priori* and that the studies and data were used in reverse as a means for confirming these.

Much of what is described as "lay or local knowledge" is better categorized as personal opinion or popular understanding. This should not be aggrandized by being labeled as public "values," but be open to being challenged, interrogated, and altered in the same way as the science they decry. Indeed, if it were agreed to put these views on a par with scientific knowledge, the scope for identifying "false positives" (assumed harmful—found harmless) would be vast.

Of course, science has never been value free, but presenting it as the outcome of competing sectional interests tends to highlight quantity and perception over quality and transformation. Far from being egalitarian, real exclusion begins when prejudice or opinion are taken to be a sound basis for decision making.

Finally, it is ironic for a publication that calls for greater participation and transparency in scientific decision-making processes that so many of the authors and reviewers should have come from a similar background and yet be reluctant to identify this in their biographies. Maybe this explains why the comment by the chair of the report's editorial team that "over-precaution can also be expensive, in terms of lost opportunities for innovation and lost lines of scientific enquiry" appears nowhere within the report.

For all that, the report contains some useful empirical evidence. Unfortunately, rather than being an intellectual milestone, it merely reflects many of the confusions and equivocations now common among political, corporate, and even scientific institutions.[5] The report's initiator, David Gee, has issued a "challenge" for others to identify "false positives" that are "robust enough" under close scrutiny. It will be imperative to take up this offer as soon as possible and to be bold rather than humble in doing so.

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3 The European Commission "Communication from the Commission on the Precautionary Principle," COM (2000) 1, first appeared in February 2000. However, most authors (for example, Timothy O'Riordan & James Cameron. (1994). *Interpreting the precautionary principle*. London: Cameron, or Ragnar Löfstedt & David Vogel. (2001). The changing character of consumer and environmental regulation: A comparison of Europe and the United States. *Risk Analysis*, 21(3), 399–405) only trace its origins back to the early 1970s.

4 See, for example, O'Riordan & Cameron. (1994). *Interpreting the precautionary principle*. London: Cameron, or Stern & Fineberg (Eds.). (1996). *Understanding risk: Informing decisions in a democratic society*. Washington, DC: National Academy Press, or Stirling. (1999). *On science and precaution in the management of technological risk*. Sussex: SPRU, University of Sussex.

5 See, for example, Royal Commission on Environmental Pollution. (1998). *21st report: Setting environmental standards*. Cm 4053. London, or House of Lords. (2000). *Science and society*. Select Committee on Science and Technology, Session 1999–2000, Third Report, HL Paper 38. London.

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The True Cost of Precautionary Chemicals Regulation

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This article explores the possible social costs of introducing an overly precautionary regulatory regime for chemicals. It begins by examining research by the UK Medical Research Council Institute for Environment and Health (MRC-IEH), which suggests that the resource implications of the proposals contained in the European Commission White Paper "Strategy for a Future Chemicals Policy"[1] are unrealistic and even unrealizable. The article then focuses on contemporary debates pertaining to endocrine disrupting chemicals (EDCs) and goes on to question whether a "right to know" is always necessarily a good thing, or whether in certain instances it can lead to a society that feels more sorry than safe.[2] Finally, problems relating to the representation and inclusion of public values in decision-making processes are raised prior to concluding with a call for an ambitious orientation toward social change rather than a self-limiting obsession with safety.

I. INTRODUCTION

The European Commission White Paper, "Strategy for a Future Chemicals Policy," presented on February 27, 2001, identified an "overriding goal of *sustainable development*" and raised as "a cause for concern" the impact of chemicals on human health and the environment. It proposed a new single system, to be called REACH, for the Registration, Evaluation and Authorisation of CHemicals, which have "proven or suspected hazardous properties" and are produced in volumes greater than one ton per annum.[3]

In the spirit of a recent article by Chauncey Starr for this journal,[4] as well as my own work in this area,[5] this article will examine what Starr called "the social cost of fear reduction." Starr was concerned that "some of today's hypothetical fear-based issues could develop into long-term doctrines that will be politically enduring, difficult to modify, and seriously destructive," comparing these to historical situations "arising from the amplification of a minor popular concern into an apocalyptic dogma."

My earlier piece similarly suggested that "bringing up a generation of people in fear of everyday products, questioning the ability of science to improve their lives, and hence doubting the desirability of innovation and change, has a social cost which has yet to be calculated." I do not attempt to quantify these losses as part of a risk assessment modeling process, but nevertheless these social costs should be clearly identified in order to be mitigated against or prevented.

There is, of course, no doubting the need for clear priorities and purposes in the regulation of chemicals. However this article seeks to explore possible downsides of the recent flurry of activity in this area.[1] Society should continuously strive to ensure that the products and processes it uses are acceptable within the limits of the knowledge available to it at any particular time. Whether this is achieved through the proposals presented by the Commission, as well as the

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[1] *HPV Chemicals* (High Production Volume) program of the OECD, the *Endocrine Disruptor Screening Program* of the U.S. EPA, or *The Chemicals Study* of the UK RCEP.

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identification of hidden problems and costs, is the purpose of this inquiry.

Ultimately, these matters are settled through political debate and contestation taking the form of support for a "scientific" risk assessment,[6] or calls for greater social equity through the application of a "precautionary" principle.[7] As the sociologist Frank Furedi has indicated, the fact that safety has now become such a dominant practical and moral framework for society is historically contingent.[8] It remains crucial, therefore, for all those interested in social progress and transformation to identify all the outcomes of proposed actions, including their opportunity costs, irrespective of the claims and purposes of those promoting them.

2. TESTING IMPLICATIONS

Predictably, many of the responses to the White Paper have focused on the economic costs to business of imposing such a framework. I will not dwell upon these, as representatives from industry will no doubt present their own views on that matter. However, a distinct line has also emerged from the UK Medical Research Council Institute for Environment and Health (MRC-IEH), based in Leicester.[9]

In a report commissioned by a UK Government Ministry, the then Department of the Environment, Transport and the Regions, DETR (now the Department for the Environment, Food and Rural Affairs, DEFRA), and published in April 2001, researchers from the MRC-IEH questioned the actual feasibility of the Commission's proposals.

According to this report, the requirement to test all chemicals produced in volumes greater than one ton per annum, or roughly some 30,000 substances, by 2012 is entirely unrealizable for a number of reasons.

First, they identify a lack of testing facilities available to perform the task. There would appear to be only 16 contract research organizations (CROs) within the European Union both capable and willing to do so. One could add to this that it is unlikely, contrary to the speculation of some,[10] that these numbers could rapidly increase due to a greater demand coming from regulators. This is because we have for some time been witnessing a year-by-year decline in the number of graduate chemists emerging from universities.

Thus, according to this report at least, the time scale proposed by the European Commission for simply achieving base-level testing is unrealistic. Narrowing the sample size down to the 10,000 chemicals produced in volumes greater than 10 tons per annum could allow such tests to be achieved by 2017 (some five years later than the proposed schedule); otherwise it would take until 2048 to complete the full set. What's more, such basic tests would not cover some quite contentious and increasingly high-profile contemporary issues, such as investigating for neurotoxicity or endocrine disruption, let alone allowing time for other higher-tier testing (such as for avian toxicity) or verification of the results by member states.

Implicit to all of this would be a quite dramatic cost in terms of the number of animals required to perform the necessary experiments. The MRC-IEH estimate these to be in the order of 8.4 million rodents (45.8 million with the inclusion of offspring) and a further 4.4 million fish. To give some perspective to these figures, the report indicates that since 1981 when regulations were introduced to ensure the testing of all new chemicals introduced into the market and to test existing substances on priority lists, roughly 870,000 vertebrates have been used for such notifications.

In conclusion, the report suggests that the costs anticipated by the Commission for such purposes to be wildly inaccurate and produces its own estimate of almost 8.7 billion euros, excluding reporting and verification.

Accordingly, while one might usually favor seeking to obtain the greatest possible amount of evidence in deliberating upon most matters, there would appear to be a clear need in this instance to maintain some sense of perspective and priorities. This is especially so as most of the chemicals now being required to be tested have been in use for a quarter-century or more and have effectively acquired billions of hours of exposure data through consumption or use.

Whether a truly holistic sustainability strategy—as the Commission upholds from the outset—would prioritize the removal of minute traces of those chemicals suspected of being toxic to humans or the environment from high-dose laboratory tests on rodents over, say, the provision of a clean water supply to many millions of people in the developing world is a moot point.[11] A common answer to this is that we should follow the wishes of the majority or "public values" in such matters—on which more later.

In the meantime, and in the interest of balance, it is worth pointing out that the MRC-IEH report has not been without its detractors. Foremost among these have probably been Friends of the Earth (FoE), who define themselves in their own literature as "the most extensive international environmental network in the world." According to their response, prepared

jointly with the Worldwide Fund for Nature (WWF), the European Environmental Bureau (EEB), and Eurogroup for Animal Welfare, the MRC-IEH study is "fundamentally flawed."[12]

This is, according to the FoE authors, because only the 10,000 higher-production volume (HPV) chemicals will be tested *in vivo* and further it can be assumed that much data already exists for these, if only protected by corporate property rights. In addition the MRC-IEH report is held to have ignored the possibility of testing elsewhere in the world despite the evidence of similar programs in the United States, Canada, and Japan, as well as the fact that some products may be removed from the market prior to testing due to existing concerns as to their safety.

The document goes further, suggesting that nonanimal testing methods such as *in vitro* assays or computer modeling using techniques such as quantitative structure activity relationships (QSAR), as well as simply evidence of persistence or bioaccumulation, would mitigate against the "large, unmanageable, increase in animal testing at prohibitive expense."

Although it is possible that the MRC-IEH report presents worst-case estimates—an approach not uncommon to that used by the environmental movement or more generally advocates of the precautionary principle—it would appear that the latter points pertaining to nonanimal testing are open to significant doubt, which is not evident from, and despite the stated preference given in, the White Paper to promote these "as far as practicable."

For instance, the European Commission itself has expressed concerns as to the use of *in vitro* data. Its Scientific Committee on Toxicity, Ecotoxicity and the Environment (CSTEE) recently discussed toxicological test guidelines and testing strategies, concluding that "reliance on *in vitro* assays for predicting *in vivo* endocrine disrupter effects may generate false-negative as well as false-positive results. Thus the development of *in vitro* pre-screening test methods is not recommended."[13]

Similarly, Dr. Leonard Levy, when presenting evidence on behalf of the MRC-IEH to the UK House of Lords recently, suggested that the European Commission had if anything "underestimated the resources required to undertake such a mammoth task."[14] It is clear that *in vitro* tests capable of replacing *in vivo* studies while retaining the same level of scientific assurance as to the hazard profile of a chemical are simply not available, and are highly unlikely to become available within the time frame set by the European Commission proposals.[15]

Further, Levy points out that "obtaining meaningful exposure data is not quite so simple as implied" and whatever existing data may be available, it is unclear as to how long it would take to be released, brought together, and assessed as to homogeneity and scientific quality. Europe has the largest chemical industry in the world and in consequence a significant proportion of the world's contract toxicology capacity. Collaboration with countries examining different endpoints or using alternative test protocols cannot be guaranteed.

The fact that further testing at the more detailed Levels 1 and 2 would be required for at least 5,000 chemicals (taking up to one year and 2.5 years, respectively, compared to the eight months necessary for Base set testing), and that the number of chemicals to be tested could actually be as high as 65,000, suggests that if anything, given the current rate of progress, the MRC-IEH calculation appears very much a best-case estimate.[16]

In concluding this section then, we should note some dispute as to the feasibility of the testing requirements contained in the White Paper proposals. Irrespective of who, how, or when, they are likely to place severe pressures on existing facilities and future resources for a period significantly in excess of a decade.

3. ENDOCRINE DISRUPTION

Endocrine disruption—testing for which, it is worth reminding ourselves, is not included in the resource estimates described earlier—has recently solicited significant attention, discussion, and controversy. It is cited as one of the key causes for concern by the European Commission in its White Paper. Yet, in the words of one researcher: "The study of chemically-induced endocrine disruption in mammals is a relatively new field of endeavour, and it has been assailed by an unusual level of disagreement amongst investigators."[17]

The endocrine system is held to be that complex of processes whereby a number of fundamental bodily functions are kept in check through the action of an appropriate balance of hormones. An endocrine disrupter is, accordingly, any chemical that interferes with the synthesis, transport, binding, action, or elimination of the natural hormones that are responsible for homeostasis, reproduction, development, and/or behavior.[18]

Chemicals with such properties have become known by the popular media as "gender-bender"

chemicals, helping to generate many sensationalist headlines that cannot help advance a reasoned discussion of these matters.[19] This is particularly so because, while little is known as to their true extent, action, or effect, what is clear is that such substances occur naturally, and are ingested in concentrations many millions of times greater, in the food that we eat, as well as at even greater doses through oral contraceptives and hormonal therapies.[20]

The UK Royal Society's own investigation into endocrine disrupting chemicals (EDCs), concluded that "the limited information available suggests that intake of exogenous oestrogenic compounds would contribute little to the total oestrogen exposure of the fetus and would thus pose little, if any risk to the developing reproductive system" and, further, that "it could be argued that some exposure to environmental, man-made chemicals with oestrogenic properties could be potentially beneficial rather than potentially harmful."[21] The same report noted that secular trends in growth and puberty are "most easily accounted for by differences in nutrition."

Far from adding up to form a "lethal cocktail," as some would have it, it is evident that some substances may inhibit the activity of certain estrogens by preferentially binding to, or competitively occupying, the estrogen receptor and preventing more potent molecules from exerting their full effect.[22] Certainly, a lack of funding and research into the more positive attributes of EDCs will delay such potentially fruitful avenues of investigation and their benefits.

From a scientific perspective, a key problem has been the irreproducibility of results presented by certain researchers in the field. Possible reasons for this variability include the use of diets known to be high in phyto-estrogens, species variations as well as strain variations in rodents, and the use of subcutaneous injection as an experimental exposure method. Ashby has remarked: "The strongest assay response may not always be the most relevant response for human or wildlife risk assessment purposes." Evidently, it will continue to be difficult to reconcile assay outcomes until there is agreement as to a particular constellation of experimental conditions.

The consequences of piling worst-case assumptions onto worst-case data have previously been well documented in the case of phthalates that are used as softening agents in PVC.[23] This approach led to a ban on products for which the possibility of a baby exceeding the recommended exposure limits was rigorously determined to be "so rare that the statistical likelihood cannot be estimated."[24]

The ban even extended to phthalates that had not exceeded the standard, conservative margin of safety and prompted the chair of the CSTEE, Professor Jim Bridges of the University of Surrey, to comment: "I don't think the science is saying at all that there's an immediate risk." Erring on the side of caution in this instance led to restrictions on essentially benign and beneficial products and their replacement by some for which there was simply less toxicological evidence available.[25]

Some researchers have postulated the possibility of low-dose effects below the usual dose-effect threshold. But as Herman Staudenmayer recently remarked in a paper on this issue, accepting the low-dose response paradigm means accepting that "less is more, and more can be nothing at all."[26] Arguing that absence of evidence is not the same as evidence of absence is a circular argument that ignores the fact that absence of evidence is precisely the only evidence we can ever expect to accumulate for the absence of harm.

Nevertheless, campaigners now argue that the use of all EDCs, and even substances merely suspected of being such, should be banned altogether on precautionary grounds. For this they propose that restrictions should be determined on the basis of hazard classification alone, rather than risk assessments. The distinction is vital and one upon which the White Paper appears equivocal.

In "The EU Chemicals Policy" section of the White Paper we are informed that testing requirements will "depend on the proven or suspected hazardous properties, uses, exposures and volumes of chemicals produced or imported." This is further expanded upon in the section "Knowledge about Chemicals," where the distinction between hazard and risk through exposure is made clear. However, later sections on "Classification and Labeling" and "Information to the Public" would appear to restrict requirements primarily to "hazardous properties."

As every toxicologist knows, all substances produce an effect—it is the dose that makes the poison. The fact that a substance contains a toxin does not make it poisonous; if this was not true, all foods, which inevitably contain salt, a known toxin at high doses, would have to be banned. Similarly, labeling products on the basis of hazard alone would lead, for instance, to products such as contact lens cleaning fluid and certain toothpastes being identified as potentially explosive on the basis that in high enough concentrations hydrogen peroxide—the active ingredient in these—is also used as a rocket propellant.

Everything we do exposes us to hazards. It is how we do things, as well as how often, that determines the risk. The emphasis, promoted by some, on what could be, rather than what is, removes human action, understanding, competence, and will from the equation. It naturalizes issues, making them appear wholly external to, independent of, and hence unalterable by us. This lends itself to an unrealistic exaggeration of harm. Worse, if we prioritize too many chemicals for testing, short of banning them all, we would effectively have prioritized none and hence we would continue to expose ourselves to those that should have been real priorities for analysis in the meantime.

4. SOCIAL COSTS

So far, I have addressed certain technical and scientific issues emerging from the White Paper and the discussion based around it. My main concern, however, is to focus on a far greater social or hidden cost that these proposals entail. Unlike the economic costs, which may indeed be quite significant, the social impact is likely to be more important—if harder to quantify.

One common assumption in much of the current debate on issues relating to scientific reporting and decision making is that the public have a "right to know" and should be informed whenever and wherever there is any scientific uncertainty associated with products and processes. This "right" is mentioned in the White Paper and was recently reiterated by European Commissioner David Byrne, who is responsible for the Health and Consumer Protection Directorate (DG SANCO).[27] Its emergence has, however, been criticized by others "as a sudden and political response to the BSE crisis."[28]

Aside from the obvious fact that there is always uncertainty, this "right" would appear to suggest that consumers should be permanently bombarded by reams of information in order "to know" or "make informed choices." There is, accordingly, an inherent difficulty in legally enforcing such arrangements—How much information? Who would be responsible for providing it? Where should it be made available?—although no doubt an army of lawyers and other experts are waiting in the wings to present consultant reports on such matters. But we should first examine whether a "right to know" is necessarily workable or beneficial in practice.

The British general practitioner and medical writer Michael Fitzpatrick has argued, in relation to contemporary obsessions with testing for prostate cancer among young men in particular, that: "When clinics are swamped with the worried well, the really ill will suffer, a trend that is already apparent in many areas of the health service."[29]

Ironically, while prostate cancer is mentioned in the White Paper, it is neither particularly prevalent among that particular age group nor readily detectable, giving rise to a significant percentage of false positives. It is also the case, as Fitzpatrick explains, that treatment for it is barely effective, requiring intrusive procedures that bring both guaranteed pain and significant risk to the recipient.

Another example pertinent to the issue of chemicals regulation relates to the widely reported growth in cases of testicular cancer, particularly, again, among young men. Here there is evidence for a doubling in incidence over the past 20 years, although, notably, this was from an extremely low base and—due to more effective treatment rather than prevention—the number of fatalities has fallen to below 100 per annum in the United Kingdom alone; less than a third of the total it used to be some 40 years ago. Fewer than 40 in every million men in their late 20s will suffer from it. To put this into perspective, one woman in 10 will suffer from breast cancer at some time in her life.

There has been a wide range of theories proposed, ranging from genetic to hormonal, environmental, and even cultural, as to why such rates may have increased. The only certainty is that nobody knows, and that the public health proposal of regular testicular self-examination is of little avail. If 50,000 men tested themselves regularly over 10 years it might save one life based on cutting the death rate by 50%, which would be an unusually high figure. In addition, apart from the waste of time and attention involved, the high level of misdiagnosis is more likely to cause needless and extreme anxiety.[30]

The public campaign around testicular cancer seems more like a high-profile, low-resource campaign that promotes the idea that good healthcare is about self-awareness rather than the availability—or lack of it—of doctors and treatments. Yet, despite this, the White Paper, presumably from a precautionary perspective, chooses to highlight purported links to EDCs, while admitting that "the underlying reasons for this have not yet been identified."

The explosion of the "worried well" inundating doctor's surgeries with demands subsequent to "awareness" campaigns is one consequence. Whether doctors would choose to prioritize their limited resources accordingly, however, is questionable.

Effectively, enhanced awareness through a purported "right to know" not only diverts society's assets from where they are most needed, but could also leave us feeling far more sorry than safe.

These campaigns effectively sentence many hundreds of people to years of needless worrying and introspection. The "right to know" leads, in certain situations at least, to nothing more than the promotion of unnecessary, unfounded, and unassuageable lifelong anxiety, bitterness, and cynicism.

In fact, there is growing suspicion that we are literally worrying ourselves sick over an ever expanding number of agents and activities within contemporary society.[31] This is despite continuing evidence pointing to our improved health and longevity over the last 30 years.[32] Even the incidence of most cancers—after a period of increase, due largely to the achievements of enhancing longevity and improving detection rates through screening—are in steady decline.

Of significant concern to public health in the contemporary period has been reported rises in the incidence of minor or neurotic psychiatric disorders, mostly depression and anxiety.[33] Although this may well be a subjective phenomenon—like the worried well—these conditions are "associated with an increased likelihood of consulting a general practitioner," and hence have implications both for resources and our general well-being.

Among these disorders have been the rise of so-called diseases of modern life[34] such as CFS/ME (Chronic Fatigue Syndrome or Myalgic Encephalomyelitis), ADD (Attention Deficit Disorder), PTSD (Post-Traumatic Stress Disorder), and, of greater relevance to this article, MCS (Multiple Chemical Sensitivity).

These illnesses have often falsely been characterized as being "all in the mind." However, it is quite evident that the sufferers present real symptoms. The key area of dispute is as to the source of these symptoms. Unlike other diseases, victims claim a wide and disparate range of effects, including, in the case of MCS, headaches, sore throats, itchy eyes, coughs, tiredness, backache, gastro-intestinal disturbances, dizziness, and anxiety, among others. Patients also present a wide range of personal theories as to how they came to be ill.

Professor Simon Wessely, Professor of the Epidemiological and Liaison Psychiatry at the Institute of Psychiatry, King's College London, is one of the world's leading experts in the analysis of such syndromes. In his work he has explored the correlation between those countries where there is a heightened awareness of potential chemical toxicity and the incidence of psychosomatic symptoms.[35]

According to Wessely, Sweden, one of the countries at the forefront of restricting chemical use within Europe,[36] with a policy goal of making its environment "toxic-free" by 2020, and the country that led the Commission in the preparation of the Chemicals White Paper, has one of the highest levels of self-reported sensitivities to chemicals in the developed world. It would appear, then, that too much risk awareness can quite literally make you sick.

Staudenmayer used double-blind placebo-controlled (DBPC) experiments to confirm the key drivers of somatic symptoms to be: beliefs, suggestion, vigilance, social amplification, anxiety, and stress. More recently, a team based at the University of Leuven in Belgium has investigated the extent to which warnings about environmental pollution can directly facilitate the acquiring of symptoms in relation to chemical substances.[37] Participants who had been given warnings about environmental pollution reported more symptoms to benign odors than those who had not.

Advances in clinical psychology on the understanding and management of health anxieties have also established, through empirical investigations and other clinical trials, that repeated attempts at reassurance can serve to drive anxiety rather than assuage it.[38]

These findings all point to an extremely significant conclusion with widespread consequences and ramifications for risk communication, awareness-raising, and the "right to know." That is, that official recognition of, and responses to, perceived problems—either through advocacy groups, public officials, or the media—provide confirming models through which people understand and articulate their anxieties and often become the driver of real problems.[39]

It will be crucial in the period ahead, particularly in the aftermath of the events of September 11, 2001, to unravel the broader effects on social psychology of continuously elevating risk awareness in the name of transparency and an individual "right to know," as opposed to taking a more measured approach to risk communication in the interests of broader social advance, cohesion, and well-being.

5. PROCESSES AND VALUES

There have been growing calls from many quarters to include public views or values into scientific decision making. In the United Kingdom these have

included the Royal Commission on Environmental Pollution,[40] the House of Lords,[41] the Parliamentary Office for Science and Technology,[42] and the authors of an Economic & Social Research Council publication.[43] An earlier exemplar from the United States is a 1996 edited compilation by Stern and Fineberg.[44]

Much of this discourse echoes the work of Sheila Jasanoff in the United States and Brian Wynne in the United Kingdom who, in a variety of articles,[45] have explored what they consider to be the disparate cultures of specialist science as opposed to that of the public in general. The sociologist Ortwin Renn in Germany has separately studied mechanisms for reconciling these assumed differences through negotiated dialogic processes,[46] although it should be noted that the purported effectiveness of these aims and methods have not gone uncontested.[47]

The White Paper itself steers clear of identifying with this agenda explicitly, preferring to call for more information to the public. However implicitly, in its drafting, the Commission paid heed to the critics, consulting with a significant number of stakeholders "and in particular the NGOs representing consumer interests." Ironically, one of the criticisms that could be made of the Paper has been a lack of consultation with the contract research organizations (CROs), who would be the agencies in the front line should the proposed testing schedule ever see the light of day.

Clearly, there is a tension between those who wish to include the public in order simply to keep them informed or on-side,[48] as opposed to those who genuinely hold that the public voice is a missing element for establishing accountability through a better balance of scientific and public values. This latter view appears to propose a narrowly empirical model of science whereby objectivity, or an approximation to it, is to be reached through an averaging-out process of competing interested parties.

One significant difficulty for all concerned is as to how to include what is perceived to be an increasingly disengaged public into such processes. The claims made by NGOs, such as environmental campaigners or consumer advocates, to being representative of this wider audience have increasingly been questioned.[49] At best such bodies have a passive membership comprising a few percent of any national population, ranging in the major economies of the European Union from 1% in Ireland to 10% in the Netherlands.[50] Whether directly belonging to such a lobby, or being a hand-picked and carefully vetted outsider sitting on a government established committee, such approaches remain broadly unsatisfactory as both the motivations behind them and their representativeness are open to question.

To get around these limitations, there has in recent years been much greater emphasis placed on the use of quantitative research, such as polls and surveys, as well as qualitative research, including more in-depth interviews, focus groups, and other stakeholder dialogue forums. The danger here is well documented. It includes projecting views and values through question-framing and/or selectively finding these self-same views and values among the responses. Even recording what is left unsaid[51] requires prejudicial priorities among interviewers.

Hence, there is a great danger that, rather than recording the wishes of the majority, as was suggested earlier, the inclusion of public views or values may merely record a small subset of these, which researchers look for and find reflected back at them. In the past, such views would have been labeled as public opinion. Opinions are open to being challenged, interrogated, and altered. Labeling these as values, on the other hand, appears to set them apart from further inquiry.

But we should first ask whether science truly benefits from the inclusion of "lay opinion" or "public values" into its processes and decisions. Although science is necessary to inform democratic decision making within society, it is not in itself democratic. Scientists do not simply record or measure—they assess, infer, and prioritize. To relegate the experienced and considered judgments of scientists to being just a sectional interest dilutes the science, denigrates and demoralizes the scientists, and both patronizes the public and panders to the conceit of those who claim to know or represent their "values."[52]

Of course, science has never been value-free, but maybe it should continuously strive to become so and to preclude, rather than to include, external influence. Those from outside its institutions who have made major contributions to its development did not achieve this by introducing personal views and values but rather by pointing to the assumed values of the establishment that needed to be removed, proving their case through evidence and hence convincing their peers.

It is for those who wish to see more values brought in, or writ large, rather than ignored, to justify themselves further. Far from being egalitarian, it is real exclusion that begins when prejudice or opinion are taken to be a sound basis for decision making.

Ironically, in many instances, it is now corporations, governments, and the scientific establishment itself that appear increasingly willing to take on board such public views and values into the decision-making process. The reasons for this may be varied, including the misguided belief that doing so will thereby obtain greater regulatory stability. This may prove to be very shortsighted as policy determined from opinion is likely to prove far more unpredictable than that based on evidence. Another possible and more perverse motive is an unwillingness to be held to account independently and a preference to deflect, diffuse, shift, or share the blame should things go wrong in the future.[53]

6. CONCLUSIONS

The European Commission White Paper "Strategy for a Future Chemicals Policy" comes at a time when favorability toward the chemical industry in general is at a low ebb.[54] Ironically, over the last decade this coincides with a period when the industry has done much to put its house in order, introducing a range of initiatives, including attempts to audit product use and disposal across the full life cycle. Red list discharges—which record emissions of more noxious substances—have come down by more than 95%, reportable accidents to employees and contractors have halved, to levels below those of many other industries, while output has continued to increase.

The industry is understandably concerned about its image and hence is examining ways, largely to do with greater transparency, communication, and information provision to the general public, to enhance this. Yet, clearly, public perceptions bear little relation to these efforts and rather more to ignoring the recommendations of scientists when these suggest the evidence gives little cause for concern[55] and a generalized loss of trust in industry, scientists, and politicians alike.

But if the reason for the poor image is not entirely self-generated, then it will not suffice to combine improved performance with sensitive promotion, consultation, and communication. Accordingly, adhering to the increasingly cautionary and restrictive approach advocated by a precautionary or sustainable agenda may prove to be a mere short-term palliative as opposed to the more profound changes in social attitudes that may genuinely be required. These would include a more balanced approach to understanding the necessity of risk-risk tradeoffs, as well as a generally more positive attitude to the inevitability of change and the desirability of social progress.

It would be unfortunate if, in their genuine aspiration to recreate public trust in science and industry, political initiatives such as the White Paper ended up fomenting further discontent. By raising the specter of problems at a time when these are in decline, and positing widespread testing that may be neither achievable nor necessarily desirable, there is a danger of feeding the climate of risk aversion rather than assuaging it.

Although it is good that we no longer accept a culture of unquestioning deference toward science, business, or the state, we should be wary of creating a culture of unnecessary fear, which may prove to be just as limiting and incapacitating in its stead.

Rather than embracing the opportunities latent within uncertainty and change as did previous generations, today we appear to reject them and highlight the risks. What may really have changed is not so much the scale of the problems that we face, but the outlook with which society perceives its difficulties, both real and imagined. These issues, while different, cannot really be described as greater than those facing previous generations, nor are they uniquely insurmountable. But our collective will and imagination to resist and overcome them appears to be much weaker.

Life has become safer as human society has progressed. We could turn our back on inventiveness and ambition, and get used to living within the limitations imposed by the cautious moral code of our time—or we could do the opposite.

I suggest the latter would be a better legacy for future generations.

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7

Limitations of Public Dialogue in Science and the Rise of New 'Experts'

BILL DURODIÉ

Introduction

On 18 June 2003, just before the first strand of the UK government's three-strand (scientific, economic and social) inquiry into genetically modified (GM) foods was to publish its conclusions,[1] *The Times* ran a little-commented-on one-column inch statement behind its front page, entitled 'GM exclusion', that read as follows:

> Lord Sainsbury of Turville, the Science and Innovation Minister, is to have no say on the policy over GM foods, the Government said. His place at any Whitehall meeting to discuss the issue is to be taken by Nigel Griffiths, Minister for Small Business and *Enterprise*. (*The Times*, 18 June 2003, p.2).

No doubt many of the detractors of GM will have welcomed this decision. But is it a good thing that the one minister who knows something about these matters should participate no further in the decision-making process?

Those who would argue that this was the right move to make, because Lord Sainsbury, who owns the supermarket chain bearing his name, 'has an interest' in this debate, seem to assume that we cannot separate or distinguish subjective interests from objective judgements. Indeed, they believe that there is no such thing as objective knowledge in the first place. But if that were truly the case, why would 'independence' matter at all?

This approach to these issues, which appears to be becoming increasingly widespread nowadays, is nothing more than a recipe for institutionalised ignorance.

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Confusions

There has, over the recent period, been a growing clamour to include what are held to be 'lay values' in the scientific decision-making process.[2] This often takes the form of a demand for public dialogue. But this confuses two distinct issues or trends that have emerged over the recent period – the demise of political participation or engagement in society, and a growing disillusionment with science and its consequences.

Public participation in science seeks in part to restore some limited measure of legitimacy to the former, by forcing dialogue in the latter. One of the leading authorities of this tendency, Professor Brian Wynne, of the University of Lancaster, has made his assumptions and intentions clear in one of his major essays on the subject, 'May the sheep safely graze?'. For him, the aim is to explore 'the democratic possibilities of science *and thus* of the reconstruction of politics' (1997: 47, emphasis added). In this essay, I argue that this is an inversion and confusion of that which is truly necessary. We need to restore the centrality of and reinvigorate political debate first, if we are to generate a healthy interest in science.

In fact, the 'democratic possibilities of science' are pretty close to zero. The sun does not revolve around the earth irrespective of how many people would vote that it appears so to them, and no matter where they were located on the planet, their gender, their ethnicity or how wealthy they were.

Science is an unashamedly elitist activity. But it is an elite that is open to all those with the time, interest, talent and initiative to pursue and develop it. Science is not value-free, but it should strive to become so, rather than seeking to include 'unheard voices' into its deliberative processes.

Limitations

Public participation in science, as currently pursued and promoted by a variety of organisations and institutions, is problematic for four main reasons;

Demoralising Scientists

First, by demanding the inclusion of so-called 'lay opinions', it effectively marginalises actual scientific evidence and thereby leads to the demoralization of scientists themselves. But science is not 'just another point of view'. It may be culturally situated, but this does not mean that it is only contextually valid.

Notably, Brian Wynne argues, in relation to the perceived need to *include 'local knowledge'* in science, that 'It is important not to misunderstand this as a claim for intellectual superiority or *even* equivalence for lay knowledges' (1997: 74, emphasis added).

So what are we meant to conclude? That we include the public just to confuse matters, or simply to be different?

This relativisation and marginalisation of science now occurs at the highest level. For example, the UK government's own inquiry into the purported adverse health effects of mobile phones, convened under the chairmanship of Sir William Stewart, concluded that in future 'non-peer reviewed papers and anecdotal evidence should be taken into account' (Independent Expert Group On Mobile Phones 2000: 102) as part of the process for reaching decisions on these matters.

This effectively fetishises information and opinion over evidence and explanation. It reflects and prioritises a narrow, empirical obsession with the quantity of views expressed over their actual quality. However, emphasising the local over the universal leaves us with no basis upon which to evaluate opinions or to pass judgement as to what really matters.

This approach limits and constrains the dynamism of science, further facilitating the demise in its popularity. Today we see major academic departments having to close as they attract fewer funds and fewer students. It has also led to a form of constant equivocation on the part of those who ought to be making decisions. Many reports into controversial scientific matters today seem to conclude 'it's safe, but'. By this means, politicians, regulators and sadly, increasingly some scientists too, try to have it both ways. In effect, on an issue like GM foods for example, they are saying;

> We would like to develop GM, for all the possibilities it provides, and in order not to miss out on the potential of this technology. We think, based on all the evidence we have available before us, that there is nothing particularly wrong with it. But as we need to be seen to have consulted widely in order to preserve our fragile democratic mandate, let's hear what you, the public, have to say. And let's organise some further trials as if there were a problem, even if no-one will be able to agree upon the results.

This approach led one commentator, responding to the latest report from the Royal Society on GM, to remark that the scientists were no more hesitant than before about GM itself – they had just become more hesitant about saying so (Gilland 2002).

That may be understandable. After all, scientists have been on the receiving end of a lot of adverse publicity over the last decade, ranging over all manner of things from BSE (mad-cow disease), to GM, to mobile phones and more recently, the controversy surrounding the MMR triple-vaccine.[3]

However, whilst it may make those who seek to re-invent themselves in such a way, as 'science in society' communicators, popular – courted by parliament, research councils, the media and social scientists alike – it is also little more than an act of moral and intellectual cowardice.

Rather than saving their image or reputation and somehow restoring public trust, this approach is both symptomatic of and could further entrench the very demoralisation they seek to combat. It may indeed discredit those who engage in such activities and simply bring the individuals concerned, and their once august institutions, into further disrepute.

Patronising the Public

The second major difficulty with calls for public dialogue in science is that they pander to popular prejudice and patronise the public. By having to make science more 'accessible' in order to be 'inclusive', this ends up by diluting the detail, eroding the evidence and trivialising the theory. This is not access to science but access to science as simplistic morality tales for a nervous society.

For instance, much has been made over the recent period of the supposed link between exposure to the sun and skin cancer. We teach our children from an early age, even in the UK where the sun hardly shines, to cover up when they go outside to play, or to put on some increasingly high-factor sun creams. It has been a major public health campaign around the world, so one could assume that it must be true.

But in fact the evidence is not clear cut. Most moles are benign, and basal-cell and squamous-cell cancers, that occur on exposed areas and cause concern, can relatively easily be treated. The real killer; malignant melanomas – that people worry about most – commonly occur on unexposed areas of the skin, and have little to do with exposure to sunlight. So we end up exaggerating the risk of treatable conditions and worrying about things we can do little about, all in the name of being more 'aware'. A case, amongst many others that could be pointed to, of making ourselves more sorry than safe.

Another way by which the public is patronised is the contemporary obsession with having to listen to the 'voices of victims' or their relatives. This approach took off in the UK at the time of the inquiry under the

auspices of Lord Phillips into the BSE fiasco.[4] This placed relatives centre stage to discipline the industry and civil servants concerned, a trend that has since continued with the public inquiries into the Alder-Hey Hospital human body-parts 'scandal' and the Bristol Hospital child cardiology unit 'cover-up'.

But why should this be so? Whilst we can all sympathise with, and respect, the loss of the bereaved, whether this be through the incredibly rare variant CJD (the human form of BSE that has killed just under 150 in almost a decade), or some other tragedy, such terrible events provide those involved with no particular or special insight into pathology, health-care reform or any other area of expertise.

In actual fact, the public are neither particularly insightful in such matters and nor are they particularly stupid. They are quite often ignorant of the facts and usually unmediated in their responses to them, displaying an understandable proclivity to prioritise emotion over reason. We should accordingly neither condemn or dismiss them; nor, however, should we celebrate their views or pander to them. The greatest respect you can pay anyone in any form of debate is to challenge their understanding with a view to transcending it or moving it on.

However, even the Royal Society's own first 'National Forum for Science' sought 'to ensure the participants *feel* that they have participated in the debate' (Feedback and Evaluation Summary, emphasis added).[5]

This prioritisation of feelings shows the extent to which the process in these debates is considered to be far more important than the content itself. For the advocates of public dialogue, inclusion ends up trumping insight at every turn.

Ironically, the more gestures the authorities make in this direction, whether through the form of establishing 'citizens' juries', 'focus groups', 'stakeholder forums' or 'consensus conferences', the more we see that the public actually disengages from the real process of political contestation. It is a wonder that those who promote these forms of so-called 'participative democracy' have yet to notice.

Elevating New 'Experts'

The third problem with promoting public dialogue in science, as currently proposed, is that it flatters those who claim to represent the public or truly know what public opinion demands. Thus, a new breed of self-appointed 'expert' has now emerged in all manner of fields from parenting to pollution. Indeed, you increasingly need to be an expert in expertise in order to know who to believe nowadays.

I have already examined the new role played by relatives of victims. Apart from being patronised, these have also gained an undeserved but privileged place to set, determine or change important agendas.

There also exist now all manner of self-defined 'ethicists' who sit on a plethora of scientific committees deliberating over the issues of the day. Indeed, one astute commentator recently remarked, at the time of the 50th anniversary of the discovery of DNA, that it was amazing that Crick and Watson had managed to do what they did without first having to have it cleared by an ethics committee.[6]

In these new arenas we can observe one of the more visible successes of recycling today. The clergy, 500 years on from debating Galileo, and often in difficulty filling their own places of worship, now seek to pontificate again to us all over everything from GM to human embryos. They may be qualified to preach to the faithful, but certainly not to scientists and the rest of us as to the rights and wrongs of major issues. The problem is that their views are not rooted in, or disciplined by, experience, or any particular relevant expertise.

We have also witnessed the inexorable rise of the risk managers. These believe that the solution to all of these debates is simply to quantify everything. Here I have some sympathy with science's detractors, although they may not have fully understood that this phenomenon is itself merely a positivist reaction to the school of thought that holds that everything is 'just an opinion'.

There are also a growing number of social scientists who believe that they know what it is that the public wants, or at least that they have the means for extracting it from them. Brian Wynne has described his own technique as recording what gets said, as well as 'what is not being said'.[7] This would seem to provide him with tremendous latitude to conclude anything at all. Others seek to provide 'a voice' for those who do not have one – animals, the environment, children or future generations. This ability to speak on behalf of the dumb, the inert, the innocent and the unconscious, provides them with a tremendous unelected constituency as well as an incredible opportunity to project their own prejudices and views onto the debate.

However, another problem with all of these new self-appointed voices of authority, whether they be relatives, ethicists, risk managers or social scientists, is: why should we believe them? It is often remarked that as a society our level of trust in politicians, corporations and scientists is at an all-time low. But why trust the new auditors? Who audits them?[8]

It is worth pointing out the extent to which the issue of 'trust' has become one of the key components within these debates, as there are two significant, but quite distinct, ways this term is used (Durodié 2003a). When I say that 'I trust you' to do something, this usually implies a degree of confidence in your abilities based upon my experience of your competence at getting related tasks completed in the past. It is a kind of probabilistic, rational calculation as to the outcome.[9]

However, when somebody says 'trust me', they usually mean something else. It is a paraphrase for 'let me be', in a situation where there is no prior evidence to go on. Trust, in this more authentic and stronger sense, is a demand for freedom based on the suspension of reciprocal calculation. It necessitates respecting the autonomy of others and as it inevitably occurs around an unknown it requires taking a risk.

But if trust necessitates risk, then the constant demand we face today to regulate risks precludes the granting of trust, as well as narrowing the scope for genuine innovation. Sadly, today we demand constant reassurances from those in authority, but we neither trust those who provide us with this, nor allow them the latitude necessary actively to restore that trust.

Deflecting Blame

Finally, public dialogue in science deflects blame from those whom we ought to hold to account and, far from making matters more transparent, it ends up by further politicising the decision-making process. Public dialogue allows the authorities to claim that we were all consulted should things go wrong in the future, but it is also an abdication of responsibility and leadership by those best placed to decide.

Nowadays, Doctors are increasingly expected to provide us with an 'informed choice' in matters relating to how we are to be treated for particular conditions or ailments. This appears to challenge the traditional hierarchy of knowledge and to 'include' us in the process. However, it also allows those who ought to know best to avoid having to pass judgement themselves. For people who are ill, there is rarely a good time to make such decisions and they can never be as informed as those who have spent a lifetime practising for such moments and rehearsing the options.

Ironically, we now see this growing demand for science and scientists to be held to account, emanating from politicians and officials who are increasingly not. This lets them off the hook and makes for bad science in the process.

Also, as so-called public panels are invariably vetted, approved and appointed by those in authority, this process allows for greater political interference. The Bristol and Alder Hey inquiries mentioned earlier are a case in point. They may have appeared as an exercise whereby arrogant scientists and hospital consultants were made to listen to the public, but in fact the agenda had been set a long time before, in Professor Ian Kennedy's 1981 Reith lectures *The Unmasking of Medicine* (Kennedy 1981).

Professor Kennedy went on to be a major advocate and campaigner for reform of the medical profession and he headed-up the Bristol inquiry, the outcome and manner of which went on to influence that at Alder Hey. In fact, the so-called public, who intriguingly echoed almost precisely the government line on these matters, were unwittingly wheeled out to fulfil their role and even funded by those who sought the reforms they apparently supported (Appleton 2001).

Ironically, the demand for openness, transparency, accountability and elevating the centrality of uncertainty in all things seems to come from those who are most prone to continuously obfuscate and are the most prescriptive in their conclusions. They posture as radical and democratic but actually they oppose real change and stifle innovation and ambition.

Conclusion

As the aspiration for real social change has receded, so science has been inflated in terms of import and impact, out of all proportion. This has been both by those who see science as a danger as well as by those who see it as the solution to everything. Brian Wynne argues that the 'increasing dependence on the scientific has given science a new role'. In fact, it is the failure of politics that has done so.

We should not include 'lay values' or 'local knowledge' into science, peer review or anywhere else, as there is no such thing. These are in fact mere opinions that need to be interrogated just as much as the scientific evidence itself. Labelling them 'values', as many now seem prone to do, is in fact a conscious attempt to set this debate off-limits by suggesting that we should not offend people's values.[10]

But science is not about making us feel good about ourselves. It can reveal some quite disconcerting truths. Indeed, we owe a debt to those who, in the past, were prepared to put their heads above the parapet of perception, prejudice and power, in order to expose the real workings of the world. This was not done by accommodating to majority, or even minority, views.

Having said that, mavericks do have a role to play within science. But this is by ruthlessly revealing assumed values and eliminating them, rather than by importing a few more of their own into the debate. Above all else, mavericks need to corroborate their evidence and convince their peers.[11]

We should move away from our growing obsession with the impact of science upon society and begin to examine a bit more critically the impact of society upon science. This is especially so in a society that faces no greater difficulties, or complexities, than in the past, but that despite this, has lost its sense of ambition, of the need to develop a broader vision and of the paramount importance of the will to explore and experiment, a society that appears so riddled by self-doubt and cynicism that it has become afraid of taking risks and hence unable to establish trust.

Sadly, unlike in the past, when change largely coincided with periods of social optimism or mass political engagement, what we have today is a fear of change that stems from social pessimism and mass political disengagement. It is this that will need to be addressed if we are to restore the primacy of science. Thus, irrespective of whether we benefit or not from a scientifically more literate public, the more important process of re-engaging the public cannot be forced and will need to derive from advocating a broader social vision.

There has never really been what one could call 'Science Wars',[12] fought through to a conclusion. There may be no better time to start them than now.

ACKNOWLEDGEMENTS

This essay builds substantially on a short opinion piece I originally had published in the *Times Higher Education Supplement* in April 2002 (Durodié 2002). This in turn sought to highlight one particular aspect of a paper I presented to the Demoralization: Morality, Authority and Power conference, held at the University of Cardiff School of Social Sciences 5–6 April 2002 (available at ⟨http://www.cf.ac.uk/socsi/news/dmap/papers/Durodie.pdf⟩). The argument was then refined for a talk at the International Book Festival in Edinburgh that year, and this was subsequently reproduced on the *Spiked* web-site (⟨http://www.spiked-online.com/Articles/00000006D9F2.htm⟩). In May 2003 I was invited by the Parliamentary Office for Science and Technology to present my views on these matters as part of the third anniversary celebrations of the publication of the influential House of Lords *Science and Society* report. In its current form, the article is the transcript of a talk I gave on 29 June 2003 to the Ideas, Intellectuals and the Public conference, organised by the London-based Institute of Ideas at Goodenough College, London. I am grateful to all concerned for the opportunity they afforded me to help develop my views.

NOTES

1. The three-strand inquiry coordinated by the Department for the Environment, Food and Rural Affairs (DEFRA) was announced by Environment Secretary Margaret Beckett

on 26 July 2002 in response to advice from the Agriculture and Environment Biotechnology Committee (AEBC). Further details can be found at ⟨http://www.defra.gov.uk/environment/gm/debate/index.htm⟩.

2. See for example Royal Commission on Environmental Pollution 1999; House of Lords 2000; Parliamentary Office for Science and Technology 2001; Hargreaves & Ferguson 2001.
3. MMR stands for Measles–Mumps–Rubella. A major debate over the safety of this vaccine was generated subsequent to the allegations by a surgeon, Andrew Wakefield, that it may be linked to a rise in autism amongst infants. For an excellent critique see M. Fitzpatrick 'MMR: the truth?', and other articles linked therefrom, at ⟨http://www.spiked-online.com/Articles/00000006DCD6.htm⟩.
4. BSE stands for bovine spongiform encephalopathy, otherwise known as 'mad cow disease', a degenerative brain disorder held to have been caused by feeding animal protein to ruminants and to lead to cases of Creutzfeldt-Jakob disease, a similar and fatal condition amongst human populations.
5. *Do We trust Today's Scientists?*, National Forum for Science, Royal Society, London, 6 March 2002.
6. Dr Michael Fitzpatrick, speaking in the opening plenary of the Genes and Society Festival organised by the London-based Institute of Ideas at Battersea Arts Centre in London, 26–27 April 2003.
7. Comment made at the Risk, Democratic Citizenship and Public Policy conference, British Academy, London, 6–7 June 2001
8. On this issue, see O'Neill 2002 or ⟨http://www.bbc.co.uk/radio4/reith2002/⟩.
9. This is defined as 'confidence' rather than trust by Seligman (2000)
10. I have previously argued this with respect to the proposed new European Commission system for regulating chemicals (Durodié 2003b).
11. Like Barry Marshall, the Australian junior doctor who hypothesised a link between *Heliobacter pylori* infections and stomach ulcers. He proved the link by administering both the complaint and antibiotic treatment to himself, not once, but twice for good measure.
12. This is to draw an analogy with the so-called 'Culture Wars' which occured on US campuses in the 1980s around the contents of the proper canon to teach students. These would also need to be reinvigorated and drawn through to a more progressive conclusion if we are to move forward as a society.

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Letter to the Editor Regarding Chemical White Paper Special Issue

Bill Durodié*

In a recent speech at their annual science festival, the President of the British Association for the Advancement of Science referred no less than 16 times to how things appear, or how they are perceived.[1] His argument was that these public perceptions need to be incorporated into the risk management process for society to restore its trust in the scientific decision-making process.

In a similar vein, Michael Rogers in his article points to the "*perceived need for a new regulatory framework for chemicals*," referring us to the European Commission's review that indicated "*widespread public concern about the effects of chemicals on human health and the environment.*" Similarly, Inger Schörling suggests that for various diseases "*a link to chemical exposure seems likely*," and Ragnar Löfstedt alludes to "*the image of a 'non-toxic society'*."

I was brought up to think that it was the role of science and the responsibility of scientists to expose the real relations behind the appearance of things. If the world were as it seems there would be no need for science, while public policy based upon appearance is little more than bigotry. In the long run this can have quite devastating consequences.

Unfortunately, those in our society charged with pointing to the hidden depths behind the surface of things seem increasingly unwilling to challenge people's prejudices. Among these I would include politicians, regulators, and businesses who in some shape or form have come to rely on a popular mandate, rather than a principled position, for their own survival.

Sadly, some scientists also have all too readily absorbed the modern dictate for "inclusivity" and "dialogue" in the vain hope of somehow relegitimizing their activities. In fact, whether the public is truly concerned about many of these issues, as the Cambridge philosopher Onora O'Neill pointed out in her recent Reith Lecture series, actually remains to be determined.[2] Their behavior suggests otherwise.

The media have in their turn made much of these deliberations and confusions, although I would hardly blame them for this in the absence of informed scientific debate. After all, it should be part of the remit of any scientist to ruthlessly analyze and criticize the work of others in his or her field. For if we cannot trust the experts to do this we invariably fall back upon all manner of self-appointed journalists, ethicists, risk communicators, and, tragically in some instances, the relatives of victims, whose expertise in such matters is necessarily vague.

I find it quite striking that none of the other articles in this issue seek to situate this drive to pander to an assumed public mood within its historical context. Things were not ever thus, and it is the nervousness and defensiveness of the elites in the face of their own evidence and electorates that should be the true cause for concern among committed rationalists and democrats. Jean-Philippe Montfort's article is a case in point, suggesting as it does that the Commission's proposals are "*not properly balanced*" rather than fundamentally flawed.

Forget chemicals, why not call for all food substances to be tested, both alone and in combination with one another? After all, many of these display far greater activity as carcinogens and endocrine disruptors. Of course, the reason we should not is that food, along with many of the chemicals under scrutiny, has literally billions of hours of exposure data available through our everyday use and consumption.

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Fetishising natural products over manufactured ones is hardly an excuse, ignoring as it does the extent to which food is essentially manufactured nowadays anyway. But also, such an outlook seems blind to the fact that nature itself remains by far one of the greatest risks we face on a daily basis and that our creations, on the whole, have reduced these risks for us. Ragnar Löfstedt seems to overlook this fact when pointing to the "*unique side effects*" (all negative in his telling here) of industrialization.

No doubt, industry will point to numerous problems of definition in these articles. Who is to decide what is meant by "*clean*," "*sustainable*," "*flourishing*," "*balanced*," "*varied*," "*magnificent*," and "*safe*"? And how will they decide? There is enough material here to keep an army of lawyers, bureaucrats, and consultants busy for a long time. Further, if industry is to provide the evidence in order to reduce the regulatory burden, then the fact that it is not trusted merely stores up problems further afield.

But I want to come back to the main point of my own essay, which is that it is the hidden costs of these developments, in terms of framing social responses to exploration and experimentation, that may prove to be the greatest. Most of the authors refer to the growth of allergies over the recent period without stopping to question why this may be so. In fact there is plenty of evidence to suggest that the definition of what counts as an allergy has been significantly expanded to include what in the past would have been considered to be a mild intolerance.

Further, there is much work from the field of psychosomatic medicine to suggest that social signals as to potential problems associated with chemicals lead to the development of real symptoms. A case, as I have suggested, of society literally worrying itself sick. I refer the reader to a recent paper published by a team at the University of Leuven in Belgium in this regards.[3]

Inger Schörling in particular seems keen to emphasize the "*complexities*," "*uncertainties*," and "*indeterminacies*" within science that lead, she suggests, to proof being "*virtually unobtainable*." This profligate terminological obfuscation does not seem to hold her back from her own convictions though, as with these "*unobtainable*" proofs she nevertheless concludes that "*exposure to chemicals undoubtedly contributes*" to the diseases to which she refers.

It seems somewhat churlish, but nevertheless necessary, to remind her that in science, as in all things, we can proceed to understanding what we do not know only from the basis of what we do know. *What is?* is a more fundamental question than *What if?* Otherwise, we base our actions to what we don't know as if we did know and thereby open the door to real risk and reaction.

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3. Winters, W., Devriese, S., Van Diest, I., & Nemery, B. (Forthcoming). Media warnings about environmental pollution facilitate the acquisition of symptoms in response to chemical substances. *Psychosomatic Medicine*.

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Section 2
Invited comments

Bill Durodié

Predicting the future is a thankless task. It is easier to play safe than to accurately discern long term trends, and history is littered with events and discoveries that transformed society but none could foretell. In fact, futurology invariably tells us more about where we are now, the forces and trends that shape us, than it can ever say about what is to come. Contemporary obsessions tend to be projected forwards and amplified, whilst popular prejudice can preclude focusing on more contentious or uncomfortable analyses of the present.

Thus, an attempt to map out the 'drivers of societal change' (p. 366) over a 20-year period to unearth the future of risk management should be considered to be either foolhardy or brave. At first sight it would appear that those involved in this collaborative research project involving the *Journal of Risk Research*, King's College Centre for Risk Management, Shell International Limited, the UK Health and Safety Executive, Électricité de France and the European Patent Office are at the very least risk-takers. But, as they themselves should note, appearances can be deceptive.

As the starting point for this endeavour is necessarily the here and now, one can safely assume that if this is not accurately described and determined, then all that follows suffers accordingly. Unfortunately, *Riskworld* 2020 uncritically repeats many of the assumptions, aphorisms, platitudes and prejudices that currently inform the risk discourse. The single key question here should have been: 'Do people's perceptions of risk, match the reality of the dangers they face?' Yet it has not clearly been asked.

Instead, we are treated to the usual litany of assumed problems from 'the effects of climate change' (p. 370), through 'financial contagion' and 'new scourges such as BSE' (p. 373), to 'swelling populations' that 'create growing dependency' (p. 378), 'work-related stress' (p. 391) and even US 'hegemony' (p. 375). The fact that Britain was warmer during the Roman period than today is presumably irrelevant, as is the sorry tale of those who died falling down the stairs over the last decade, and who outnumber the human victims of mad cow disease. The notion that more people on the planet could offer us more solutions is not even envisaged.

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Along with the usual risk suspects, words such as 'complex' or 'non-linear' are used whenever there is a need to evade the debate and as a cover for ignorance. We live, we are told, in 'an era of increasing connectivity and bewildering complexity' (p. 372). Never mind the industrial and innovatory slowdown we have witnessed since the early 1970s, or our growing sense of alienation and political purposelessness. Arguably, people lead far more disconnected lives today than in previous generations, as all manner of formal and informal networks have fallen by the wayside, and it is this that shapes our perceptions of risk. It will be a major task over the coming decade to untangle this mish-mash of complicity, confusion and prejudice.

Clearly, the crisis of confidence that informs this agenda, which is often and quite wrongly presented as having been driven by environmentalists and consumer activists, started from the very top of society. It was when the élite, charged with running our world, with all its problems and contradictions, lacked their own vision for the future or alternatives to pitch themselves against, that things began to go wrong. This manifested itself as an inability to lead through a growing reluctance to accept responsibility.

Our leaders are all too aware of the problems of society but lack insight and courage as to how these might be resolved. The rise of risk consciousness represents acquiescence to this imperfect world. It implies that society has problems that cannot be solved, only managed. Such an outlook is explicitly stated in the *Riskworld* report: 'The illusion that we can control risk is being replaced by a recognition that we can only navigate and adapt to risk' (p. 387).

Thus, lacking a vision of the future, the élite have come to view their role as the management of risk in the here and now. The strategy is not to solve the problems of society, but to contain them – often by an ever-closer regulation of individual behaviour. But this approach is fraught with problems. It is a negative philosophy that encourages passivity and which, rather than attempting to unite people around a vision or cause, tends to scare them by drawing attention to their individual vulnerability.

Also, by setting up the role of political leadership as the ability to contain risk, it exposes the inability of society's leaders to deliver a safe world. This encourages cynicism and deepens doubts about the legitimacy of the élite. This legitimacy hangs in the balance. With no vision and no programme, there is no reason for our political leaders to be where they are except the will of the electorate. But the electorate have become increasingly disengaged as risk averse politics simply takes the form of technical management fronted by differing and failing personalities.

Mistrust ensues as fear has been used to foster coherence but the ability to protect is always found lacking. Trusting nobody at the top, individuals' actual isolation in the very opposite of a networked world, makes them very exposed to every new scare or panic – whether it is issued by the authorities, campaign groups or anybody else. And the cynicism of politicians means that there is little antidote for these panics. A scared society may continually seek official reassurance, but increasingly, it does not trust this advice.

When it comes to the issue of trust, the report lacks teeth. 'Societal trust' we are informed, 'is multidimensional and its main components are considered to be transparency, competence and efficiency' (p. 393). In fact, trust quite simply comes from action and it is fear of action that precludes trust. As all actions necessarily encompass the great bogey of risk managers; '*unforeseen consequences*', then trust comes from taking risks. Instead of passively and timidly asking 'Who will society trust to frame risks?' (p. 393), the reports authors could more boldly have asserted that 'who takes risks, trusts society'.

The demand for trust today highlights the gulf between perception and reality as new technologies have invariably improved and saved more lives than they have impaired or destroyed. Public scepticism of this is symptomatic of a broader disenchantment with social progress rather than the actual impact of development. It is an expression of the contemporary world's difficulties in assimilating change rather than complexity, which tends to be experienced and presented today as a negative, purposeless force beyond human control. When people react against change, they necessarily channel this through targeting specific innovations.

In this, I find myself in agreement with just a couple of lines in the report: 'signal events or catastrophes have greater salience and act as lightning rods around which widespread dissatisfaction and disaffection can coalesce. As a result, risk has become a code' (p. 381). But here it is disengagement that is the real problem, rather than 'inequity'. Innovation is necessarily about engaging with uncertainty. That is why emphasising trust will prove counterproductive and only fuel demands that cannot be assuaged. If the underlying cause of the demand for trust is a socially driven scepticism to change, then its absence can have no technological solution.

To understand this, it is worth exploring the distinction between trust and confidence. As Professor Adam B. Seligman of Boston University argues in one of the most illuminating studies of this question (*The Problem of Trust*, Princeton University Press, 2000), trust is not about expected outcomes. If a trusting act was based upon such calculations or on quantifiable rational expectations it would not be an act of

trust at all, but an act of confidence. It is the suspension of reciprocal calculation that truly characterises trusting relationships.

This is the basis of a fundamental difference between trust in people and confidence in institutions or technological systems. With regard to our interpersonal relationships we act as free individuals and recognise in others their free agency as well. But when we act in predefined ways, trust is not called for, nor established. Thus the origins of trust are rooted in our recognition of the freedom of others to act freely. This fundamentally social act allows us to act outside of predefined or ascribed roles. In short, trust is a fundamental part of risk-taking.

Thus trust is not only a means of negotiating risk, it implies risk. Trust is a means of negotiating that which is unknown. The implied risk is central to recognising others' capacity to act autonomously and in unexpected ways. If all actions were constrained or regulated there would be no risk, only confidence or a lack of confidence.

Trust is therefore quite a rare commodity; and because it is based on free will, trust cannot be demanded, only offered and accepted. Trust and mistrust develop in relationship to free will and the ability to exercise that will when existing norms and social roles no longer suffice. Trust as an aspect of social solidarity is very different to confidence, which is based on market exchange whereby roles are ascribed and outcomes expected. Transgressions are resolved through the legal system.

Autonomous and active engagement are the prerequisites of trust. So the passive expectation that trust should be delivered is anathema to the establishment of real trust. Society today however, is increasingly being reorganised along the lines of mistrust. There is thus an overriding impulse to regulate so that society can be confident that aspirations, risk-taking and experimentation are constrained and limited. The longer term outcome of all this will be to have less innovation and development, as well as failing to deliver trust.

The way out of this impasse is to re-engage people in a political debate that challenges our culture of fear. As I have argued elsewhere, we may need 'to recreate confident, combative individuals before we can aspire to having peaceful, progressive communities' (*Times Higher Education Supplement*, 28 March 2003, p. 26).

Sadly, when we come to examining the three speculative, new-age scenarios prepared for us by the *Riskworld* people, the one striking absence is direct, political engagement. Instead all we are offered is; 'the Council of International Risk Governance' (p. 307), 'the enlargement of the European Union' (p. 315) or 'self-organisation' (p. 324).

The projection of unrepresentative, unaccountable quangos into the future, along with individual isolation, surely reflects poorly on the world we now inhabit. Getting rid of these clumsy barriers, arguing for real freedom and reinvigorating political debate are the most urgent tasks of all those who would gladly see the back of our exaggerated risk obsessions.

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The Timid Corporation - Why Business is Terrified of Taking Risk

Benjamin Hunt, Wiley, UK,
ISBN 0-470-84368-3 (hardback),
252 pages + xii

This fascinating book, endorsed on its back cover by Professor Michael Power, co-director of the Centre for the Analysis of Risk and Regulation at the London School of Economics, and himself author of a significant book exploring similar issues,[1] cannot come recommended highly enough. It should be debated by all corporate managers and their staff.

Benjamin Hunt, an independent journalist and researcher, has written, among others, for *The Wall Street Journal* and the *Financial Times*. He has a straightforward thesis derived from primary research, case studies, and interviews. This is "that risk aversion has become *institutionalized* in business" (p. 2), and further, that the source of this problem lies far closer to home than many seem prepared to recognize, as evidenced by "an unprecedented bout of *self-regulation*" (p. 4).

Thus, "risk aversion is not just a temporary mood," rather "risk aversion has become more of a permanent mindset" (p. 1), promoted, among others, by various types of consultants who see this development as "providing them with huge new revenue opportunities" (p. 30). This phenomenon was clearly in evidence subsequent to the terrible events of September 11, 2001. All manner of self-appointed risk consultants emerged seeking to provide advice, business continuity plans, and supposed "security solutions" to all forms of business, largely by encouraging them to imagine the worst and to speculate about the assumed consequences of not doing so.

Early on, Hunt relates an everyday tale of woe suffered by a legal executive attempting to attend a conference he had been invited to give a presentation at. Notwithstanding tedious concerns as to his physical security that probably arose, it is the moral or ethical dimension of the dilemmas raised by the company that are enough to make you cry. Should the firm be seen to accept free flights and accommodation? And, what about the content of the talk? What if it were misquoted, or appeared to endorse a particular technology? How might the firm's other suppliers respond? All in all, the barriers faced by this company in promoting itself to the world were almost entirely self-generated.

So how did we get from the unashamed advocates of unfettered free-market idealism, such as Friedman and Hayek, to today's climate of nervous caution, where simple choices as to who to interact with and how, have become so problematized?

Hunt begins his analysis during the 1980s, the supposed heyday of deregulation. He shows, as the journalist Simon Jenkins and others have before him,[2] that Thatcherite and Reaganite rhetoric failed to hold back a vast regulatory tide. The reason for this was that instead of being economically motivated, as regulation had been in the past, it increasingly became socially oriented. This re-regulation led to what one academic cited in the book has described as the replacement of "the informal with the formal, the flexible with the rigid, and the personal with the legalistic" (p. 15).

Despite the vulgar prejudices of the old left, business has never been merely about making money. Useful commodities have to be produced and consumed too. But more importantly, through the discipline of competition, entrepreneurs have had to innovate, thereby also providing a leadership role within society. It is this capacity to push society forward while realizing their profits that in the past provided capitalists with moral purpose and authority.

This begs the question as to how business leaders sustain themselves when returns are harder to come by, or society becomes more suspicious of change. In the early 1970s the slow-down of the postwar boom began to bite, as evidenced by the collapse of the Bretton-Woods agreement that triggered the oil crisis, and this found philosophical expression in the report *Limits to Growth* by the Club of Rome. This influential thinktank was assembled by, and largely consisted of, an increasingly disillusioned elite and their report went so far as to describe in outline form what

[1]Power, M. (1997). *The Audit Society: Rituals of Verification*. Oxford: Oxford University Press.

[2]Jenkins, S. (1995). *Accountable to None: The Tory Nationalization of Britain*. London: Hamish Hamilton.

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today has come to be known as the "precautionary principle."

More profoundly though, since the end of the Cold War, and the brief flurry of market triumphalism witnessed then, just as their ideas have had to stand the test of interrogation alone, the elite seems to have absorbed and assumed for itself a growing cultural mood of self-denial and self-doubt. This "Culture of Fear," as the sociologist Frank Furedi has coined it,[3] emphasizes risk over opportunity and leads to an intense impulse to limit the impact of change by regulating the activities both of individuals and of various groupings in society. It is this that has led, in effect, to the formal adoption of a precautionary approach, as much by the so-called hawks in the White House with respect to military matters, as by the bureaucrats in Brussels in relation to human health and the environment.

Accordingly, business has become re-presented and increasingly accepts an image of itself as reckless, abusive, and destructive. Despite lack of evidence as to widespread misdemeanors, every corporate scandal today, from Enron to Worldcom, becomes reinterpreted as a morality tale that points back to an already assumed need to constrain the corporation. Yet, as Hunt indicates, there is nothing new about "cooking the books," nor is there any real indication that such matters are any worse or more widespread today than in previous periods when fraud or insider deals have been discovered.

Regardless, society's growing fear of change and consequential aversion to risk demands disciplining assumed miscreants. Hence, lacking any broader vision for themselves today, businesses have been keen to be seen to introduce all manner of public checks and balances within their once private domains. In the name of accountability, responsibility, and transparency, corporations have institutionalized a bewildering array of codes of conduct, ethical regulations, risk management procedures, stakeholder forums, good governance systems, corporate social responsibility, and sustainable development agendas.

Whether this makes things any better remains to be determined. Indeed, Hunt points to a number of adverse consequences to such developments. On the one hand, we witness an increasingly defensive attitude toward investment and shareholders, on the other, there is a growing obsession with maintaining customer loyalty, brand names, and reputation. It is these themes that are then explored further in the book.

The rise of the risk manager, from the margins to the mainstream, may be celebrated by those who read *Risk Analysis* as at least offering some bulwark of objectivity to the subjective impressionism of those who rail against change. However, it is worth noting how easily such intentions can be distorted to reflect the more conservative mood that prevails throughout society at large. Going along with, and even pandering to, popular prejudice, rather than challenging it head-on or seeking to transcend it, betrays a growing defensiveness and further helps foment the forces of reaction.

Shareholders, too, have become preoccupied by issues of risk. This is both from the narrowly economic dimension, whereby they encourage restraint upon the ambitions of management in terms of innovation and expansion, and from a more socially oriented perspective, seeking to ensure against so-called unethical investment. In turn, managers have become preoccupied by shareholders and justify their decisions according to the increasing pressure they exert, or are held to exert.

Hunt examines this in relation to the decision by Shell not to dump the oil storage platform Brent Spar into the sea, suggesting that "Shell felt it had somehow to make amends, and clean up its act, even though it had not done anything wrong" (p. 71). In my own work I have touched on how major corporates, such as Baxter Healthcare, have had to reorient their entire outlook for just such supposedly ethical reasons.[4] Those, like Lee Raymond, ExxonMobil's chairman and chief executive, who has maintained the self-confidence and wherewithal to tell his critics, "If you don't like this corporation, take your money and get out of this stock," at his company's recent annual general meeting, are a dying breed.[5]

One of the book's strongest sections is its exploration of the concept of "brand value." Unlike the origins of branding, which stemmed from a need to differentiate between similar products, Hunt points out that today, "brands are valued because they create a comfort zone around a firm and its products" (p. 156). The aim is to lock in a relationship and establish loyalty. Thus, rather than innovating anew, shaping and developing new markets, as well as new

[3] Furedi, F. (1997). *Culture of Fear: Risk-Taking and the Morality of Low Expectations*. London: Cassell.

[4] Durodie, B. (2000). Plastic Panics: European Risk Regulation In the Aftermath of BSE. In *Rethinking Risk and the Precautionary Principle*. London: Butterworth-Heinemann.

[5] McNalty, S. (2003). Activists Hijack Exxon AGM. Financial Times, May 28

customers, firms who once had to take risks in order to establish themselves and the brands we are now familiar with have settled for a more limited approach to the future, consisting largely of brand protection and brand extension. The fact that as a consequence the pharmaceutical industry now employs "more people in marketing than in research" (p. 134) can surely only bode ill for the future.

As Hunt points out, "the irony about the new obsession with the customer is that the customer is not served very well by it." Innovation tailored to assumed needs and projected demand is often more limited in scope than that unfettered by focus-group prejudices. He continues, "consumers did not take to the radio, car, aeroplane, television, computer or mobile phone because they were branded products" (p. 234). Indeed, as he states earlier in the book, "genuine innovation often has the capacity to confuse people" (p. 149). Sadly, what is considered to be innovative today, as expressed through glib reference to the explosion of patents, tends to be on a much smaller scale than the technological developments of yesteryear.

Hunt refers to Harvard Professor Clayton Christensen, author of *The Innovators Dilemma*, who has explored this theme more systematically than most. "In his view, companies that listen to customers too closely end up stifling growth opportunities. It is precisely by listening to customers that companies find it difficult to escape from stagnating markets and pursue new opportunities" (p. 150). Further, "Giving up on radical innovation in order to be reconciled with 'the new realities' has dangers in itself. It can leave firms more at the mercy of external forces and, paradoxically, leave them less able to adapt to change" (p. 171).

One outcome of these discussions is a contemporary obsession with the need to restore trust in business as much as in government and science. But, as I have argued elsewhere, the very attempt to do so in a conscious manner is unachievable.[6] Ultimately, real trust, as opposed to confidence, requires respect for the autonomy of others and taking a risk by granting them the freedom they require to explore and experiment. Hence, attempting to regulate risk precludes the establishment of trust, as well as stifling innovation. Thus it is, in respect to all of these changes, that Hunt concludes on the rather bleak note that "a society that does not try to shape its future ends up being dictated to by its own anxieties" (p. 235).

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Facing the possibility of bioterrorism

Bill Durodié

The possibility of bioterrorism has been met by significant financial outlays to map out public health responses. These have included comprehensive audits of potential agents, as well as exploring mechanisms for counteracting their impact. Psychological intervention and communication have been identified as key areas requiring further work, as fear of infection could pose a greater strain on social resources than the pathogens themselves. Bioterrorism provides a powerful metaphor for élite fears of social corrosion from within. Accordingly, a broader historical and cultural perspective is required to understand why individuals and societies feel so vulnerable to what remain largely speculative scenarios.

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Introduction

In 2002, in the aftermath of anthrax attacks on politicians and the media the previous year that affected 22 people (five fatally) [1], the US government signed legislation providing $2.9 billion to enhance bioterrorism preparedness, including public health and medical strategies [2]. Unsurprisingly, therefore, there is a vast and burgeoning academic literature on all imaginable aspects of bioterrorism: ranging from the identification of potential agents and how to counteract them, through syndromic surveillance and diagnosis, to consequence management including treatment, isolation, risk communication and psychological intervention [1,3]. Several specialist publications have been launched and numerous conferences held to discuss these issues.

Many experts expressed the hope that, after years of neglect, by capitalizing on political concerns, fear of bioterrorism would allow the field of public health to come of age [4–7]. Health tracking systems designed to deal with terrorist attacks are expected to also be of use in monitoring emerging infectious diseases more broadly and for identifying the roots of chronic illnesses [4]. This may be true, but it is also an indictment of scientific and political leaders that they only appear willing to develop a sense of common purpose in the aftermath of adversity. What is more, it remains to be determined whether it is as straightforward to reorient systems and staff developed and trained to target specific agents, to having to deal with more general ailments, as it would be the other way round.

During this period, an outbreak of severe acute respiratory syndrome (SARS) developed in South-East Asia and was transported to a few other locations worldwide. Researchers appear to have used this episode to confirm their own prejudices, either warning of a possible apocalypse yet to come or using it as evidence of the need for, or efficiency of, the new health alert mechanisms put into place as a consequence of the focus on bioterrorism [7–9]. A less salutory interpretation of these events might suggest the very opposite — an over-reaction to a minor and predictable condition that, through the prism of the newly inflated sense of risk and warning systems, led to society inflicting considerable, yet unnecessary, damage on several regional economies and airlines.

Bioterrorism is defined as the release of biological agents or toxins that impact upon human beings, animals or plants with the intent to harm or intimidate [10–13]. Those pathogens perceived to be the most threatening, on the basis of infectivity, virulence, lethality, pathogenicity, incubation period, contagiousness and stability, are known by Centres for Disease Control as category A agents [14–16] and are smallpox, anthrax, plague, botulism, tularemia and viral haemorrhagic fevers. Category B agents, which include the toxin ricin, are considered to be less easy to disseminate, have lower morbidity and mortality rates, and are less likely to challenge the public health system. Emerging pathogens are defined as category C agents.

A lot of articles have outlined the properties of the prime suspects, focusing on dose, transmission, diagnosis and treatment. These reviews encompassed numerous journals and books, as many professions are considered to be in the front-line of having to identify or deal with bioterrorism [10,14,15,17]. Few writers, however, point to the difficulties in developing, producing and deploying biological agents [18], as evidenced by the failures of the Japanese cult, Aum Shinrikyo, with biological agents almost a decade ago [11]. In fact, such agents have rarely been used and there is a limited list of such incidents, dating back to the throwing of people infected with bubonic plague over the walls of Kaffa by the Black Sea in the mid-fourteenth century, through the purported

use of smallpox infested blankets by Lord Amherst against native American tribes in the mid-eighteenth century, to a growing number of incidents across the world over the course of the twentieth century [11,12,18].

The effective use of chemical and biological weapons awaited proper scientific understanding and technical capabilities that only emerged from the late nineteenth century onwards. But, it is the advent of biotechnology over the past 50 years, and in particular the more recent, if overstated, possibility of genetically engineering agents to target specific biological systems at the molecular level, that is held to pose a new and significant challenge for the future [19]. Accordingly, there is an increasing amount of literature on the need to reaffirm and strengthen existing counter-proliferation protocols, such as the Biological Weapons Convention, to monitor the use and deployment of so-called dual-use technologies, which can mean almost anything, and to ensure greater scrutiny of scientists and the communication of scientific methodologies and data [11,12,19,20].

Another area presumed to be of concern to the management of such incidents is that of dealing with their psychological impact [3,21,22•,23–25]. Weapons of mass destruction in general, and chemical and biological weapons in particular, are considered to be likely to produce adverse psychosocial consequences upon targeted populations [26], despite a paucity of data in this regard [22•]. Limited, hurried and fairly superficial surveys conducted in the aftermath of the 11 September 2001 attacks purport to show significant levels of post-traumatic stress disorder, affecting both those who were immediately present, as well as those more indirectly exposed through the medium of television [21,23,24,27••]. As a consequence, numerous strategy documents have been, or are being, prepared aimed at ensuring that politicians and emergency responders are aware of, and prepared to deal with, these broader phenomena [28,29]. This article goes on to deconstruct some of the key concepts and assumptions within this debate.

Putting bioterrorism in context

Much of this discussion takes at face-value the notion of an impending threat posed by (usually) external malefactors [19], bent on undermining western democracies, as well as the extreme vulnerability of these societies to such attacks and the assumed fragility of their members [23,24]. There is little attempt to identify possible internal sources of discontent, in view of the fact that the West has greater access to, and capabilities in developing, such weapons [18]. Nor is there any general recognition that advanced economies are better placed to deal with the consequences and contain the potential of bioterrorism, a fact that significantly undermines their purpose to outsiders. More importantly, there is little understanding that our exaggerated sense of vulnerability and frailty is both historically contingent, predating 9/11 quite significantly, and culturally determining, giving shape to and driving much of the bioterrorism agenda [30••,31•].

A notable exception to this trend is presented by King, a medical historian and epidemiologist, who identifies one of the casualties of these times as being 'a proper sense of history' [30••]. He notes that 'experts were using the threat of novel diseases' as a rationale for change long before the recent attacks, and that contemporary responses draw on 'a repertoire of metaphors, images and values' shaped by even older, more complex forces. He goes on to suggest that 'American concerns about global social change are refracted through the lens of infectious disease', signifying a more broadly perceived 'loss of control' over contemporary society. This important essay, shows that a major contribution to our proper understanding of these purportedly narrowly scientific or military issues will come from some unexpected directions.

Another of these is sociology. In his latest book, Furedi, explores the roots of a growing sense of social and individual vulnerability in what he coins 'therapeutic culture' [32••]. By increasingly framing problems through the prism of their emotions, people are actively incited to feel powerless and ill. Accordingly, 'the spirit of stoicism and sacrifice', along with 'a sense of common purpose, unity or a commitment to fight' are now rarely in evidence. A powerful consequence of this, along with distorted perceptions [33] and an increase in reported rates of depression, is provided by the phenomenon of mass psychogenic (or sociogenic) illness [22•,27••], numerous instances of which became evident in the aftermath of the anthrax attacks [31•,34].

Essentially, psychogenic illness occurs when members of a group exhibit a rapid spread of the signs and symptoms of an illness, but the physical complaints have no corresponding organic aetiology [22•]. In extreme situations such cases can rapidly overwhelm existing healthcare resources, undermining the treatment of those directly affected or contaminated [21]. The arrival of television cameras or emergency workers wearing decontamination suits can act as the confirming trigger for this spread [27••,31•]. So too can psychological interventions, such as debriefing, which also undermine constructive, prosocial and rational responses, including the expression of strong emotions such as anger [35–38].

Thus, it is evident that social and cultural expectations as to behaviour shape professional interventions in an emergency or the aftermath of disaster, and that these are significant determining factors as to outcomes [39•]. Accordingly, political and media presumptions that the public will panic, despite a categorical lack of evidence in this regard, are both false and ultimately debilitating [22•,35,39•,40]. Although trying to be helpful in this

regard, a forthcoming World Health Organisation document displays a confused outlook, arguing for the development of long-term professional psychosocial frameworks of support, but conceding that these cannot be imposed [28]. In an incisive critique Pupavac has exposed the limitations of, and false assumptions lying behind, such interventions [41••].

In their study of Gulf War veterans, Stuart *et al.* [42] report a significant reinforcement of false beliefs in exposure to toxins among veterans receiving primary diagnoses of mental disorder. This points to the fact that psychiatrists can end up becoming complicit in shaping and creating individual and social ills [42–44]. Despite good intentions, it is difficult for the latter not to reflect the broader social outlook that emphasizes vulnerability and human frailty. The extent to which this script is culturally constructed is made evident by Bleich [45•]: an Israeli population habituated to living with terrorist attacks displayed lower reported rates of post-traumatic stress disorder than those observed in the US post 9/11.

All manner of technological fixes for dealing with the presumed problem of bioterrorism, from new vaccines to regulations regarding the conduct and communication of science, are being proposed and examined. But, none of these address our corrosive, culturally determined concerns. Indeed, by suggesting the primacy of objective — scientific problems over subjective, social and political ones — an emphasis on technical responses ensues that tends to push people further apart, thereby encouraging them to be more suspicious of one another [46]. This separation can promote a preponderance of rumours and hoaxes, as well as reinforcing passive notions of susceptibility to apparently inevitable threats [21,26,33,47]. Real resilience requires bringing people together with a sense of common purpose [48•].

In this regard, numerous well-meaning contributions, emanating from several directions including the emergency planning community and risk managers and communicators, suggest the need to provide more or better information as a necessary building-block for restoring public trust and confidence [8,11,21,35,49–51] and uncritically accept the supposed threats and fears. Information is necessary [26], but not sufficient to fundamentally address or assuage concerns; it cannot compensate for the demise of a more confident and purposeful culture. Indeed, if it fails to address the 'credibility gap', as Glass puts it [39•], or fulfil the 'need to find meaning' referred to by Hassett in his important contribution [27••], then information can readily become part of the problem rather than being a cure.

Conclusions

Many responses to the perceived threat of bioterrorism fail to address the social, cultural and historical context shaping such concerns [30••,34]. Accordingly, there has been a tendency to seek quick technical fixes to assumed problems, rather than addressing more profound political and perceptual issues. Yet, developed societies had increasingly been living in fear of the consequences of social and technological change well before the recent terrorist attacks, and politicians had busily been reinventing themselves as risk managers accordingly. Ironically, attempts to control or contain change, often for purportedly environmental or moral reasons such as the US ban on stem-cell research, could end up exposing us to even greater risks [35].

As the public are the real first responders in any emergency or disaster, it is vital that they be fully integrated into, and engaged by, a set of broader social aims and values [48•]. The confidence derived from having a sense of purpose or mission, developed over a long-term, active, political engagement in society, cannot be short-circuited by technical means or information campaigns. Hence, although specialist simulations and exercises for dealing with bioterrorism incidents may be of benefit to emergency responders and political leaders [13,16,52,53], they are unlikely to achieve any broader resilience across society. Worse, by failing to address the cultural presumptions and concerns that underlie the emergence of such issues, they may serve to truly corrode society from within. Restoring an appropriate and robust sense of confidence to deal with these matters will need to be a political, not a technical, project.

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Cellular Phones, Public Fears, and A Culture of Precaution
Adam Burgess, Cambridge University Press, 2004, ISBN 0-521-81759-5 (hardback) and 0-521-52082-7 (paperback), pp. 301 + x

Risk analysis today falls broadly into two opposite, methodological camps. Those who appeal to scientific evidence to explain or critique what they consider to be exaggerated public fears, and those who focus on sociological data to highlight people's perceptions and hence seek to justify a more precautionary outlook. While most recognize that risk contains both a material element and a perceptual element, there is rarely a meeting of ways in their methods of analysis.

This is where Adam Burgess' contribution to the debate is to be warmly welcomed. Rather than falsely comparing the statistical risk of one activity with another, as many in the scientific camp are prone to doing, Burgess, a lecturer in sociology at the University of Bath has produced an explicitly sociological analysis. But rather than taking people's perceptions at face value he seeks to explain how these perceptions came to be constructed in the first place, thereby, challenging these and critiquing precaution.

Focusing on people's perceptions has become the mainstay of governments, activists, the media, and even risk consultants. These suggest that our perceptions of risks are as important, if not more so, than the actuality of the risks we face, as perceptions often determine behavior. Thus, it is held, that irrespective of the basis for such fears in scientific "fact," their effects are real in social consequence, leaving governments with little choice but to take such concerns on board and to regulate accordingly.

This conciliatory approach benefits from appearing to take ordinary people's views very seriously and incorporating these into the decision-making process. In an age when few participate actively in political life, it is commendably inclusive and democratic in outlook. It is also a godsend to governments bereft of any broader dynamic or direction. But, as others have suggested elsewhere, assuming or adapting to popular perceptions is as contemptuous of the public as dismissing them.[1] It may also be more damaging.

Burgess explores the advent and use of the "precautionary principle" in the European context,

[1] Durodié, B. (2003). Limitations of Public Dialogue in Science and the Rise of New 'Experts', Critical Review of International Social and Political Philosophy, Vol.6, No.4, Winter 2003, pp. 82-92

comparing it with the notion of "prudent avoidance" in the United States. These approaches, he suggests, have led to the institutionalization of marginal concerns and create a lose- lose situation. Not taking precautions is taken to show a lack of concern, while funding new research suggests either an attempt to influence the outcome, or the existence of a real problem. Thus, irrespective of outcome, any action taken serves to drive public fears rather than assuaging them.

He also demonstrates how it is that once one authority, region, or country has adopted a particular standard, others feel under pressure to follow suit. Indeed, the contemporary vogue for the devolution of power to regional authorities has accelerated this trend, as new bodies are at pains to prove their purpose and adopt a campaigning agenda to distinguish their role from that of central government. All this leads to a ratchet-like effect superimposing worst-case regulations onto worst-case assumptions. The role of the European Commission is particularly apt in this regards having established safety as one of its main "*raisons d'êtres*."[2]

The book's greatest strength, however, lies in its international comparisons. Here, the extent to which social perceptions were distinctly constructed according to varying national priorities and agendas is most clearly exposed. Thus, the sheer size of the United States, combined with the availability of cheap conventional calls and the pre-existing confusion of media and lobby groups made it much harder for activists to establish a coherence there. This was despite the long-standing debates there over the impact of electromagnetic radiation. What's more, efforts to establish a campaign against cellular phones became moderate by the specific responses to the Columbine High School shootings of April 1999 and the September 11 terrorist attacks in 2001. These events showed a nervous public the extent to which technology could possibly serve a vital social function, thereby effectively undermining moves against it.

In Europe, on the other hand, concerns focused on the siting of transmission towers, or base-stations. Thus, campaigns only really emerged when the masts, reflecting the shift from analogue to digital technology, needed to be located in closer proximity to the users. As more masts were required in hilly or mountainous regions, such as Scotland and Italy, than flat ones, such as the Netherlands, so the campaigns took on different intensities there. What's more, telecommunications towers had a different meaning in Northern Ireland, where they evoked memories of a "surveillance state" and the campaign against them was used by the authorities to unite the different communities, to Ireland itself. There, complaints largely emanated from non-Irish émigrés searching for a rural idyll, and the issue threatened to challenge the young, dynamic, and forward-looking image of a "Celtic Tiger" being promoted by the government. For other similar and rather evident reasons, in Finland, the home of Nokia, such campaigns never really got off the ground.

The role of the media is most rigorously examined in the U.K. case. Here, far from being a tabloid frenzy, concerns were first raised, and continued to be developed, by the high-brow broadsheet, *The Sunday Times*. Headlines such as "Mobile phones cook your brain" (April 14, 1996) and "Are we being told the truth about mobile phones" (December 20, 1998), reflected one particular journalist's personal obsession. Indeed, the case is well made that once the issue hit the tabloids it also shifted from one newspaper to another as particular journalists changed jobs. In an interview with Cathy Moran of the *Express* newspaper, Burgess goes so far as to ascertain how her interest in the subject stemmed from her seeing it as a personal opportunity to do something "more worthwhile" than covering celebrity-driven trivia (p. 80).

It is the interaction between this small number of "moral entrepreneurs," in lobby groups and the media, and governments with differing attitudes to the future that determined the shape concerns took in each country. Notably, this altered the original nature of any concerns expressed by the relatively few members of the general public to raise any issue in the first place. These originally focused on the aesthetics of transmission masts, the impact they might have on property prices and the lack of consultation as to their deployment and positioning. It was institutional influences that transformed these rather isolated "not-in-my-backyard" concerns into far more effective campaigns about the purported health effects of the phones themselves, as well as their base stations.

One development was that as ownership of mobile phones became both more democratic and more likely to occur among younger age groups, so the debate shifted from attacking "yuppie status-symbols" to focusing on the towers and their possible effects

[2] Durodié, B. (1999). *Poisonous Dummies: European Risk Regulation after BSE*. European Science and Environment Forum, Cambridge. Available at http://www.scienceforum.net/pdfs/Durodie1.pdf.

upon children. The science, as is often the case, was counterintuitive in this regard. The closer you are to a base-station, the less energy your phone requires to receive the signal. Thus the best place to site masts would be as near to children as possible. But like so many of these debates, a nervous elite ignored the real evidence in favor of hearsay and emotion. Thus it was that the then Education Minister, David Blunkett called for an " urgent investigation" of the placing of masts on schools, while the National Union of Teachers called upon the Health and Safety Executive for advice and the Metropolitan Police advised their officers to restrict usage of the technology (p. 87).

The consequence, unique to the British response, was the establishment of the Independent Expert Group on Mobile Phones (IEGMP), under the chairmanship of the former Chief Medical Officer, Sir William Stewart. This initiative, launched at the behest of the then Minister for Public Health, Tessa Jowell, to " keep ahead of public anxiety," is seen by Burgess as the paradigm inquiry of our precautionary times. It sought to avoid dealing with the scientists of the National Radiological Protection Board, including instead members with little specific expertise in the field. On one hand it concluded that there was no scientific evidence whatsoever of any harm, on the other it sought to give credence to public concerns by advocating further research and urging parents to limit their children's usage.

Unsurprisingly, this attempt to have it both ways, satisfying both scientists and concerned parents alike, satisfied neither. It led to headlines such as " So are mobiles a risk or what?" in the *Mirror* and similar confusion elsewhere. Through this process of demonstrating their sensitivity to what they presumed to be public concerns, or what Burgess calls " symbolic politics" (p. 266), the authorities not only failed to clarify the matter, but made it worse as the number of campaigns grew in its aftermath. These felt encouraged by such official endorsement and apparent recognition of their concerns. In fact, as Burgess indicates, parents might well have responded differently in surveys if the scale of the risk and money expended upon it had been put in the context of other options for protecting their children's health.

In the case of mobile phones, no plausible scientific mechanism has been posited to explain any purported ills. Indeed, much of the research produced has been to explain various associations after they had been noticed, rather than to understand their possible cause. This approach could equally well be applied to other products and processes that produce localized heating effects, such as laptops and electric blankets. But apart from generating new fears, as Burgess points out, noting an effect is not the same as assuming harm. Regardless, as Furedi suggests elsewhere, " if society wants to treat electromagnetic fields as a cause of illness, they will be deemed a cause of illness." [3] What's more, there is a danger in dealing with problems in this way that diagnosis becomes reduced to mere description and thus the possibility of resolution becomes impossible.

Risk consultants and sociologists suggest our perception of risk to be shaped by such factors as whether the risk is taken voluntarily, the extent to which it is understood, the fear it instils, our level of trust in authority and the impact it may have, particularly on children. Burgess' analysis suggests rather different factors. These include, the degree of political engagement in public life, the confusion of roles and responsibilities between differing authorities, the growing sense of isolation among the political, scientific, and commercial elite and their attempts to combat a crisis of legitimacy by promoting public fears.

Situating the rise of an obsession with the impact of science upon our lives into this context of a demise in broader social and political engagement in society, Burgess points to the ultimate irony that " attempts to reform science have extended the role of science in policy much further" (p. 232). In the end, it was the sheer utility of the technology that outweighed the fears that had been constructed and, as people continued to use their mobiles, so gradually the media lost interest. It remains, however, a salutary lesson in the social construction of fears that should be used to inform many similar episodes that will undoubtedly emerge in the years ahead.

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[3] Furedi, F. (2004). *Therapy Culture: Cultivating Vulnerability in an Uncertain Age* (p. 136). Routledge.

Animal-Rights Terrorism and the Demise of Political Debate

Bill Durodié

Winning over the many may be difficult but remains essential for defeating the few.

This summer, the United Kingdom Home Office launched a crackdown on animal-rights protestors who intimidate or harass people associated directly, or indirectly, with experiments on animals. The move followed action against the construction of an £18 million biomedical research facility at South Parks Road in Oxford. This had led the main contractor, Walter Lily & Co Ltd, like the concrete suppliers RMC before them, to pull out of the project to replace and update the university's animal-testing facilities.

Both companies are subsidiaries of Montpellier plc, whose executive cars had been damaged with paint. The parent company's investors had also received spoof letters purporting to come from the senior management team, and advising them to withdraw their interests in the company or risk being identified on a website run by activists. Why anyone would think that a company would threaten its own shareholders is not evident, but this led to a 20 per cent drop in the share price as some investors bailed out.

Earlier in the year, Cambridge University shelved its own plans to build a neuroscience study centre, which would have housed a primate research laboratory. This followed a similar campaign to that in Oxford, made worse by five years of delay in obtaining planning permission. Estimated costs for the facility, including measures to protect it, had spiralled from £24 million to £32 million.

Nearby, Britain's biggest animal testing laboratory, Huntingdon Life Sciences, has become an almost permanent protest site. There have been sporadic clashes against the police charged with protecting the facility. Its director has been physically attacked, requiring hospital treatment, whilst other members of staff suffer continually from various forms of abuse.

Over recent years, a small element within animal-rights groups appears to have started targeting suppliers, including junior staff and their families, as well as researchers, in their campaigns. They are held to use smear tactics and threats against staff and their children, bombard them and their families with malicious telephone calls, post and e-mails, and a tiny number have gone on to damage property, use crude incendiary devices and launch physical assaults.

Certainly, there would appear to have been a significant increase in both the number and severity of incidents involving such campaigners. In the first few months of this year there were 54 attacks on the homes of company directors and employees. By May, there had been 117 arrests, compared with 15 for the same period in 2003. However, these figures could also reflect more reporting of such incidents, as well as a growing willingness on behalf of the authorities to take action.

The Home Office decision to tighten-up and strengthen existing police powers, however, may not satisfy scientists and businesses, who had been lobbying for new, more specific legislation. The proposed enforcement plans, which will include extending anti-stalking laws and making use of anti-social behaviour orders to curb the activities of the more extreme elements, fall far short of bringing in the army to protect supplies and facilities, as some had called for in order to make the government show its support for such research.

Accordingly, this autumn, a leading City of London organisation, whose members control pension funds worth £650 billion, are set to take matters into their own hands. They argue that the UK has already lost over £1 billion in investment as companies take their business elsewhere, dissuaded by the unreceptive climate to their work here. It is claimed that they will be announcing details of a £25 million bounty for any information leading to the arrest of the purported ringleaders. Notably, this is more than the reward available from the CIA for the capture of Osama bin Laden, which currently stands at $25 million.

So, are animal-rights activists, terrorists on a par with the likes of al Qa'ida? Certainly they share a similar anti-human outlook. But it is also clear that those criticising the protestors lack resolve in winning this debate. Despite the horrendous-sounding nature of some of the incidents concerned, it remains the

case that they are few and far between. And there already exist laws to deal with criminal damage and assault. The police themselves have estimated that there are only 20-or-so hard-core animal-rights activists in the UK responsible for carrying out such direct action.

If the protestors succeed it will have less to do with their own ruthlessness and organisation than with the defensiveness of those they confront. And this lack of real resilience goes to the very heart of the issue itself – a reluctance by scientists, corporations and politicians to stand up for the benefits and necessity of animal research. For instance, some of the advocates of animal research had pointed to the fact that neither of the proposed new facilities in Oxford or Cambridge would have led to an increase in the number of animal experiments conducted. This rather concedes the point that there is a problem with such research in the first place.

Others have suggested that by closing down facilities in the UK, experiments will simply be conducted abroad where, it is assumed, regulation regarding animal welfare is less stringent. Apart from the stereotypically racist undercurrent to this line of argument, it also lends itself to considering that animal, rather than human welfare, should be the priority. No number of expert or lay ethics committees can get away from the fact that some experiments involve putting chemicals in animals' eyes or planting electrodes in their brains. So there is little room for squeamish evasion by posing as champions of animal welfare.

No scientist enjoys using animals in experimental procedures, but nor should they be forced, by adapting to the current guidelines that emphasise a strategy of refinement, reduction and replacement (the so-called three Rs), to curtail the drive to explore and innovate. Scientists themselves have been particularly poor at standing up against this sentimental tide of regulation that would have precluded many of the insights and advances we, and they, benefit from today.

Despite accusations by some that such experiments do not transpose to understanding the effects of drugs or other products upon the human metabolism, they have already led to treatments, vaccines and cures for diseases and conditions such as polio, leukemia, asthma and diabetes. They remain a necessary step to sifting out unexpected reactions and identifying future potentialities. And without these procedures there would be little hope for our future understanding of how to treat other human afflictions, such as cancer, heart disease, multiple sclerosis, Parkinson's and Alzheimer's disease.

So, it is not violence alone that forces some companies out of this market. For targeted individuals, the tactics of some activists may well be intimidating, but it is the reluctance of government and the scientists and corporations involved to defend the principle of animal research that provides an opening for cranky, immature threats, as well as extremists. This situation is then further exacerbated by a stream of cancellations and concessions by the authorities concerned. It is this moral and intellectual cowardice that they seek to compensate for through calls for legislative coercion.

It was the government that stalled on giving the go-ahead to the Cambridge primate centre and it was the Labour Party that withdrew its own pension fund investment from Huntingdon Life Sciences, subsequent to being pressured by the Political Animal Lobby. More recently, it was the chair of the science and technology Commons Select Committee who declined to appear on the BBC's flagship Newsnight programme for fear of being targeted.

Without forcing a broader public debate on the matter and engaging wider support, the authorities will continue to lack real resilience in the face of a handful of activists and cave in too easily. Accordingly, those few who do raise their heads above the parapet are readily targeted and live their lives under siege. But the knee-jerk response, to secure society and its facilities from the outside, rather than winning the argument from the inside, will offer little long-term benefit. Rather, we will all be losers from the assumption that a solution lies in restricting the actions of a few.

Winning this fundamental argument could offer any government that is truly committed to engaging the public in a dialogue, a tremendous opportunity to re-establish some of the essential bonds of social discourse that have become eroded in recent years. It would also go some way towards challenging the profoundly anti-human, anti-modern, anti-Western views of the animal-rights lobby. These views are almost entirely Western in origin and go on to inform other, more extreme, nihilist terrorists.

Sadly, so far the response of the various authorities to the purported threat posed to society by a tiny number of extremist campaigners, rather betrays their own sense of confusion and isolation. It is this crisis of confidence and insecurity amongst the elite of society, and their unwillingness to resolve this through principled political debate that both undermines them and encourages others. Worse, by seeking to short-circuit or bypass the internal process of political engagement with the external imposition of further rules and restrictions, they end up revealing a contempt for ordinary people on a par with that of any terrorist. ■

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NUFFIELD TRUST GLOBAL PROGRAMME ON HEALTH, FOREIGN POLICY AND SECURITY

RISK CASE STUDIES

The Concept of Risk

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The Rise of Risk

Risk is an abstraction that represents the likelihood of specific outcomes. As such, risks appear largely external to us - particular events occur whether we want them to or not. In effect, risks have always been around, however, that we conceive of something as being a risk, is a product of social progress and the evolution of human consciousness.

The ability to discern patterns, and their limitations, in nature, in order to subject these to our actions, has enabled development. In turn, the meaning and history of risk have changed too. Our understanding of risk reflects our own confidence – or lack of it – in human will and agency. Hence, it has gone through several *qualitative* transformations from randomness to chance and probability and, a more recent focus on uncertainty (1).

In recent years, there has also been a phenomenal *quantitative* growth in references to risk. The word exploded into the academic literature in the 1990s, coinciding roughly with the translation into English of Ulrich Beck's sociological best-seller, *Risk Society*, in 1992 (2). Since that time, the number of conferences, courses, centres and journals, focusing on, or making use of, the word *risk*, have expanded rapidly too.

This development begs our understanding. Do we face more risks today? Have we become *more conscious* of the various risks that we face? Or, are these risks now of a *qualitatively different* order? Beck, and the British sociologist, Anthony Giddens, err toward the latter of these possible conclusions. They suggest that society now faces new risks – those generated by ourselves. Accordingly, Beck and Giddens distinguish between what they consider to be *natural risks* and what they have come to define as *manufactured risk* (3).

There are numerous problems with these distinctions, not least of which is trying to understand where one category ends and the other begins. For instance, it could be argued that humanity itself, has only come to exist in a self-conscious state through its separation from nature, and hence most of the risks that impact upon us are necessarily mediated in unnatural ways. What's more, the widely-held assumption that natural products or processes are necessarily better for us than manufactured ones is simply wrong.

Both of these writers, and many others besides, note a heightened *consciousness of risk* within contemporary society. This is often attributed to a loss of control over who determines what risks are acceptable for society, as well as the social distribution of costs and benefits. Few however, critically examine such perceptions. They tend to be accepted as a given. Accordingly, the solutions proffered revolve around the need to regulate risk, rather than the need to understand perceptions.

But it may be that, rather than living in a *Risk Society*, we now live in a *Risk Perception Society*. And if so, rather than taking risks at face value, it is their perception that ought to be the subject of sociological analysis and investigation. Unfortunately today, many seem to fetishise public perceptions, considering it almost rude to interrogate them. But, whilst dismissing people's views may well be patronising, so too is adapting or pandering to these uncritically.

The academic and social commentator, Frank Furedi, has noted that over recent years our use of the word *risk* has altered. Risk used to be considered, at least in part, as a conscious relationship. People could choose to *take a risk*, implying an active engagement between the human subject and objective reality. Nowadays, many references to risk are prefixed by the word *at*. We are now increasingly perceived of as being *at risk* in numerous situations (4). This reveals and reflects a growing sense of human passivity, disconnection or impotence in the face of what are assumed to he implacable or inevitable external processes.

A further shift has been the growing tendency to focus more on hazard and uncertainty than on risk and probability. Hazard is understood to be the *potential* effect of a situation, process or product, such as its being unstable, corrosive or carcinogenic. Risk refers to the *actual* chance of something happening, taking account of real behaviour or exposure. This is often expressed as a probability. Everything that we do exposes us to hazards. It is *how* we do things, and *how* often, that determines the risk.

So for instance, stairs are a hazard, but it is the likelihood of injury that is known as the risk. The latter will be a function of variables such as step height, lighting conditions, age and speed. The call, emanating from certain quarters, to regulate specific situations on the basis of their *innate* hazardous properties is therefore, whether consciously or not, a call to remove human *agency* from the equation.

In a similar vein, uncertainty refers to the difficulty of knowing what *may* occur in advance of experience. It seeks to distinguish situations where we can base decisions upon data, from those where we can not. But that there remain unknowns to be determined in all instances is hardly new. In fact, we can only move towards an appreciation of what we do not know by starting from what we *do* know. Unlike risk and probability, prioritising hazard and uncertainty, downplays our understanding, competence and will.

These respective shifts; the *quantitative* explosion in reference to risk in all possible walks of life, the focus on people's *perceptions* of risk over the actuality of the dangers they face, the shift in how we use the word *risk* from being a verb reflecting an *active* relationship to becoming a noun, used in a *passive* sense, and the desire to prioritise *invariant hazards* and *unknown uncertainties* over the conscious *choice* or ability to *engage with risk* and to *determine probabilities*, appear to share similar roots. It is to this that I now turn my attention.

The Demise of Society

When Margaret Thatcher famously suggested in an interview that *'there is no such thing as society'* (5), she was, understandably, derided by many. But today, it would appear that her statement was almost prescient. In form at least, if not in content, there is now very little awareness of the extent to which many phenomena are shaped and determined by social forces. Instead, there has emerged a growing emphasis on nature and individuals as the presumed roots of most issues.

Hence, science and psychology now occupy peculiar and privileged positions in contemporary life (6). Despite the fact that many perceived problems in the world today are shaped more by their social *context* and origins than by their scientific or psychological *content*, it is the latter that are increasingly scrutinised and held to account.

From analyses of the impact of genetically modified organisms on the environment to studies of psychological orientations and preferences, from concerns about the consequences of exposure to endocrine disrupting chemicals on early-years development to attempts to predict behaviour in a terrorist incident, such an outlook presents our world and our responses to it as being increasingly determined by impulses either entirely external to us, or so innately internal that there is little we can do about them.

Ironically, at the same time as natural forces and individual behaviour are singled-out and assessed, they are also feared and monitored as potentially disruptive sources of risk to our lives. Why is this? How did the demise of a broader understanding of ourselves, as well as many of the phenomena we observe as being broadly social in content, come about? These are important issues to address, as they impact upon our sense of the possibility of transforming the world. If things are largely scientifically or psychologically given, then there may be little point in trying to change things.

It is the gradual erosion of any sense of the need for, and the possibility to achieve, social change that drives this outlook. In the past, radicals sought to transcend the limitations imposed upon society by advocating widespread social reform. Science fed into, and fed off, this broader aspiration and dynamic. Science can transform society, but it is also a product of society – and a society that does not desire transformation, or fears the consequences of change, is unlikely to develop as rapidly as it could otherwise (7).

The emphasis often given as to the ability of science to effect social change is one-sided. It was the aspiration for social progress that gave humanity confidence in the power of its own reason in the first place – a factor that then proved of significant importance to the development of science. The Scientific Revolution represented the triumph of rationality and experimentation over the superstition, speculation, diktat and domination that had gone before. It was a practical battering-ram with which to challenge perception, prejudice and power. But science was also the product of a broader social dynamism – as well as becoming an essential contributor to it.

And, just as the initial dynamic behind science was social change, so social change – or more particularly the lack of it – could circumscribe it too. Initially this came from the vociferous rejection of the old religious and monarchical orders that had been supplanted. Then, with the advent of positivism, scientists themselves sought to decouple science from the political project to transform society. Businesses – subject to the internal imperative to innovate and compete against one another to realise profits – could harness science, with all the instability and the constant flux this produced – but the social order of the market system as a whole was beyond challenge.

Finally, over the course of the twentieth century, a wider layer of society lost its faith in the progressive capabilities of scientific transformation. Two world wars, separated by a depression and followed by continuing poverty and conflict in the developing world generated doubts as to the possibility of universal human progress. Radicals, who had traditionally championed the liberatory potential of scientific advance, now viewed it with increased suspicion. It was clear for instance, despite the potential they offered, that the Manhattan Project and the Apollo Programme had initially been driven by the narrow needs of American militarism.

Some now argued that aspiration itself – rather than its failure as evidenced in the collapse of confidence in social progress – was dangerous. Science was seen as the amoral steamroller of a dispassionate new modernity that crushed communities and tradition. What is so poignant about the modern disenchantment with science, is that it has emerged at a time when its achievements are without precedent. But behind the current crisis of faith in science, lies a collapse of confidence in humanity, and hence in the desirability and possibility of social transformation (8).

In parallel with the gradual disillusionment of society with science, has come an equally significant process of disengagement of society from politics. This accelerated after the demise of the old Cold War divisions. For the majority of ordinary citizens this formal alienation has been exacerbated by a growing sense of social disconnection at the level of informal attachments and associations with others. These social bonds have been severely eroded over the last decade or so. The resultant underlying sense of isolation and insecurity right across all sectors of society has become a key element shaping contemporary perceptions of risk.

At the formal level, people in advanced Western societies are increasingly unlikely to participate in the political process. This effect is most striking among younger age groups. Electoral turnouts are at an all-time low and in the few instances where these are high, emotional attachment appears to rule over reasoned argument. Few are active, or even passive, members of political parties or trade unions as their forebears were, and there is little attempt to engage in – or raise the standard of – debate. When people do vote, it is often on a negative basis – against an incumbent, rather than for a replacement.

This means that there is very little loyalty, and accordingly predictability, in the outcome of contemporary elections. Marginal events, largely disconnected from the actual process – such as a terrorist attack or claims as to the personal character traits of particular contestants – can have quite devastating impacts. Turnouts range between 10% and 60% depending on the type

of election. But, as this is split between two or more major parties, the actual mandate of those put in office is even lower.

What it means to belong to one of these bodies has irrevocably been altered too. In the past, trade union membership suggested a solidarity with members of a community that one might not even know – as well as a sense of collective purpose and struggle in seeking to transform existing conditions. Today, it is more likely to represent a means to obtain individual perks, such as cheap car insurance, or personal security in relation to health and safety issues at work. Suggestion of redundancy is more likely to lead to a negotiated settlement than a form of group action.

For the social elite, the political disengagement of the majority is potentially catastrophic. It exacerbates their own sense of isolation and insecurity, as their democratic mandate and political legitimacy become questionable. This has been made worse by a loss of vision and purpose. This became particularly pronounced through the demise of the old political framework, whereby the world was divided between the two competing visions of a socialist left and a free-market right.

Today, the categories of left and right have been expunged of their traditional associations and meanings. Voters are unable to distinguish between the pronouncements of the various major parties. Now, all fight for what they believe to be the centre ground and are desperately seeking issues that may reconnect with, and re-engage, ordinary people. Foremost amongst these have been the environment, human health and security.

At the informal level, the changes in society are even more striking. Many have commented on the growing pressures faced by families, communities, and neighbourhoods. In his book on this theme, *Bowling Alone*, the American academic Robert Putnam also pointed to the demise of informal clubs and associations (9). Meeting up with friends occurs less frequently than previously too. In other words, people are not just politically disengaged but also, increasingly socially disconnected. This loss of social capital has occurred and been experienced within a generation.

Not so long ago, for example, it was still possible across most urban centres, to send children to school on their own, assuming that other adults would act *in loco parentis* – chastising them if they were misbehaving and helping them if they were in trouble. Today, such a straightforward social arrangement can no longer be taken for granted. No-one ever signed a contract saying that they would look after other people's children. It was simply an unstated and self-evident social good. Ironically, this loss of a social sense of responsibility makes the individual task of parenting harder (10).

In a similar way, ordinary communities, at the turn of the last century, invested a great deal of effort establishing and running their own institutions. These took a wide variety of forms from churches, to working men's clubs, schools and trade unions. It is almost impossible to find a similar process at work within society today.

This is not to suggest some kind of golden-age of community activism. Clearly, past societies were also associated with a wide manner of activities and actualities we are quite glad to have seen the back of. However, the resulting erosion of social connectedness is significant.

The Rise of Risk Perception

Being less connected leaves people less corrected. It allows their subjective impression of reality to go unmediated or unmoderated through membership of a wider group or trusted community. The erosion of collective forms of social association, both in the formal sphere of political conviction and participation, as well as in the informal sphere of everyday life, has had a devastating impact upon how people view themselves and the world around them.

Views and values which, in the past, would have been filtered and scrutinised through various layers of public and private insight and knowledge, come today to form unchallenged personal frameworks for understanding the world. Individual obsessions can grow into all-consuming worldviews that are rarely open to reasoned interrogation or debate. The sense that ideas are actually shaped through an interaction between material circumstances and social associations has been severely eroded. Today, what would once have been considered to be mere opinions, have become inextricably and existentially bound to one's emotional identity. Questioning these can be perceived as tantamount to a physical assault.

Without a sense of the possibility of social solutions, and divorced from any trusted networks or webs of association by which to provide meaning and a sense of belonging and attachment for themselves, people are increasingly inclined to view events as random, out of control or inevitable. Social isolation and insecurity lends itself readily to problem identification and inflation. In part, it is this that explains our recent proclivity to emphasise or exaggerate all of the so-called risks that are held to confront us.

From BSE (bovine spongiform encephalopathy, more commonly known as mad-cow disease) to GMOs (genetically modified organisms), from the assumed risks presented through excessive use of mobile phone to the purported link between the MMR (measles, mumps, rubella) triple-vaccine and childhood autism – all new developments are now viewed through the prism of a heightened and individuated consciousness of risk.

Nor are our fears restricted to the realms of scientific and technological products and processes. Many age-old activities and agents have also now been reinterpreted through our growing sense of isolation and fear. Abduction, bullying, crime, doctors, the environment and food, form just the first few letters of an ever-expanding lexicon of new concerns. Even relationships and sex can now be viewed and assessed using an instrumentalist risk calculus – to the detriment of both.

But, rather than the world changing any faster today than in the past, or becoming a more dangerous, unpredictable or complex place, it may be our diminished, more fragile and isolated, sense of self that has altered our confidence to deal with change and the problems it gives rise to (11). Far from it being the inevitable reflexive consequences of manufactured risk impacting upon us, it may be our alienated and distorted perceptions that lend themselves to identifying everything as a risk.

Those who propose that we now inhabit a *Runaway World* (12), would be hard pressed to show how the pace of change today is any greater than say, over the sixty-five year period two

centuries ago between the creation of Richard Trevithick's first steam locomotive and the advent of transcontinental railroads across the United States of America, or the pace of change over the same period a century ago between the Wright brothers first powered flight and man walking on the moon. If anything, when considering the tumultuous social developments that accompanied these periods of technical innovation, change today appears somewhat attenuated in its impact.

Much of the recent focus has been on the largely undelivered promises of biotechnology – a technology which, in its various stages is now passing its fiftieth anniversary – and the potential of the internet. But whilst the latter may have led us to being more networked virtually, the extent to which this has transformed the real world is less evident. Transfers of information alone do not effectuate change. Radically overhauling existing transport networks, a transformation not currently envisaged by many, would for instance, necessarily have greater social and scientific consequences.

In our technically networked world, we may be more aware – but we are also easier to scare, than previously. Being more isolated leaves us more self-centred, as well as risk averse. The demise of the social also leads to little sense of the possibility that if there truly is a problem needing to be addressed then it is together – with others – that this can best be altered or challenged. In turn, these developments reduce the likelihood of our acting for some greater common good and end up making us less resilient, both as individuals and as a society.

All of these developments have had a quite devastating and stultifying impact upon society. The breakdown of collectivities have, in the absence of any coherent replacements, enhanced the sense which isolated individuals have of themselves, as being frail and vulnerable. In turn, an exaggerated perception of risk lends itself to increasing demands for greater regulation and social control. Accordingly, people increasingly look to those in authority to enhance their sense of security by mitigating the worst effects of the natural world and the actions of those who seek to change it.

And in an age characterised by an absence of political vision and direction, the politics of fear, or risk-regulation, have provided a reluctant and isolated elite with an agenda and a new, if limited, sense of moral purpose. The authorities have willingly embraced this role. Latching onto the generalised climate of isolation and insecurity, politicians have learnt to repackage themselves as societal risk managers – particularly around the issues of health and security.

In a quite remarkable transformation, radicals have reinvented the state as a mechanism of social protection. People who would once have sought to organise their own affairs and build their own institutions – in the absence of any sense of social solidarity or their own ability to deal with problems collectively – now turn to the state to resolve matters. Even those environmental and consumer lobby groups with the most vehement anti-state rhetoric, look to the state to act as the ultimate regulator and enforcer.

Politicians now pose as the people who will protect us from our fears and regulate the world accordingly. But the demise of any positive sense of the possibility and desirability for social transformation has also led to a reduction in what it is that politicians actually offer the public today. The petty lifestyle concerns they focus on, reflected in incessant debates about smoking, smacking, eating and drinking are unlikely to inspire and engage a new generation

of voters (13). Nor – at the other end of the spectrum – do doom-laden predictions relating to global warming and terrorism.

Indeed, the more such concerns are highlighted, the more it becomes impossible for the authorities to satiate the insecurities they create. Hence, alongside disengagement and alienation, has come a concomitant disillusionment and mistrust in all forms of authority, whether political, corporate, or scientific, as these invariably fail to live up to new expectations. This catastrophic corrosion of trust – in outlook if not in practice – has facilitated the replacement of healthy scepticism with unthinking cynicism.

Accordingly, expertise is now perceived as elitist and knowledge as biased or unattainable (14). In many situations today, the public are encouraged, and have become accustomed to, assuming the worst and presuming a cover-up. This has generated new demands for the attribution of blame and compensation. Image and rumour now dominate over insight and reason. Myths and conspiracy theories abound, encouraged by the same people who demand the inclusion of presumed public perceptions in decision-making.

Focusing on people's perceptions has become the new mainstay of governments, activists, the media, and even risk consultants. These suggest that our perceptions of risks are as important – if not more so – than the actuality of the risks we face, as perceptions often determine behavior. Thus, it is held, that irrespective of the basis for such fears in scientific *fact*, their effects are real in social *consequence*, leaving governments with little choice but to take such concerns on board and to regulate accordingly.

It is this outlook that the former Chief Scientific Advisor to the UK government, Sir William Stewart, reflected at the end of his chairmanship of the government's own inquiry into the purported adverse health effects of mobile phones. He concluded that in future *'anecdotal evidence'* should be taken into account as part of the process for reaching decisions (15).

Such a conciliatory approach benefits from appearing to take ordinary people's views very seriously. In an age when few participate actively in political life, it seems commendably inclusive and democratic. It is also a godsend to governments bereft of any broader dynamic or direction. But, assuming or adapting to popular perceptions is as contemptuous, and as patronising, of the public, as dismissing them outright. It may also be more damaging.

The New Public Health

The World Health Organisation (WHO) definition of health is *'a state of complete mental, physical and social well-being'* (16). After its adoption in the preamble to the WHO Constitution in 1946, this was largely subsumed to the pursuit of more tangible goals, such as eradicating disease and treating illness. Its return as a key reference point to contemporary debates about health is not a measure of the inherent strengths of the concept, but rather of the decline of other, more socially-oriented approaches and outlooks for enhancing social well-being.

For societies with a diminished sense of the import and impact of social forces upon them, public health and public safety have been reconceptualised as a multiple of individual well-being and personal security. Hence, despite drawing attention in a limited way to the social aspects of health, the WHO definition feeds into more narrowly subjective orientations and privatised worldviews. As the British General Practitioner and medical writer and commentator, Michael Fitzpatrick, has pointed out, health became politicised at precisely the same time as the world of politics was suffering a dramatic decline (17).

Fitzpatrick notes that people in Western societies live longer and healthier lives than ever before, yet seem increasingly preoccupied by their health. He suggests that the search for a personal sense of well-being is unrealisable despite, and largely because of, the barrage of government and other public health campaigns that encourage people to assume individual responsibility for their health.

More recently, Furedi has pointed to the fact that the concept of well-being itself, necessarily presumes its opposite – that is, that the natural order of things is for people to be ill (18). Hence, the requirement in contemporary health campaigns for constant vigilance to stave off illness. Conspicuous awareness has become a defining posture of our times.

This contemporary focus ignores the real gains in public health achieved over the last century and a half. As the medical consultant and author, Raymond Tallis, has indicated, much of this was attributable to developments beyond the remit of medicine. Increasing prosperity, better nutrition, education, public hygiene, housing and many other factors played their part. It is this that allowed the proportion of deaths that occur between the ages of 0 and 4 to decline from 37 per cent in 1901 to 0.8 per cent in 1999. As a consequence, *'Nearly two thirds of the increase in longevity in the entire history of the human race has occurred since 1900'* (19).

Tallis suggests that once public hygiene and a welfare state had been established, the contribution of scientific medicine – both to the extension of our quantity of life, as well as to the quality of it – has been proportionately greater. But infectious diseases, that had been the main cause of premature mortality and the most susceptible to scientific interventions, have declined in their significance. As a result, contemporary Western societies now face different health problems. Heart attacks, strokes and cancer are the major killers, whilst arthritis, diabetes and asthma are the major causes of ill health. And, as Fitzpatrick explains, in dealing with this new pattern of disease and disability, modern scientific medicine appears to offer diminishing returns.

Nevertheless, *'in real terms the health of even the poorest sections of society is better than at any time in history: indeed the health of the poorest today is comparable with that of the richest only twenty years ago'*. Hence, Fitzpatrick suggests that recent trends to denounce scientific medicine as a form of paternalistic authoritarianism, fall wide of the mark. Seven in ten children with cancer are now cured, compared with fewer than three in ten in the mid-1960s, mainly due to the development of new drugs. As American sociologist, Paul Starr, noted in a Pulitzer prize winning contribution, *'Just as medicine used to be uncritically given credit for gains in health that had other causes, so medicine was now disparaged without prudent regard for its benefits'* (20).

At the same time however, pseudo-scientific and blatantly unscientific approaches for dealing with the feeling of illness – as if this were the same as a disease – have been extended into those areas of our lives that actually require social solutions. Fitzpatrick is particularly critical of the rise of CAM (complementary and alternative medicine) in this regards. Coinciding with the wider loss of faith in science these alternatives may make sense to individual patients who find conventional medicine ineffective and conventional practitioners unsympathetic – but for doctors to collaborate with such practices suggests a denial of expertise that reflects a far broader loss of nerve within the profession itself, and *'a capitulation to irrationalism'*.

Medical intervention today has also increasingly spread into areas that would once have been considered to be *lifestyle* issues, such as eating and drinking, as well as into the once private realm of sexual habits and perceptions of abuse. That this should be so, begs examination. As indicated earlier, in exploring the growth to contemporary prominence of the concept of risk, we should be alert to many initiatives being driven more by social context and political considerations, than by scientific content.

Aside from the indisputably clear and robust evidence linking smoking to lung cancer, few – if any – of the many health concerns raised recently – including that of secondary inhalation of tobacco fumes – present anywhere near so transparent a picture. Despite a multitude of examples and volumes of advice, epidemiology fails to support most pronouncements about health, for the simple reason that the data suggesting causal linkages, rather than mere association or correlation, remains disputed at the highest level and ultimately unpersuasive.

In the 1960s Austin Bradford Hill and Richard Doll, whose pioneering work categorically demonstrated the dangers of tobacco, proposed a series of criteria which would allow epidemiologists to judge whether an association was likely to be causal (21). The association should be strong, graded, independent of confounding variables (such as class, gender, race and occupation), it should be consistent – having been observed in different types of study and with different populations – reversible and plausible. Smoking met all of these – but few associations between illness and disease today and their supposed risk factors meet any.

That people have gone along with a number of such health campaigns – from covering-up in the sun, to not smoking in pubs and monitoring the calories and units of alcohol they consume – hence appearing to support the requisite lifestyle changes, rather than denouncing or opposing them, may well be a symptom of their passive sublimation, rather than the healthy, active and engaged endorsement that is usually presumed by government and activists.

It seems likely that much of what passes as public health concerns and research today is – consciously or not – part of the broader agenda of issues serving to reconnect an isolated elite with the public by addressing their assumed insecurities. Unable to show conclusive evidence for a link between particular problems and their presumed causes, governments have fallen back on advocating preventative strategies of restraint in relation to purported risk factors for which the available evidence falls far short of demonstrating a causative role.

In this, the parallels with our distorted and exaggerated sense of threat pertaining to matters of security in the world, subsequent to the terrorist attacks of the 11th of September 2001, are quite striking. I have noted elsewhere the parallels between the so-called principle of precaution in relation to environmental matters and the principle of pre-emption in relation to international security (22). To these we can now add the principle of prevention in relation to health.

As isolated individuals, we are constantly encouraged to consider the worst that might happen, and to act as if this were true. This explains to some extent the attention now paid to basic public health problems in the developing world. But, rather than advocating development or targeted intervention, as would have been the case in the past, in order to ensure the provision of clean water, and the eradication of Malaria and Aids, the focus – distorted through contemporary Western sensitivities and insecurities – is on containment and prevention, as perceived through the narrow prism of our collective personal security.

Prevention is, of course, better than cure – but only when it can be shown that the probability of what one seeks to prevent is rather high, and the effectiveness of any proposed cure can be guaranteed. Otherwise, prevention readily becomes a mantra and a problem in itself. Prevention is of necessity, required to be general in application and long-lasting – cure can be both specific and discrete. Nor does providing a cure require a moral judgement on anybody's part. On the other hand, if your primary focus is on prevention, then it is morally wrong not to take what are presumed to be the appropriate corrective measures.

In many, if not most, public health debates encountered today, both domestically and abroad, few, if any, of these essential mitigating circumstances relating to prevention are met. Yet, the presumption that they are, and the moralising actions that ensue, dominate. Despite widespread misgivings and concerns among leading scientific and medical professionals in relation to various cancer screening programmes, for instance, both government advice and non-governmental campaigns continue to prioritise awareness and screening over the development of more effective treatments and cures.

The overall result of these interventions is to promote a new form of dependency, or *help-seeking* behaviour by the public, from appropriately informed experts and professionals. This may be packaged in the language of *choice*, but the clear message is that people are expected to make the *right choice*, otherwise they may require a more prolonged period of *support*. This outlook reflects the broader cultural changes identified earlier. And these developments have been bought-into by medical professionals, health officials, regulators and politicians alike, as well as by the general public.

The Medicalisation of Society

How did this state of affairs come about unchecked? After all, as early as the 1970s a number of radical critiques of *medicalisation* had emerged (23). Developed in the United States, these all shared an understanding of the importance of individual autonomy. Their strength lay in their insight into the potential loss of freedom that accompanied the process of medicalisation. Their weaknesses lay in their inability to connect this to broader social trends.

Those who developed these ideas, like feminists and the radical, Ivan Illich, encouraged cynicism in science and its achievements and attributed too central a role to medicine and medical professionals in the overall process (24).

The British medical sociologist David Clark has noted that *'at the time when Illich was writing, the mid-1970s, a much more unitary and optimistic view of medicine was in evidence than exists today'*. By contrast, *'the modern medical system is pervaded with doubt, scepticism and a mistrust of expert claims'* (25). Others too, have identified a growing equivocation on the part of the medical profession regarding their own expertise and deference towards their patients, as by far a bigger problem than an assumed *'club culture'* (26). Yet, the caricature of the arrogant, distant and unsympathetic consultant persists.

In fact, recent studies about particular new illnesses indicate that doctors are not central to these developments. In other words, as US academic Peter Conrad suggests, medicalisation is a *'sociocultural process that may or may not involve the medical profession'* (27). The American military sociologist Wilbur Scott has emphasised the role of anti-war campaigners in the *'invention'* of PTSD (post-traumatic stress disorder), for instance (28), and in a similar vein, Conrad and Deborah Potter have noted how it is adults with so-called ADHD (attention deficit hyperactivity disorder) who diagnose themselves (29).

PTSD is foremost amongst the ever-expanding list of syndromes and sensitivities that people have become conscious of today. Its origins relate to the experience of US veterans after Vietnam. These suffered not so much from defeat in south-east Asia, as from rejection upon their return home (30). Shunned as pariahs and branded psychopaths, the PTSD label offered moral exculpation and access to compensation. But whereas older conditions such as *shell shock* and *battle fatigue* had been held to be specific, relating to a soldier's background and psyche, the new diagnosis was applied more generally, assumed to derive from the fundamentally traumatising experience of war.

Originally framed as applying only to extreme events, PTSD spread rapidly to encompass relatively common happenings such as accidents, muggings, verbal or sexual harassment, and even workplace disputes. It finally entered the official *Diagnostic and Statistical Manual of Mental Disorders* (DSM) in 1980.

In 1952 the DSM only recognised 60 categories of abnormal behaviour, by 1994 this had expanded to 384 (plus 28 *'floating'* diagnoses). Furthermore, it is now increasingly suggested that many, if not most, people in society suffer from mild forms of familiar conditions such as depression and anxiety, obsessional compulsive disorder and autism. Aid agencies also

commonly consider entire populations to suffer from PTSD in advance of any detailed analysis (31).

Ironically, most veterans diagnosed with PTSD have had no combat experience, pointing to a self-justifying reconstruction of current problems through a narrative of past trauma. Research also suggests that PTSD is more serious and more common among international relief and development personnel, than for the locals they seek to support (32). These facts indicate the category to be culturally constructed and its causes amplified through our particular Western obsession with risk and stress, often in pursuit of remediation or recognition.

It is not just medical categories that are social products. Concepts of the *person*, or what is *normal* or *acceptable* behaviour in different circumstances are unique to particular cultures at particular times too. Hence, many more people present symptoms of stress and depression to their doctors today than a generation ago (33). This has been due both to a widening of the definition of such disorders, as well as the substitution of values such as resilience and composure by vulnerability and disclosure. The trend to medicalise or psychologise problems reflects the more fragile individualism of our times.

It is important to understand that medicalisation is not foisted from above onto unwilling putative patients. Rather, the demand for diagnosis is often generated from below. Indeed, there has been very little criticism raised from either the public or experts alike as to the growing notion that a significant percentage of the population experiences or exhibits mental and physical health problems that have not been diagnosed and are insufficiently recognised.

The demand for recognition has become one of the dominant themes of our times. Active campaigns exist to raise awareness of and recognise specific new illnesses, including PTSD, PND (post-natal depression) – including amongst men – ME (myalgic encephalomyelitis or chronic fatigue syndrome), MCS (multiple chemical sensitivity), IBS (irritable bowel syndrome) and RSI (repetitive strain injury).

It would appear that what is now emerging in society is a form of human subjectivity that positively embraces the sick-role. Indeed, the NHS (National Health Service), branded a *'National Sickness Service'* by the recent report into health by the former head of NatWest bank Derek Wanless (34), has gradually moved away from emphasising cure towards offering recognition to those who suffer, thereby facilitating the notion of sickness as an identity that merits recognition, rather than a problem that needs a solution.

It was the American sociologist Talcott Parsons who, in the 1950s, first theorised the concept of the sick-role as being, not just a biological state but a social state too (35). As such, his innovative analysis proposed that individuals held two rights and two obligations. Their rights were that they should be allowed exemption from the performance of their normal social obligations, as well as being excused from responsibility for their own state. Hence, a sick person could not simply be expected to pull themselves together and get well by an act of will.

On the other hand, once exempted from their responsibilities, sick people also needed to be taken care of. This constituted their obligations. Firstly, that they should be motivated to get

well as quickly as possible, and secondly that they should seek technically competent help and co-operate with medical experts. This would usually imply establishing a relationship with a physician. In this sense doctors played a complementary role to that of the sick person.

For Parsons, the primary function of these relationships was to control the disruptive effects of illness in society. This was achieved through the obligations of the patient to co-operate with the medical task, thereby preventing the development of a deviant subculture. In this sense, the social system ensured passage from illness to wellness.

But these rights and obligations could only be fulfilled in a society where there were shared assumptions about social order and the desirability of individuals returning to their ascribed social roles. In other words the sick role was predicated on the assumption that everybody understood that they should get well and indeed, would want to get well. People needed to know what their normal social roles were and understand the desirability of fulfilling these.

Today, these shared assumptions have broken down. The steady decline of shared meanings and values has led many to live in a state which Parsons would have identified as deviance. People no longer necessarily undergo the process of getting well. What takes place instead is the generation of an illness identity, which is recognised through contemporary public health sensibilities thereby providing legitimacy to a new, incapacitated role.

This has allowed the sick role to become semi-permanent, resulting in a reciprocal suspension of responsibilities. People in this position cannot be expected – and do not expect – to perform their normal social roles. Soldiers who can't fight, students who can't sit exams and people who can't work, have increasingly become a feature of our times. These new identities are encouraged through the diminishing of social expectations in the individual, the recognition of sickness as an unavoidable identity, and the promotion of help-seeking.

It is this that Furedi refers to as *Therapy Culture* (36). And as the therapeutic ethos and its concomitant relationships extend into more and more areas of life, so similar problems become reproduced elsewhere. Now, parents, partners and colleagues are no longer expected to be able to perform their social role either.

This social construction of illness, under the guise of the new public health may be costly, but it is a small price to pay for governments that seek to reconnect with the people. People who are self-consciously ill are far less threatening and far easier to manage than those with the social-consciousness to be active and demand more.

Hence, in 2002, the number of days lost from work through stress reached 33 million, passing for the first time the number of days lost through strikes in the UK in 1979, the year that included the *winter of discontent*. But, this stultification of the conscious, subjective and active element in society raises different problems in relation to promoting national resilience in the face of a presumed global war on terrorism. It also lends itself to the exaggeration of the threat posed by presumed public health problems elsewhere, and hence to the promotion of a counter-productive and prescriptive security framework for understanding international health issues.

Security fears, public health campaigns and contemporary preoccupations with illness have also encouraged people back into a relationship – directly or indirectly – with the state. In its

turn, systematic government interference in healthcare has eroded the boundary between politics and medicine. This has been a long and gradual process.

In the mid-1970s, it was a Labour government that first took up the cause of prevention. The then health minister David Owen, as a former hospital doctor, would have been familiar with the radical critique of conventional medicine. But the White Paper *Prevention and Health: Everybody's Business* was felt by many to be too hectoring in tone (37). The strategy made little impact as Owen was an unpopular minister in an unpopular government that was brought down in the wave of militant trade unionism that culminated in the *winter of discontent*.

In the USA, where government concerns with escalating health care costs were greater and trade unionism weaker, the doctrine of individual responsibility won greater approval, connecting with a growing interest in self-help and consumerism. In a paper anticipating subsequent trends, American sociologist Irving Zola identified medicine as *'becoming a major institution of social control'* (38). This was not that evident at the time, due to the more independent and confident form of individualism that still pertained.

Despite launching what was claimed to be the biggest health campaign in history – in relation to AIDS – it was not until 1992 with the *Health of the Nation* White Paper, that the Conservative administration launched a comprehensive health promotion programme (39). In tune with the times, this identified ten *risk factor* targets to tackle matters such as smoking, diet, teenage pregnancy and blood pressure. Politicians had also learnt by then, that if a policy directed at changing individual behaviour was going to make an impact on the public, then it was necessary to foster intermediary institutions between the state and the people.

The number of such intermediaries has been expanded significantly since the 1997 election victory of New Labour. The government appointed Tessa Jowell as the first minister of public health and made the promotion of *healthy living* a central theme of policy – not just for the Department of Health, but across other ministries.

The confusing multitude of supposedly independent groups within the sector has allowed ministers to deflect accusations of running a *nanny* state, despite many of these being funded by government, promoting government agendas, or proposing state action as a solution to particular perceived risks and problems.

The greater impact of official health promotion campaigns over recent years reflects the enhanced sense of individual isolation and vulnerability that now pertains. This has been augmented by the many former activists who retreated from public activity to pursue political objectives through their professional work, often in education and health. Far from undermining the system, since abandoning their once radical goals, they have rather strengthened it with an infusion of more culturally attuned energies.

Through the re-definition of poverty as social exclusion and the promotion of social inclusion to make people feel good about themselves, health promotion has now become redefined as a means for redressing inequality rather than the other way round. As a result, general practitioners, midwives and other professionals who have *'a relationship with people that reaches deep into their personal, private space'*, have increasingly been enlisted to take on more

socially oriented goals beyond merely treating their patients. They are encouraged to take a more active interest in their patient's lives to the probable detriment of both the patient and their professional relationships as instead of serving patients' needs, they now serve the demands of government policy.

Fitzpatrick concludes, '*It is rather ironic that, after seeking to take over the management of the social as well as the medical problems of the neighbourhood, many GPs complain of high levels of stress (not to mention a growing inclination among their patients to assault them).*' The solution, he proposes, lies in restoring the centrality of treatment over prevention, as well as reminding those doctors concerned about restoring public trust, that this was first established through a commitment to medical science and the determined defence of it, along with their autonomy, against anti-scientific prejudices and political intereference.

The New Security Fears

Since the 11th of September 2001 there has been much focus placed upon the need to enhance social resilience, understood as society's ability to recover or withstand adverse conditions or disruptive challenges. Politicians, emergency planners and others talk incessantly of the need to *build, engender, improve* or *enhance* resilience in society (40). Unfortunately, much of this debate is framed in the fashionable, but limiting, language of risk management.

Senior officials regularly point to the central role they attribute to risk reduction. This, in keeping with the times, is understood in narrowly technical terms, as consisting in the main of horizon scanning, investment in equipment, training, business continuity planning, new legislation and the like.

But this reveals the absence of any broader purpose and direction in society at large. After all, risk reduction is a means, not an end. In the past, society was not so much focused on reducing risk as upon enhancing capabilities towards some wider goal. Risk-reduction was a by-product of such activities.

Presumably, people are prepared to risk their lives fighting fires or fighting a war, not so that their children can, in their turn, grow up to fight fires and fight wars, but because they believe that there is something more to life worth fighting for. It is the catastrophic absence of any discussion as to what that something more might be, that actually leaves us fundamentally unarmed in the face of adversity today. In that regards, risk management is both insufficient as an approach, as well as being unambitious.

Combined with the contemporary cultural proclivity to speculate wildly as to the likelihood of adverse events and the demand for high-profile – though not necessarily effective – responses and capabilities based on worst-case scenarios, we may end up distracting our attention in a way not warranted by a more scientific assessment and prioritisation of the various risks that we face as a society.

The incessant debate as to the possibility and consequences of an attack using chemical, biological, radiological and even nuclear weapons, is a case in point. Whilst it is widely accepted that the probability of a chemical, biological, radiological and even nuclear terrorist attack is low, it is assumed that this can not be ruled out. It is often suggested that although groups such as Al Qa'ida may have relatively poor capabilities in such techniques, their intention to develop these is nevertheless clear, and if they did, the consequences might be devastating.

Like the new public health this, in essence, captures the logic of our times; '*Never mind the evidence, just focus on the possibility*'. It is a logic that allows entirely vacuous statements such as that of an official after the supposed discovery of the chemical agent ricin at a flat in North London, who was reported as saying; '*There is a very serious threat out there still that chemicals that have not been found may be used by people who have not yet been identified*' (41).

But undiscovered threats from unidentified quarters have allowed an all-too-real reorganisation of everyday life. The US government has provided $3 billion to enhance bioterrorism preparedness. Developed nations across the globe have felt obliged to stockpile smallpox vaccines following a process, akin to knocking over a line of dominoes, whereby one speculative *'What if?'* type question, regarding the possibility of terrorists acquiring the virus, led to others regarding their ability to deploy it, and so on.

Health advisories to help GPs spot the early signs of tularemia and viral haemorrahagic fever have cascaded through the UK's urgent alert system. And homes across the land have received the government's considered message for such incidents; *'Go in, stay in, tune in'* (42).

Like all social fears, there is a rational kernel behind these concerns. But this is distorted by our contemporary cultural proclivity to assume the worst. It is the fear of bioterrorism that is truly contagious, and it is a fear that distracts us from more plausible sources of danger, diverting social resources accordingly, and exposing us all to greater risk. It is also a fear that has bred a cynical industry of security advisors and consultants, out to make a fast buck by exploiting public concerns, and thereby driving those concerns still further.

For instance, rather than view the recent outbreak of SARS (severe acute respiratory syndrome) in south-east Asia as being a fairly limited, familiar and essentially predictable condition – in view of the close proximity between people and fowl in that part of the world – an army of health and security advisors sought to use it as an example of just the sort of threat they had been predicting.

The episode confirmed their own prejudices – either warning of a possible apocalypse to come, or serving as evidence of the need for, or efficiency of, the new health alert mechanisms they had helped put in place as a consequence of the fear of, and focus on, bioterrorism. In fact, it was their own reactions, amplified through the prism of societies inflated sense of risk, which lead them to inflict quite considerable, yet entirely unnecessary, damage to several regional economies and airlines.

There is a long history of bioterrorism incidents (43). At best, these are tactical devices with limited consequence, but not strategic weapons. The advent of biotechnology and the more recent, if overstated, possibility of genetically engineering agents to target biological systems at a molecular level is now held to pose a new challenge (44).

But few commentators point to the difficulties in developing, producing and deploying biological agents, as evidenced by the failures of the Japanese cult, Aum Shinrikyo, in this regards only a decade ago. It was this that led them to settle for the rather more limited impact produced by the chemical agent sarin, despite their resources and scientific capabilities. The Tokyo subway attack that ensued had rather more impact upon our fevered imagination than in reality.

As with the anthrax attacks, that targeted politicians and the media in the US in 2001, this incident suggests that bioterrorism is more likely to originate amongst malcontents at home, due to greater access and capabilities in developing such weapons there. Advanced economies are also better placed to deal with the consequences of bioterrorism, a fact that significantly undermines their purpose, especially to outsiders. Nevertheless, suicidal foreign malefactors

bent on undermining western democracies continue to be presented as the greater threat.

Recognising the extremely low probability and limited consequences of such incidents, some experts point to the longer-term psychological impacts as being the more important (45).

There is an element of truth to this. Psychological casualties are a real phenomenon. In certain emergencies these can rapidly overwhelm existing healthcare resources and thereby undermine the treatment of those more directly affected. But they can also become a self-fulfilling prophecy. And by increasingly framing social problems through the prism of individual emotions, people are encouraged to feel powerless and ill.

The arrival of television cameras or emergency workers wearing decontamination suits act as powerful confirming triggers for the spread of mass psychogenic illness (46). So too can psychosocial interventions, such as debriefing subsequent to an incident (47). These can undermine constructive, pro-social and rational responses, including the expression of strong emotions such as anger (48). Hence, despite good intentions, psychiatrists can become complicit in shaping social ills. This is because few are prepared to question the dominant cultural script emphasising social and individual vulnerability, and the need for professional intervention and support.

Rather than critically questioning the framing of the debate, many now simply accept the possibility of chemical, biological, radiological and nuclear terrorism as a given (49). There is little understanding of how our exaggerated sense of risk is both historically contingent, predating 2001 quite significantly, and culturally determining, giving shape to and driving much of the agenda.

The medical historian and epidemiologist, Nicholas King, has noted that *'experts were using the threat of novel diseases'* as a rationale for change long before any recent incident, and that contemporary responses draw on *'a repertoire of metaphors, images and values'* (50). He suggests that *'American concerns about global social change are refracted through the lens of infectious disease'*. This coincides with the view of others who see bioterrorism as providing a powerful metaphor for elite fears of social corrosion from within (51).

Despite incidents since 2001 pointing to the preferred use of car bombs, high explosives and poorly deployed surface-to-air missiles, the authorities have, through their pronouncements, encouraged the media to hype weapons of mass destruction. This is despite any terrorist's capabilities being rather limited compared to our own and the consequences being more likely to devastate them than us. We have stockpiled smallpox vaccines, but notably, have run out of influenza jabs. And, in the extremely unlikely eventuality of an incident occurring, we assume that the public will panic and be unable to cope without long-term therapeutic counselling.

In an age readily gripped by morbid fantasies and poisonous nightmares, few surpass the pathological projection of our own isolation much better than the fear of bioterrorism. All of this rather begs the question as to who is corrupting civilisation the most. The fantasy bombers or the worst-case speculators?

Conclusions

A heightened consciousness of risk, both amongst ordinary people, but also the elite of society, has been driven by a broader process of social fragmentation and isolation. In turn, the insecurities this has created have been addressed by various social leaders, keen to restore a sense of purpose and legitimacy for themselves in the post-Cold War world order. These parallel processes have encouraged a significant degree of risk amplification in relation to numerous contemporary issues.

Foremost amongst these are those pertaining to the environment, as well as personal health and security, which have also served as conduits for politicians and others to restore their connections to the public at large. The accompanying loss of any perception as to the possibility, and desirability, of transforming the world through social, rather than individual or technical processes, has further facilitated an exaggerated sense of the importance and consequences of psychological and scientific risks in the world.

Many of these phenomena were clearly in evidence prior to the terrorist events of the 11th of September 2001. The latter however, allowed a broader distortion of contemporary sensitivities to occur by encouraging a fatalistic sense that there are people out there who simply want to destroy everything. This in turn, has fed into our already heightened sense of individual vulnerability and insecurity. Unfortunately, many of the proposals raised to deal with such matters, project our current existential obsessions onto the world stage.

Accordingly, the notion of health promotion, as opposed to treatment and cure, for tackling world poverty is now largely assumed without debate. Also, the assumption that individuals simply need to be provided with information to make the right choices goes unquestioned. What's more, if people are not choosing to lead healthy lives then it becomes possible to condemn them morally for failing to do so. Help-seeking from appropriately qualified experts is now *de rigeur*, as is the notion that a significant fraction of the population – up to two-thirds by some accounts – is suffering from some mild form of psychological condition or other illness.

Whereas in the past governments would have hesitated to intrude directly into the private lives of their populations, today such concerns have been overthrown as the distinction between what is public and what is private has increasingly been eroded. What's more, the new processes of medicalisation and psychologisation – which have led to various claims for official recognition by specific groups – is now often promoted more informally through non-governmental lobbies and patients' associations.

Bizarrely, it would become a problem for governments today if all of their proposed health targets were met. They would thereby lose their means of maintaining a connection with the populace. Of course, with the constant expansion of medical categories, sensitivities, symptoms and syndromes, there is little chance of such a state of affairs coming to pass.

On the other hand, by encouraging a sense of vulnerability, or the notion that to be well is either odd, or something that needs constant vigilance, they have raised new problems in an

age characterised by the equally false and exaggerated perception of the threat posed to society by terrorism.

Social resilience rather requires the need to promote a more confident and assertive form of individualism, contrary to the fragmented, isolated and insecure sense of individuation that now pertains. How governments seek to square this circle in the coming years will be quite interesting.

Sadly, one consequence of contemporary Western obsessions is to constantly project our perception of problems onto others around the world. An optimistic and confident, if arrogant, imperialism has been replaced by a pessimistic, doom-laden environmentalism and public health-ism, that are no less prescriptive in their pronouncements for those upon the receiving end.

But if we are best to serve the people of the developing world, rather than impose our apocalyptic outlook upon them, then it is high-time that we promoted real development and sought to separate once and for all, the concepts of health from the prescriptions of policy.

Global health security targets communities. However, in the absence of real communities in the early years of the twenty-first century, this can only ever mean targeting large numbers of isolated individuals in a manner mediated through a range of *caring* professionals. Hence, it becomes a moralistic imperative to conform, rather than a consciously determined strategy to enhance what is in the best interests of society as a whole.

Public health and public safety often come into conflict with individual health and personal security. One may need to be obtained at the expense of the other. The recent furore in the UK over the individual rights of parents to obtain separate inoculations for measles, mumps and rubella for their children, in the light of speculative concerns raised by one hospital doctor as to the rather remote – and as it proved unfounded – possibility of the MMR triple-vaccine being linked to childhood autism, is a prime example.

Public health should never be considered to be a private matter. But the prevalent outlook that promotes individual consumer choice through the new government White Paper *Choosing Health: Making Healthcare Choices Easier* suggests the opposite (52). The consequence in relation to the MMR debacle was that – as vaccination levels descended below the threshold required to guarantee herd immunity – limited outbreaks of previously contained diseases emerged across the UK.

On the other hand, public health needs to rest on a secure scientific footing, if it is not to be replaced by a fanciful wish-list of presumed risk-associations, driven by the burgeoning preventative paradigm of our times.

The latter can only lead to the denigration of science, as well as to the demise in the reputation of those who seek to prioritise their immediate popularity and image over more reasoned but possibly unpalatable insights. Current developments are likely to prove disastrous for both patients and doctors alike. And in their third-world incarnation these simply represent the projection of contemporary Western prejudices and morbid fantasies.

Despite the fact that more people than ever across the globe enjoy better health today, the

intense awareness of health risks means that more people feel more ill, as well as unduly concerned as to what *outsiders* may bring.

This results in an ever-increasing burden of demand on the health care and security systems that all Western societies experience growing difficulty in meeting. And when health becomes the goal of human endeavour it acquires an oppressive influence over the life of individuals and when people are ruled by the measures they believe may help to prolong their existence – it is the quality of their lives that is diminished.

Our contemporary conceptualisation of risk has been quite disabling in this regards.

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The Limitations of Risk Management
dealing with disasters and building social resilience

This article explores the significance of social resilience in the light of the events of the 11th of September 2001. It examines the way in which evolving cultural contexts alter our perceptions of risk and disaster. It argues that the contemporary dominance of technically focused risk management led responses is limiting and may serve to undermine the ordinary human bonds that make us truly resilient. A political debate over societal values is required if we are to re-engage the public in order to achieve this and hence deal appropriately with disasters and terrorism.

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Since September 11th 2001 a good deal of focus has been placed upon the concept of resilience, understood as the ability to withstand or recover from adverse conditions or disruptive challenges. Politicians, emergency planners and others, talk of the need to 'build', 'engender', 'improve' or 'enhance' resilience in society (Durodié 2003).[1]

Unfortunately, much of this debate is framed in the fashionable, but limiting, language of risk management and risk communication. Senior officials regularly point to the central role they attribute to risk reduction. This is understood in narrowly technical terms as consisting of horizon scanning, investment in equipment, training, business continuity planning, new legislation and the like.[2]

This outlook actually reveals a certain absence of purpose and direction in society at large. After all, risk reduction is a means, not an end. In the past, people were not so much focused on reducing risk as upon enhancing capabilities towards some wider goal. Risk reduction was a by–product of such broader purposes and activities.

It is also worth noting, that in recent times, the concept of risk itself has gradually altered from one that captured possibility and engagement in the active sense of 'taking a risk', to one that increasingly reflects a growing sense of doom and distance from events, as evidenced in growing reference to the passive phrase of 'being at risk'. Risk used to be a verb. Now it has become a noun.

This reflects a wider form of disengagement that has occurred across society at large. Gradually, our sense of will and agency have been removed from the equation. Risks are now conceived as being entities in their own right, only minimally subject to human intervention (Furedi 1999). If risks are conceived of as being inherently and implacably out there, coming our way, then the best we can do is to identify them and prepare to deal with them.

Social Responses

In fact, how we as individuals, and as a society, define and respond to risks and disasters, is only partly dependent upon causal agents and scale. Historically evolving cultural attitudes and outlooks, as well as other social factors, play a far greater role. In objective terms, risk may be defined as a function of hazard and probability, but that some product or event is perceived of as a risk, or is treated as a disaster, depends on subjective factors.

This human element is missing from mechanistic risk calculus. Technical definitions of risk and resilience not only omit key elements of understanding and response – such as our degree of trust in authority, in other human beings and in ourselves – but may also serve to further undermine such factors, which are crucial in responding effectively.

There is, for instance, a contemporary cultural proclivity to speculate wildly as to the likelihood of adverse events and to demand high-profile responses and capabilities based on worst-case scenarios.[3] In the end, this only serves to distract attention and divert social resources in a way that may not be warranted by a more pragmatic assessment and prioritisation of all of the risks that we face.

Technique and technology certainly help in the face of disaster, although the fact that particular societies both choose and have the capacity to prioritise such elements, is also ultimately, socially determined. More broadly, it is possible to say that resilience – loosely defined as the ability of individuals and society to keep going after a shock – is most definitely a function of cultural attitude or outlook.

Cultural values point to why it is that, at certain times and in certain societies, a widespread loss of life fails to be a point of discussion, whilst at other times or in a different society, even a very limited loss can become a key cultural reference point. This evolving context and framework of cultural meanings explains such variations as our widespread indifference to the daily loss of life upon our roads, as opposed to, for instance, the shock and national mourning that ensued across the globe from the loss of just seven lives aboard the Challenger spacecraft in 1986.

The loss of Challenger represented a low-point in the cultural assessment of human technological capabilities. It was a blow to our assumption of steady scientific and technological progress that no number of everyday car accidents could replicate. It fed into and drove a debate that continues to this day regarding our relationship with nature and a presumed human arrogance in seeking to pursue goals beyond ourselves.

Hence, emergencies and disasters, including terrorist attacks, take on a different role dependent upon what they represent to particular societies at particular times, rather than solely on the basis of objective indicators, such as real costs and lives lost. In this sense, our response to terrorist incidents, such as that which occurred on September 11th 2001, teaches us far more about ourselves than about the terrorists.[4]

On the whole, the history of human responses to disaster, including terrorist attacks, is quite heartening. People tend to be at their most co-operative and focused at such times. There are very few instances of panic (Durodié and Wessely 2002). The recent earthquake and tsunami in the Indian Ocean serve as a salutary reminder of this. Amidst the tales of devastation and woe, numerous individual and collective acts of bravery and sacrifice stand out, reminding us of the ordinary courage and conviction that are part of the human condition.

People often come together in an emergency in new and largely unexpected ways, re-affirming core social bonds and their common humanity. Research reveals communities that were considered to be better off through having had to cope with adversity or a crisis (Furedi and Roberts 2004). Rather than being psychologically scarred, it appears equally possible to be enhanced. In other words, whilst a disaster, including a terrorist attack, destroys physical and economic capital, it has the potential to serve as a rare opportunity in contemporary society to build up social capital.

"Our response to terrorist incidents teaches us far more about ourselves than about the terrorists."

Of course, terrorists hope that their acts will lead to a breakdown in social cohesion. Whether this is so, is up to us. Civilians are the true first responders and first line of defence at such times. Their support prior to, and their reactions subsequent to any incident, are crucial. Disasters act as one of the best indicators of the strength of pre-existing social bonds across a community. Societies that are together, pull together – those that are apart, are more likely to fall apart.

Whilst there is much empirical evidence pointing to the positive elements of ordinary human responses to disaster, it is usually after the immediate danger has subsided that the real values of society as a whole come to the fore. It is then that the cultural outlook and impact of social leaders and their responses begin to hold sway. These determine whether the focus is on reconstruction and the future, or on retribution and the past. A more recent development has been the trend to encourage mass outpourings of public grief, minutes of silence or some other symbols of 'conspicuous compassion'.[5]

Sadly, despite the variety of ways in which it is possible to interpret and respond to different emergencies, the onus today seems to veer away from a celebration of the human spirit and societal resilience, towards a focus on compensation and individual vulnerability. If we are to understand these contemporary preoccupations

and perceptions of risk and disaster, as well as the consequential growth of narrow risk management solutions, we need to get to the sociological roots of our subjective outlooks.

Social Bonds

The key element shaping our perceptions of risk and the management of most policy issues today is a sense of isolation and insecurity that affects every layer of society. For the vast majority of ordinary citizens this takes the form of political disengagement and social disconnection. For the elite it is driven more by a sense of illegitimacy and purposelessness.

At both the formal and informal levels of social engagement, we can see that social bonds have been severely eroded over the last decade or so. We should be alert to this having quite dramatic consequences.

At the formal level, people in advanced Western societies are increasingly unlikely to participate in the political process. This effect is most striking among younger age groups. Electoral turnouts in many countries are at an all-time low and in the few instances where these are high, emotion appears to rule over reason. Few are active, or even passive, members of political parties or trade unions as their forebears were, and there is little attempt to engage in, or raise the standard of, debate. When people do vote, it is often on a negative basis – against an incumbent, rather than for a replacement.

At the informal level, the changes are even more striking. Many have commented on the growing pressures faced by communities, neighbourhoods, and families. In his book on this theme, '*Bowling Alone*', the American academic Robert Putnam also pointed to the demise of informal clubs and associations (Putnam 2000). Meeting up with friends, occurs less frequently than previously, too. In other words, people are not just politically disengaged but also, increasingly socially disconnected. This loss of social capital has occurred and been experienced within a generation.

Not so long ago, for example, it was still possible across most urban centres, to send children to school on their own, assuming that other adults would act 'in loco parentis' – chastising them if they were misbehaving and helping them if they were in trouble. Today, such a straightforward social arrangement can no longer be taken for granted. None of us ever signed a contract saying that we would look after other people's children. It was simply an unstated and self-evident social good. This loss of a social sense of responsibility makes the individual task of parenting harder.

Being less connected, also leaves people less corrected. It allows their subjective impression of reality to go unmediated or unmoderated through membership of a wider group or association. Without a sense of the possibility of social solutions, personal obsessions grow into all-consuming worldviews that are rarely open to reasoned interrogation or debate. In part, it is this that explains our recent proclivity to emphasise or exaggerate all of the so-called risks that are held to confront us (Furedi 1997 and 2002).

"Being less connected, also leaves people less corrected."

Rather than the world changing any faster today than in the past, or becoming a more dangerous, unpredictable or complex place, it may be our diminished, and more isolated, sense of self that has altered our confidence to deal with change and the problems it gives rise to (Heartfield 2002).[6] In our technically networked world, we may be more aware – but we are also easier to scare than previously. Being more isolated leaves us more self-centred, as well as risk averse. In turn, these developments reduce the likelihood of our acting for some greater common good and end up making us less resilient, both as individuals and as a society.

From BSE (mad cow disease) to GMOs (genetically modified organisms); from mobile phones to MMR (measles-mumps-rubella triple-vaccine), all new developments are viewed through the prism of a heightened and individuated consciousness of risk.[7] Nor are our fears restricted to the realms of science and technology. Age-old activities and processes have been reinterpreted to fit our new sense of isolation and fear. Bullying, sun-bathing, and even sex have joined an ever-growing panoply of concerns, along with maverick doctors, crime, food, and paedophiles.

Worse, this state of affairs has been exacerbated by the various authorities themselves,

which suffer from their own existential crisis of isolation and insecurity. As we no longer vote, so ruling parties appear increasingly illegitimate and divorced from majority concerns. A less than 50% turnout when split two or three ways produces governments with at best a 20-25% mandate. The real figure as reflected by demographics, negative voting, and actual local election results is often well below this, languishing around the 10-15% mark.

This crisis of legitimacy has been further accentuated by a certain lack of purpose that has set in since the dissolution of the old Cold War divide. Then, an ideological divide separated a supposedly socialist Left from a free-market Right. The demise of the Left exposed the Right's own lack of ideas and dynamism.[8] Now all parties fight for the centre ground and desperately seek issues that will re-connect with voters.

Latching on to the general climate of fear and insecurity, politicians have learnt to repackage themselves as societal risk managers around issues such as security, health and the environment. They pose as the people who will protect us from our fears and regulate the world accordingly. But the petty lifestyle concerns they focus on, as reflected in incessant debates about smoking, smacking, eating, and drinking are unlikely to inspire and engage a new generation of voters. Nor will doom-laden predictions relating to terrorism and global warming.

Indeed, the more such concerns are highlighted, the more it becomes impossible for the authorities to satiate the insecurities they drive. Hence, alongside disengagement and alienation, has come a concomitant disillusionment and mistrust in all forms of authority, whether political, corporate, or scientific. Healthy scepticism has increasingly been replaced by unthinking cynicism. In many situations today, the public tend to assume the worst and presume a cover-up. Rumour and myth abound over evidence and reason.

Social Resilience

The list of measures commonly discussed as being necessary to enhance social resilience in the aftermath of September 11th 2001 consists, amongst others, of the need for better surveillance and intelligence, new detection equipment and protective clothing, more effective models for predicting behaviour, alternative modes for imparting information through 'trusted' sources, as well as new structures of government and integrated response systems.[9]

These are all largely technical in character, reflecting an alienated sense of risk as being external to us. Hence, even when discussing prevention, the assumption is that we are merely anticipating and building capacity for 'inevitable' challenges.[10] In the words of some senior officials, it is 'only a matter of time', or 'when, not if', a terrorist atrocity will occur in the United Kingdom using some kind of crude chemical, biological, or radiological device.[11] The notion that it may be possible to shape conditions, or set the agenda, with a view to obtaining more desirable outcomes or altering our social mindset, independently of external forces, is rarely entertained.

Unfortunately, much of the rhetoric regarding the war on terror, far from being robust and resolute, reveals an almost resigned fatalism towards future events. There is no sense of changing how people will respond, simply a sense of preparing them to respond. This defensive responsiveness in turn can only further encourage, not just terrorists, but a whole host of other malcontents, loners, hoaxers, and cranks in their activities.

At best, our strategy is one of re-acting to the presumed actions of others. They drive – we follow, or mitigate. Despite occasional references to the need to 'defend our way of life' or 'our values', very little effort has been put into identifying what these might be.[12] They tend to be assumed, or glossed over, in some cursory fashion. At best, tolerance, which is the virtue of putting up with other people's values, gets misconstrued as a value.

No doubt, because societal aims and cultural values are deeply contested and debating these might appear to be divisive at a time when we need to act in unison, it is easier to face the other way. But this flagrant lack of clarification as to who we are, what we believe in, and where we are heading as a society, fundamentally undermines any technical attempt to be resilient.

Real resilience, at a deeper social level, depends upon identifying what we are for, not just what we are against. That way we can orientate society and seek to build upon it, not just anticipate what is coming and seek to respond. It

is precisely by establishing our aims and values and then pursuing these, that we stand the most chance of winning hearts and minds, not just at home but also amongst the disaffected abroad.

This is not to deny the need for a small layer of highly-trained professionals in society to deal with the problem of terrorism in the here-and-now. But the debate about who we are and what we are for is not some abstract philosophical issue waiting for present hostilities to be over. It is most urgent and necessary right now. Without an eye on the ends, just as much as on the means, we may take decisions that drive us further from our goals than we appreciate.

What we do in the present is inevitably shaped by our existing values, as well as the form of society we seek to create. There are already many signs that some of the actions that have been taken thus far have served to further exacerbate the deep mistrust and cynicism in government and authority that is already quite widely felt. Worse, despite good intentions, encouraging people to be 'alert', rather than alarmed, may well further erode the very social bonds of ordinary human trust we will need to depend upon if we are truly to be resilient as a society.[13]

None of these serve to shore up ordinary social bonds and hence real human and societal resilience. By encouraging the dominant paradigm of risk management in our understanding both of terrorism, as well as how to respond to it, we are encouraging a suspicion of others that effectively pushes people further apart and accentuates existing trends towards social atomisation. We have created a new bureaucracy but, as the figures show, we have failed to address the underlying insecurities (Durodié 2004a).

Above all we have focused solely upon the form that terrorism now takes in the modern world – that relating in some increasingly tangential way, to Al Qa'ida – and largely ignored its content – a vehement anti-Americanism, that rejects modernity and progress.

This latter reveals the real complacency of the dominant responses. One hardly needs to leave the West, to discover a whole host of other voices also expressing a hatred for America and enlightenment values. This division is internal rather than external. Islamist terror is merely its most visible manifestation. But once Stupid White Men had become a best-seller on both sides of the Atlantic, we should have been alert to a certain degree of cultural self-loathing at home (Moore 2001).

Timothy McVeigh and the Aum Shinrikyo cult pointed to our ability to create home-grown nihilist terrorism. And it is well worth reminding ourselves that the 19 hijackers from September 11th 2001 had themselves all spent considerable time in the West, imbuing our values – or lack of them – and had largely been educated here.

"Once *Stupid White Men* had become a best-seller on both sides of the Atlantic, we should have been alert to a certain degree of cultural self-loathing."

Cultural confusion as to who we are, what we are for, and where we are going will undermine our attempts at instituting social resilience. Society today is less coherent than it was a generation or more ago, it is also less compliant, but above all it is less confident as to its aims and purposes. This will not be resolved by training ourselves to respond to disasters, but by a much broader level of debate and engagement in society, not just relating to terrorism and other crises, but to far broader social issues.

Presumably, people are prepared to risk their lives fighting fires or fighting a war, not so that their children can, in their turn, grow up to fight fires and fight wars, but because they believe that there is something more important to life worth fighting for. It is the catastrophic absence of any discussion as to what that something more important is, that leaves us fundamentally unarmed in the face of adversity today. In that regard, risk management is both insufficient as an approach, as well as being fundamentally unambitious and therefore, dispiriting.

Social Solutions

Historical comparisons of disaster, such as responses to the Second World War 'Blitz', or to past episodes of flooding and epidemic disease, reveal a number of important lessons for today.[14] Not least, is the extent and depth of social bonds and engagement at those times. During the war, there was also a clear sense of the need to carry on with normal life and everyday roles and respon-

sibilities, rather than developing some kind of shelter-mentality, (Jones at el. 2004), as is now encouraged.

However, the most striking change over the last fifty years has been in how we assume that ordinary human beings will react in a crisis. Beyond the grossly distorted belief in the likelihood of panic lies a more subtle, yet unspoken shift in cultural assumptions, that in itself undermines our capacity to be strong. That is, that in the past, the assumption on the whole, as born out by actual human behaviour, was that people were resilient and would seek to cope in adverse circumstances.

Today, there is a widespread presumption of human vulnerability that influences both our discussion of disasters well before they have occurred, and that seeks to influence our responses to them long after. A new army of therapeutic counsellors and other assorted professionals are there to 'help' people recover (Furedi 2003). This presupposes our inability to do so unaided. Indeed, the belief that we can cope, and are robust, is often presented as outdated and misguided, or as an instance of being 'in denial' (Furedi and Roberts 2004).

In some ways, this latter element, more than any other, best exemplifies and clarifies some of the existing confusions and struggles that lie ahead. If self-reliance is old fashioned and help-seeking actively promoted, for whatever well-intended reason, then we are unlikely to see a truly resilient society emerge.

This cultural shift is reflected in the figures that reveal that whereas in the United Kingdom, in the period of trade union militancy and unrest known as the 'winter of discontent' of 1979, there were 29.5 million days lost through strikes, in 2002 there were 33 million days lost through stress.[15]

We have shifted from being active agents of history to becoming passive subjects of it. This may suit social leaders lacking a clear agenda or direction. It may indeed be easier to manage the sick than those who struggle. But it also precludes the possibility of encouraging and establishing real resilience, resolve and purpose across society.

The standard way of dealing with disaster today is one that prioritises pushing the public out beyond the yellow-tape perimeter put up by the authorities (Glass and Schoch-Spana 2002). At best the public are merely exhorted to display their support and to trust the professionals. Effectively, we deny people any role, responsibility, or even insight into their own situation at such times. Yet, despite this, ordinary human beings are at their most social and rational in a crisis. It is this that should be supported, rather than subsumed or even subverted.

Handling social concerns as to the possibility of a terrorist attack is no easy feat. In part, this is because social fears today have little to do with the actuality, or even possibility, of the presumed threats that confront us. Rather, they are an expression of social isolation and mistrust, combined with an absence of direction and an elite crisis of confidence.

The starting point to establishing real resilience and truly effective solutions will be to put the actual threat posed into an appropriate context. This means being honest as to the objective evidence, as well as being able to clarify the social basis of subjective fears.

The incessant debate as to the possibility and consequences of an attack using chemical, biological, radiological, and nuclear weapons is a case in point (Durodié 2004b). Whilst Western societies have debated such nightmare scenarios as if they were real, terrorists have continued to display their proficiency in, and proclivity to use, conventional weapons, such as high explosives, car bombs, and surface-to-air missiles.

"Ordinary human beings are at their most social and rational in a crisis. It is this that should be supported, rather than subsumed or even subverted."

Above-all, if as a society, we are to ascribe an appropriate cultural meaning to the events of September 11th 2001 – one that does not enhance domestic concerns and encourage us to become ever-more dependent on a limited number of 'expert' professionals who will tell the public how to lead their lives at such times – then we need to promote a far more significant political debate as to our aims and purposes as a society.

Changing our cultural outlook is certainly a daunting task. It requires people in positions of

authority to clarify and agree on a common direction and then to win others to it. The reluctance to engage in this fundamentally political process and the clear preference to concentrate instead upon more limited, technical goals, leaves us profoundly ill-equipped for the future. It speaks volumes as to our existing state of resilience and may serve to make matters worse.

Bizarrely, few of the authorities concerned consider it to be their responsibility to lead in this matter. Nor do they believe such cultural change to be a realistic possibility. Yet, in the eventuality of a major civil emergency, they hope that the public will pay attention to the risk warnings they provide and alter their behaviour accordingly. By then it will be too late.

Notes

[1] The author is grateful for two years of funding from the United Kingdom Economic and Social Research Council, (Award Reference L147251003), for research into the Domestic Management of Terrorist Attacks, which in part supported the development of the ideas contained herein.

[2] As indicated in the UK Cabinet Office Draft Civil Contingencies Bill, available at; http://www.ukresilience.info/ccbill/draftbill/ccbill.pdf

[3] This approach has in effect been institutionalised through the advent of the politically charged 'precautionary principle' as a tool for decision-making, originally in the fields of the environment and public health. This so-called principle demands a tendency to err on the side of caution, which in its turn necessitates the constant use of worst-case assumptions and data.

[4] Indeed, I have argued elsewhere that our contemporary proclivity to focus research more upon the assumed cultural outlook and psychological mindsets of the terrorists, rather than examining ourselves and our responses, fails to identify the links between these and to tackle the problem at its real root, that is in the advent of Western anti-Western ideology (Durodié 2005).

[5] A mawkish yet ultimately shallow emotionalism for victims of tragedy and disaster that one never knew is a recent but growing contemporary trend. In response to the tsunami in the Indian Ocean, the European Commission instituted three minutes of silence, whilst nations competed to display who could provide the most financial aid, despite having had more muted responses to previous catastrophes such as earthquakes in Iran and floods in Mozambique.

[6] This refers to British sociologist Anthony Giddens' suggestion that we live in a Runaway World (Giddens 1999). In fact comparisons of historical change over equivalent periods in the 18th and 19th centuries might suggest that if anything we witnessed a slowing down in the 20th century.

[7] In recent years, each of these have become key cultural reference points in the public debate on risk. Space precludes a fuller discussion of how the presumed impact of each of these was grossly exaggerated.

[8] At the time, US conservative academic Francis Fukuyama famously heralded the 'End of History' (Fukuyama 1992). It took some time before the old Right understood quite what they had lost through the demise of their perennial bogeys on the Left.

[9] Many professional risk communication experts point to the need for information to be imparted to the public by 'trusted' sources, either individual or institutional. Some even suggest that these should come from a variety of ethnic backgrounds in order to 'connect' with different communities. Both of these outlooks highlight the widespread contemporary belief that the medium itself is more important than the message. But elevating style over substance rather reveals the absence of any real content.

[10] London's Metropolitan Police Chief Commissioner, Sir John Stevens, described an attack on London as 'inevitable' on 16 March 2004, a few days after the Madrid bombings.

[11] All phrases used by Eliza Manningham-Buller, the Head of the UK Security Service in her first public speech to a conference at the Royal United Services Institute in Whitehall on 17 June 2003.

[12] Phrases used by UK Prime Minister, Tony Blair, in his speech available at; http://www.number-10.gov.uk/output/Page1731.asp at the Lord Mayor's Banquet on 11 November 2002. He subsequently made similar remarks in a local constituency speech, failing each time to clarify what he actually meant. In a similar vein, US Department of Homeland Security supremo, Tom Ridge, consistently referred to Western values as being 'freedom' and 'democracy' in a speech given at King's College London on 8 November 2002.

[13] 'Alert, not alarmed' is the preferred slogan of the Police and other senior politicians and officials in the UK. As a phrase, this is entirely general and vague, as opposed to specific and practical.

[14] 'Blitz' meaning lightning, is the term used to refer to the aerial bombardment of British towns and cities, predominantly London, by the German Luftwaffe during the Second World War.

[15] The figures are available on-line at: http://www.wsws.org/articles/2004/mar2004/mine-m05.shtml.

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Inclusion versus Experimentation

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ABSTRACT *This short reply to criticism of an original paper demonstrates how the critics themselves reflect the limitations originally pointed to. Public dialogue in science is about form not content. Nervous officials, and sadly a few scientists themselves, feel that they need to be seen to consult on such matters with ordinary people. They are creating a new system of patronage in the process. An army of self-appointed communications experts also go so far as to suggest that this makes for better science. This projects a narrow utilitarian or instrumentalist model whereby science should serve certain pre-determined social goals. This debases science, discrediting its institutions and accentuating the very problem they seek to solve.*

KEY WORDS: science, society, dialogue, expert, risk, uncertainty, trust, public, values

In the spirit of dialogue, Roland Jackson, Fiona Barbagallo and Helen Haste have written a reply to my essay 'Limitations of Public Dialogue in Science and the Rise of New "Experts"' (Durodié 2003). I am grateful for this, not just because their response offers me an opportunity to expand further on these matters, but also because it reflects some of the problems I raised.

Jackson et al. focus their discussion on the 'context, purposes and practice of public dialogue'. This reflects an absence of much discussion as to what the dialogue should actually be about thereby confirming one of my original points. That is, that for the advocates of public dialogue, process is far more important than content. Quantity and access are prioritised over quality and insight. What is most striking however, is how limited their description of the context is. In my original piece I concluded that 'as the aspiration for real social change has receded, so science has been inflated in terms of import and impact, out of all proportion'. This is a vital point. It partly explains why scientific development is now increasingly viewed as a risk.

As Jackson et al. must know, science, as well as transforming society, is itself a product of society. Indeed, the scientific revolution was born in a period of dynamic social change, becoming in its turn a contributor to that change. It derived from a

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wider process of social transformation and reflected a faith in humanity itself, rather than merely in science. It is the demise of such aspirations, as well as the actions associated with them, which has encouraged today the advent of an increasingly alienated sense of dependence upon a supposedly deterministic science. This has been bad for society and bad for science too. Science's aims and methods have suffered from the corrupting influence of being tailored to explain, or address, essentially social processes and phenomena.

If it is true, as Jackson et al. suggest, that 'there is a risk of a strong reaction' if research outcomes are found to be 'at odds with the values or expectations' of the public, then presumably clarifying what the public's values truly are should be the primary task. And referring, as they do, to 'publics' rather than the public, simply begs the question as to quite how many publics there are and which of these we should pay attention to. Both these processes are political rather than scientific matters.

Jackson et al. allude several times to the need to locate their proposals within the 'wider political process'. It therefore seems somewhat remiss of them to fail to point to the noticeable demise, both quantitative and qualitative, of broader debate and engagement in worldly affairs over the contemporary period. Aside from the continued poor turnout in the UK general election, politics, as I am sure most would agree, should be about more than mere voting. It requires a debate as to vision and principles, as well as contesting and acquiring the means to realise these. Dialogue in relation to science-related issues, or 'dialogue on', as they would have it, appears a poor substitute for this more ambitious and active, participatory role in shaping social consciousness and society as a whole. It rather seems to reflect the lowering of horizons born of an age when the desire to transform the world through mass political engagement is, in their own words, 'perhaps an ambition too far'. But just as the initial dynamic behind science was social change, so the absence of this circumscribes science too, as well as shaping an exaggerated sense of science's impact upon us.

Ironically, it was always radicals who understood the potential of science to upset vested positions of prejudice and power. Accordingly, science was traditionally championed by the left as a practical battering-ram with which to challenge superstition and diktat. But the left also lost their faith in science, initially through their conflation of it with post-war American militarism, and more recently through their attempts to harness environmental ideals, in order to provide themselves with a sense of purpose, as well as a constituency, in the post-Cold War world order. Accordingly, the suggestion that I 'wish for a past golden age when experts were experts, authorities were automatically respected by tradition and everyone knew their place', is simply baffling. Rather, it is those who would wish to see science instrumentally harnessed to 'address societal needs' in an age when our sense of what is possible, or desirable, has been so diminished, who are the real conservatives.

For those who have given up on the desire for social transformation, believing this to be too ambitious, then maybe teaching scientists 'how to talk' appears a more achievable goal. Sadly, within the context of diminished aspirations that they themselves reflect, shape and drive, this can only serve to further undermine expectations,

as well as corrupting the individuals, ideals and institutions they purport to be helping. For instance, rather than talking to the public as to the possibility of a link between the MMR triple-vaccine and childhood autism, science and society would have been better served, in the first instance, by a more robust internal debate. It was this failure that propelled the debate into the public sphere, where few were qualified to comment upon, or interpret, the evidence. Instead a cultural mood attuned to constant speculation as to worst-case scenarios determined the direction of much of the discussion, seriously impairing the UK vaccination programme.

This proclivity to assume negative outcomes is encouraged by Jackson et al. when they talk of the need to take into account science's 'inherent uncertainties'. They seem not to envisage the possibility of positive solutions to uncertainty, and this potentially limitless task, of accounting for the unaccountable, fails to highlight that science has always been replete with contradiction. What is new today is a broader crisis of confidence in dealing with uncertainty, and a concomitant absence of direction, that has afflicted both society at large, and science in consequence. This loss of nerve, in the face of what has always been an inevitably uncertain future, has led to a wholesale corruption of the aims, principles and standards of scientific inquiry. It is this debasement, rather than a mere disheartening, that I sought to draw attention to when alluding to 'the demoralization of scientists' in my original essay. It is a wonder that those who prioritise communication over content should have failed to appreciate this distinction.

Another area of confusion arises from their own definition of dialogue. That they should place such store by this word is itself quite telling. Jackson et al. describe dialogue as 'a context', before suggesting that it 'locates scientific developments in a wider social context'. A context within a context then? Given, as indicated above, that their grasp of context itself seems rather limited, this can not bode too well for the analysis that ensues.

Dialogue is variously described as 'an open exchange and sharing', something that 'enables' inclusion and seeks to 'recognise' other factors. As dialogue 'does not remove authority' from science or 'somehow set public opinion as equal', there appears to be no requirement to act upon it, just to 'respect' and 'acknowledge'. Adopting the therapeutic language of our times, dialogue is no longer a means to an end, but rather an end in itself. So much for the possibility of real change then.

In fact, history rather suggests that when the public truly desire to be involved in decision-making then there is little that can hold them back. They certainly do not require to be 'empowered' by those in power, or those with good intentions. Such narrow, goal-oriented support, for 'improving confidence' or 'reducing conflict', constitutes a patronage of a more profound kind than merely being condescending to others, as it appears is the only way in which Jackson et al. understand the term patronise. Ironically, whilst preaching the virtues of humility in science, Jackson et al. confidently tout the input and relevance of social scientists who 'can and should offer valuable specialist expertise'. Notably, this claim to authority is not associated with any calls for public dialogue in the social sciences. This inadvertently accepts the

input of such experts as having no real and lasting impact upon the world in the way that they believe science does.

Somewhat more ominously they propose that dialogue is somehow necessary to secure science's 'licence to practise'. In this narrowly instrumentalist model of science, 'public consent' replaces royal assent in determining whether, on the basis of providing certain tangibly perceived 'benefits', scientists should be allowed to pursue their inquiries. In fact, science's 'licence to practise' derives from its results. Many of these are not envisaged, nor can they be, when scientists first experiment. To demand otherwise is to confuse open-ended inquiry with a form of methodological prescription better known to social scientists writing funding applications. No doubt Jackson et al. are more familiar, and possibly more comfortable with the latter.

Certainly, they are at ease with projecting their own prejudices onto the public. In their speculative discussion about nanotechnology, a nascent area of science yet to impinge upon popular consciousness in any way, these dialogic communicators quite literally, and unashamedly, speak on behalf of the public. They begin their statements with such phrases as, 'The public is likely to want to see...', and even, 'It will want to ask...'. It seems as though those who speak the loudest of the need for evidence-based uncertainty and humility are amongst the least able to practice it.

Whilst suggesting that the inclusion of non-scientists might lead to 'a broader range of options' being discussed, they also appear blind to the fact that dialogue about 'benefits, concerns and moral issues' can actually narrow the scope of discussion. As the notion that it is possible, even desirable, to shape or lead public opinion, is entirely absent from their description of dialogue, this approach can only mean adapting to the lowest common denominator, or contemporary prejudices and fears.

Consensus and compromise may appeal to woolly-minded bureaucrats in Whitehall and Brussels, but science is poorly served by it. Like it or not, policy-making necessitates a conflict in society between groups with competing aims. Indeed, whether scientific inquiry is best advanced by demanding a dialogue with the public is one of those conflicts. That the champions of inclusion over experimentation should now include the chief executive of the British Association for the Advancement of Science speaks volumes as to the position of some amongst the scientific elite within this debate.

In conclusion, it should be noted that I do not oppose education or public discussion about science, simply the notion that this should inform the direction of science itself. Politicians and officials who promote dialogue in science in order to relate to the public, and scientists who need the prop of relevance and inclusion to justify themselves, impoverish both their fields of activity. They reflect elites who have lost the confidence to get on with what they purport to promote. It is high time they were prised apart.

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CHAPTER 13

Cultural Precursors and Psychological Consequences of Contemporary Western Responses to Acts of Terror

Bill Durodié

This chapter explores what the response to the terrorist attacks of September 11, 2001, teaches us about Western society today. There has been a wealth of research examining the purported cultural background and psychology of the perpetrators of those events (Hoffman, 1999; Reich, 1998). That focus has two main rationales: (1) to identify and deal with potential terrorists and (2) to begin to tackle what are considered to be the *root causes* of terrorism—usually held to stem from poverty and disaffection across the Third World (von Hippel, 2002). These approaches offer a somewhat predictable and reassuring explanation of events. They locate the problem of terrorism elsewhere—in the minds, actions, and cultures of others. At best, those posing a threat are understood to be reacting in an adverse way to what are held to have been the injustices committed against their forebears during an earlier age of imperial domination.

Here, I wish to consider the extent to which some of the issues may be far closer to home, and more contemporary, than we like to envisage. In part, this is due to the particular way in which Western societies perceive and deal with anything that involves risk nowadays (Furedi, 1997/2002a). If anything, the actual threats posed could be conceived of as weaker today than those presented throughout most of the Cold War, yet society appears to react as if they were stronger. Why is this? And what does this tell us about ourselves? A focus on our increasingly exaggerated perceptions of risk and the adverse consequences this brings, both to the people of the Third World and for Western societies, is a missing element to our analysis of terrorism that we ignore at our peril.

Ultimately, if our responses are shaped, in part at least, through the prism of our own domestic fears and insecurities, then the actions taken will prove limited or ineffective and may serve to confuse matters more. A mystifying mythology is created,

which in its turn demands totemic gestures to reassure the public. This process readily becomes a self-fulfilling fantasy which—far from assuaging our concerns—will only drive them further.

Inverting Questions

Just as there are two sides to every coin, so occasionally we need to invert the questions we ask of society if we are to obtain a more balanced and productive take on issues.

For example, the recent fashion to re-examine Samuel Huntington's work *The Clash of Civilisations and Remaking of World Order* (1998), in the light of 9/11, would do well to be moderated with an equally vigorous examination as to the possibility of a clash within civilization, rather than between differing cultures. This would need to address the radicalization of Muslims within Western societies, but more importantly, for those wanting to get to the real roots of this phenomenon, to assess and analyze the largely Western origins of anti-Western ideas.

In this vein, rather than recording so-called anti-American sentiment across the world today (The Pew Global Attitudes Project, n.d.), we would do well to examine how such attitudes have developed closer to home. After all, more anticapitalist protestors come from Seattle than from Gaza. The rejection of once core social values, such as ambition, success, and development, and their representation as arrogant, selfish, and dangerous, reaches its apogee in relation to the United States—the most advanced capitalist nation. This rejection is reflected in a growing self-loathing evident in American culture and that of other Western societies, as expressed, for instance, in Oscar-winner Michael Moore's best-seller *Stupid White Men* (2002).

Another assumption worth exploring in a more rounded way is that of the need to understand why it is that a small proportion of Asian youth appear to be attracted to fringe Islamist organizations. It may prove more productive to ask why it is that a small element of Asian youth, and quite a few others as well, fail to find any sense of solidarity or purpose within Western society (Durodié, 2004a).

Surely, it is an indictment of our own culture that its lack of direction and dynamism fails to attract and inspire ambitious young people. It is not the magnetism of those who supposedly seek to restore a twelfth-century caliphate in the twenty-first century that should concern us. Rather, it is a failing of our own society that it does not project clearly a vision of its own future to argue against those who would have us live in the past. It fails, thereby, to command loyalty or to impart any sense of mission or meaning.

Instead of examining the presumed culture and psychology of those who perpetrate acts of terror, this chapter focuses upon those selfsame factors in relation to our societies and to ourselves. To what extent are we truly facing a new phenomenon, encompassing new technologies with unforeseen consequences? Or, is it we who have changed—including our individual attitudes to danger, the coherence of our institutions, and our sense of social solidarity and resilience?

Diminished Selves

The extent to which once core social affiliations and bonds have been eroded without replacement over recent decades is striking. We should be alert to the possibility of this producing some unexpected consequences.

At the formal level, people in advanced Western societies are increasingly unlikely to participate in the political process. Nor are they as likely to be active—or even passive—members of political parties or trade unions in the same way that their forebears were. There is, of course, more to democracy than merely casting your vote, but even when people do vote, it is often on a negative basis—against an incumbent rather than for his or her replacement. These trends are also most marked among the young.

At the informal level, some changes are even more notable. Many have commented on the growing pressures faced by communities, neighborhoods, and families. In *Bowling Alone: The Collapse and Revival of American Community*, the U.S. academic Robert Putnam pointed to the demise of informal clubs and associations (2000). Meeting with friends occurs less frequently than previously, too. This loss of, what has sometimes been coined "social capital," has occurred within a remarkably short period of time.

A generation ago it was quite normal to send children to school on their own, assuming that other adults would act *in loco parentis*—chastising them if they misbehaved and helping them if they were in need. Today, across many urban areas, this can no longer be assumed to hold. None of us ever signed a contract saying that we would look after other people's children. It was simply an unstated and self-evident social good. Sadly, this erosion of communal bonds has, in its turn, made the job of parenting harder still (Furedi, 2002b).

So, as well as being liberated by the erosion of traditional rules and structures over recent decades, we should note that, without anything to replace these, we have also become more isolated from one another and less effective in consequence. Far from this erosion of old community values necessarily giving rise to a new, confident individualism, what we have seen is the emergence of a disconnecting process of individuation. In the past, social networks and norms may have imposed arbitrary or authoritarian structures and rules upon people, but they also provided meaning, conferred identity, and facilitated basic processes, without which we have become greatly diminished as individuals (Furedi, 2004a).

Being less connected has also left people less corrected. It has allowed their subjective impressions of reality to go unchecked, unmediated, or unmoderated through membership of a wider group or association. In the past, when confronting difficulties, people would, through their social networks, have been encouraged to view things more objectively, or at least from a different perspective. They could also have envisaged a collective solution to their problems. Nowadays, personal obsessions readily grow into all-consuming worldviews that are rarely open to reasoned interrogation or resolution. We may be more aware than previous generations, but we are also easier to scare, as we are increasingly alone in facing life's challenges. Notably,

it is this erosion of informal social bonds that has led to their having to be replaced by more formal processes of blaming and claiming (Furedi, 1999).

Thus, a narrowly self-oriented personality and culture have emerged alongside a growing sense of isolation and insecurity. In some ways, we have replaced a culture of unthinking deference with one of unnecessary fear. It seems that confident individuals need a coherent society to fall back on, just as much as a coherent society requires confident individuals upon which to build.

Risk Aversion

Above all, though, this process of individuation has encouraged an exaggeration of the threats and challenges posed by everyday life. This has manifested itself as a growing obsession with, and aversion toward, all manner of risks, both new and old. Risk has become a dominant prism for viewing the world today, as evidenced by the number of courses, conferences, and journals now devoted to the concept. This outlook emerged gradually but was catapulted to prominence through the breakup of the Cold War order, coinciding with the publication of German sociologist Ulrich Beck's book, *Risk Society: Towards a New Modernity* (1992).

The AIDS-awareness campaigns of the 1980s were an early indicator of changing perceptions of risk. In the United Kingdom, these changing perceptions became much clearer in the debacle over bovine spongiform encephaloparhy (BSE), more commonly referred to as "mad cow disease" (Durodié, 1999). Since that time there has been a steady stream of risk-related issues impinging upon public consciousness. These have included campaigns against the presumed adverse consequences of introducing genetically modified organisms into the environment and concerns over the use of mobile phones held to have possible effects on the brain through so-called nonthermal radiation (Burgess, 2003). More recently the MMR (measles-mumps-rubella) triple vaccine was accused by some, despite a lack of confirming evidence, to be linked to autism in infants (Fitzpatrick, 2004).

Nor has it been just scientific and technological risk-related matters that have been brought to prominence. Age-old activities and problems have also been reinterpreted and reorganized around a heightened consciousness of risk. Bullying in schools, sunbathing, child abduction, untrustworthy general practitioners (GPs), and the very food we eat have all, at one time or another, formed part of a growing panoply of issues one can point to of having fears raised about over recent years.

Risk management as a discipline has therefore become a major discourse and organizing activity, in both the public and the private sector (Power, 2004). Risk managers sit on the board of major companies (Hunt, 2003). Even relationships are now increasingly viewed through the distorting and stultifying prism of risk. Despite concerns raised as to the broader implications and consequences of this, there is an almost unstoppable trend to reinterpret all issues—whether personal, social, or scientific—in this way.

But, rather than the world changing any faster today than in the past, or becoming a more dangerous, unforeseeable or complex place, it may be our diminished, and more isolated, sense of self that has altered our confidence in dealing with change and the problems it gives rise to (Heartfield, 2002). More on our own and self-absorbed than previous generations, with an exaggerated sense of threat, it has become normal for people to look for, and expect, professional support in dealing with what would once have been considered to be everyday difficulties. An all-regulating, blame-attaching response to problems and issues ensues that has, in its turn, helped shape a new, more limited, political framework and agenda for a period largely devoid of any broader social vision.

In part, this is because a more positive social and cultural orientation toward change declined over the course of the twentieth century. Radicals who would once have promoted science and technology as a means for challenging vested authority and power came to associate these with postwar American militarism (Durodié, 2002). Combined with the political defeat and exhaustion of the left, best symbolized internationally by the end of the Cold War, this helped foment a more conservative outlook.

In their turn, the various components of the old right, briefly triumphal about these developments, soon fell out with one another. The only force to have held them together was the threat posed to their interests by the Soviet bloc externally, and organized labor internally. The convergence of left and right reflects the absence of any broader sense of mission or agreed direction for society. The management of risk fulfills the need for a new organizing principle. Politicians, concerned as to their legitimacy, have then sought to repackage themselves as societal risk managers. They have also increasingly pursued the center ground, seeking technical, rather than political, means to enhance turnout in elections.

But the demise of any polarized or principled political debate also fed declining interest and engagement in the public sphere. More limited aspirations—to promote voting by anyone, for anyone, and to micromanage the economy, focusing particularly upon privatized concerns such as education and health—have not inspired a new generation of voters. Attempts to include the public more in certain decision-making processes by various means have merely reflected and reinforced declining electoral participation rates (Durodié, 2003).

Furthermore, while a nervous and atomized public is held to expect greater regulation of risk by the authorities in order to feel protected, there is no way of ever satiating this assumed demand. Rather, the failure to do so appears to confirm a growing sense of human limitations and low expectations. It also feeds suspicion of the very authorities—political, corporate, and scientific—that would need to be trusted in order to transcend contemporary difficulties, as well as further undermining social bonds. Increasingly, through these processes, people have learned and been encouraged to assume the worst or presume a cover-up, even before any crisis has truly emerged.

Cultural Asymmetry

It is within this broader cultural context that we need to situate the events of September 11, 2001. Far from being the trigger to a period of insecurity and policy change, these events were a catalyst for wide-ranging trends that lay just beneath the surface of Western society. For the first time, 9/11 allowed Americans *en masse* to view and perceive of themselves as victims on the world stage. They hardly needed much encouragement. Victims—people who are known by what happens to them—as opposed to heroes—people who are known for what they do—are a key reference point of our times. The fact that the attacks were unprecedented in scale and occurred in the United States simply allowed the domestic soul-searching to begin.

We should be clear that the real driver for this was the growing sense and exaggeration of risk, caused and accentuated by the individuation of society deriving from a concomitant loss of confidence and purpose. Notably, there has been a shift in conceptualizations of risk in recent years that parallels the demise of active participation in the political sphere. The classical notion of risk comprised an active formulation of "taking a risk," which envisaged positive, as well as possibly negative, outcomes. Contemporary use, however, focuses more on the notion of "being at risk," a largely passive viewpoint that externalizes threat as somehow being inherently and inevitably out there (Furedi, 1997).

This historical shift, however, retains an important cultural dimension. Accordingly, there are some who retain an understanding of risk-as-opportunity rather than becoming transfixed by risk-as-threat. It was this cultural asymmetry toward risk taking, far more than the resource asymmetries other commentators have focused on, that was crucial in facilitating the events of 9/11. In another age, individuals armed with box cutters might not have been able to achieve what they did. If we are to prevent similar incidents from happening again, we need to become conscious of quite how much we have changed as individuals and as a society over the short period since the end of the Cold War. These changes increasingly play a determining role in world affairs.

Some commentators have described this shift as the advent of what they call an "age of anxiety," or "culture of fear." This culture stems from and further encourages a focus on the personal and the private over the political and the public. Indeed, political life increasingly focuses on personal issues as a consequence. This narrow, privatized introspection emphasizes feelings over facts and image over insight, leading to the advent of what has also been labeled the "therapeutic society" (Furedi, 2004b). Any sense of a collective good, or the need to maintain one's composure, has been replaced by an increasingly narrow and self-obsessed emotionalism that pours itself out because it fails to perceive any common good worth believing in—still less fighting for.

Accordingly, those who do believe in something—no matter what—appear as fanatics to contemporary sensibilities and are labeled "fundamentalist." Ironically, their sense of the possibility and need for social solidarity and sacrifice—irrespective of their limited aims—are important elements of resilience we would do well to learn

from, rather than seek to eliminate. Furthermore, getting obsessed with—or seeking to moderate—the passions and aspirations of others evades the urgent need to resurrect our own beliefs and capabilities.

Another measure of how much it is we who have changed can be found by examining the literature on human responses in disasters going back over 50 years. In the past, it was generally assumed that people and systems were fairly resilient and could cope. With few exceptions this was found to be true (Quarantelli, 1998). Today, experts tend to assume that individuals and institutions cannot manage without professional support in a crisis. Accordingly, it is now presumed that humanity and society are always vulnerable and in need of long-term, if not lifelong, assistance.

For nearly 50 years the Western allies stood face to face against an enemy known to have a formidable nuclear arsenal, stocks of, capabilities in, and a significant research program into, chemical and biological weapons. Yet now, in an age when concepts of belief, truth, and sacrifice have been so eroded that they no longer hold any purchase, and when confronted by those who are prepared to commit suicide for their cause, we move to reorganize the world as if we had never faced a greater threat. Surely this tells us more about ourselves than about the enemies we face?

Psychosocial Impacts

September 11, 2001 is testimony to the remarkable strength and widespread prevalence of human resilience. As in most disasters, the orderly evacuation of the World Trade Center reflected a tendency toward spontaneous, rational, and cooperative behavior (Furedi, 2004). Yet, the political presumption of social vulnerability and concomitant need for professional support was not long in the offing. Indeed, the dust had hardly settled from the Twin Towers when a veritable army of counselors, psychologists, and other assorted therapists descended on New York to offer their help.

Unsurprisingly, according to their own methods and determinations, these experts found an elevated incidence of post-traumatic stress disorder (PTSD)—a term not even listed in psychiatric diagnostic manuals until the 1980s. They also assessed significant rates of depression across the entire population (Schuster et al., 2001). This was even among those who had been "exposed" to these events only through the medium of television. In this regards, it is worth noting that the very act of searching for, and highlighting, this supposed evidence, itself derives from and ultimately reinforces a culture that effectively encourages people to label themselves as being ill.

As Tel-Aviv based psychiatrist, Professor Avi Bleich, has indicated the reported incidence of trauma appears peculiarly elevated. This is especially so when contrasted to the significantly lower levels among an Israeli population who have suffered terrorist attacks on an almost daily basis over a protracted period (Bleich, Gelkopf, & Solomon). All this reinforces the points made as to the determining role of cultural and historical factors in shaping our presumption of vulnerability. But the notion of frail individuals still prevails, shaping both policy and attitudes. Hence, even the Fire Department of New York—whose firefighters on September 11 had been the heroes

of the hour—subsequently reinvented themselves, according to the dominant social outlook, as forgotten victims in need of support and compensation.

By the time the anthrax attacks occurred, Americans had become focused on security issues in general, and their own insecurity in particular. Hence, despite targeting politicians and the media, these incidents led to an unprecedented response right across society. This was manifest by the number of people who handled their mail, quite literally, with gloves, as well as in the demands for ciprofloxacin that inundated doctors across America, from those keen to have what was held to be necessary to treat themselves in the highly unlikely eventuality of being exposed. In the first two weeks of October 2001 alone, there were some 2,300 false anthrax alerts across the United States.

A number of these incidents led to cases of what is described in the psychiatric literature as mass psychogenic illness, or in more popular terms, people quite literally worrying themselves sick. One notable case occurred on the Maryland subway where 35 people had to be hospitalized after developing real symptoms including drowsiness, irritability, nausea, and vomiting, subsequent to their concerns being alerted by the smell of a strange substance, which later turned out to be window cleaning fluid (Hyams, Murphy, & Wessely, 2002). Many other similar incidents occurred.

This was not that first time that mass psychogenic illness or something similar has been observed in populations. It is worth reminding ourselves that due to their fears, combined with a lack of knowledge as to how to use the equipment they had been provided with, a small number of Israelis suffocated themselves to death on their own gas masks during the first Gulf War. The figure was more than had died from being hit by one of Saddam Hussein's Scud missiles (Hyams et al., 2002). And, while they eventually habituated themselves to the new circumstances, this same population also suffered from an increased incidence of coronary problems in the early days of that conflict.

Whether based on a real threat or not, such responses can pose real strains upon society and its resources in an emergency. An incident in Goiana, in Northeast Brazil, in 1987, where an inappropriately discarded hospital cesium source was stolen by youths is particularly apposite in this regard. Once the incident became known, it led to 100,000 people presenting themselves to the authorities for examination and treatment. Emergency workers had to commandeer a football field to sort out the worried-well from the truly exposed, who numbered in the end no more than 244, of which only 54 merited treatment.

The point is that people's concerns, genuine or otherwise, are shaped by the purposes and beliefs of their society and, more particularly, those of their social and political leaders. This can have a real impact on the demand for resources and hence the ability of the authorities to cope with any particular incident. By the time an emergency actually occurs, it is too late to change such outlooks. Hence, while the numerous training exercises we now witness may serve some limited purpose for the authorities, they will have little impact upon social resilience itself.

Driving Concerns

The actions of political leaders and emergency responders at critical times, especially in the initial stages of any incident, send out important signals to the rest of society as to how they are expected to behave. This can drive public concerns rather than assuaging them. Ambulance personnel, for instance, are trained in an emergency, to calm trauma victims down irrespective of the state of their injuries by downplaying the latter, as such actions save lives. Contemporary culture, however, is suspicious of expertise and demands a degree of openness and transparency that increasingly precludes the application of such professional judgment.

Few have questioned whether sending people in full chemical and biological weapons suits to handle the numerous incidents of white powder scares that occurred in the aftermath of the anthrax cases was necessarily the most appropriate action to take. And, in a similar vein, questions could be asked about the U.K. government's decision to place armed police outside mainline railway stations in London in the aftermath of September 11 or about tanks and troops outside Heathrow Airport subsequent to an alleged tip-off as to the possibility of a surface-to-air missile attack.

Some commentators have suggested that, far from reassuring the public, such steps are counterproductive and project an image of a society that appears to have lost control, or any sense of perspective and proportion. More recent episodes concerning the systematic cancellation of flights to Washington, D.C., from London and the release of information surrounding the supposed foiling of a plot to use the little-known chemical osmium tetroxide in an explosive device seem to confirm this trend.

This points to a growing confusion, or erosion of the divide, between what ought to remain private intelligence and what is worth putting into the public domain, based upon an assessment of people's abilities to take effective action based on the information provided.

The British Prime Minister, Tony Blair, countenanced against taking action "on the basis of a general warning," in a speech delivered on November 11, 2002, at the Banqueting House in London (2002, p. 1731). He indicated that this could lead to "doing their [the terrorists'] job for them" (p. 1731). Yet, the authorities perceive themselves as being under a great deal of pressure to be seen to be acting. Whether their perceptions of the public mood are accurate, or the actions they take are truly effective, remains to be determined. Phrases such as "alert, not alarmed," together with the assumption that a terrorist attack is a matter of "when, not if," or indeed that an attack is "inevitable" are about as general and unspecific as it gets.

Such rhetoric presumes itself to be challenging an assumed complacency toward the issue of terrorism and is presented as resolute and robust. But the generalized sense of "being at risk" or "vulnerable" that they project reveals an almost resigned air of fatalism toward future events. The use of language to prepare, or alert, the public, also smacks of blame avoidance rather than determined resolve. It exaggerares the significance of terrorism to society and, in effect, encourages all manner of potential terrorists, as well as hoaxers, loners, and cranks to have a go. It also ignores the

understanding the public has that determined individuals will always be able to get through, no matter how many technical barriers have been erected against them doing so.

Continuously issuing warnings or information that turns out to be factually incorrect, out of date, or too vague to act upon has a number of consequences.

First, it can literally make people ill. This need not be as dramatic in form as instances of mass psychogenic illness, but it has helped to foment a vaguer underlying anxiety about life and a gradual, passive disengagement from it, which could be tremendously disabling for those seeking to build up social resilience. This is reflected in the large number of surveys that—irrespective of their self-reported basis and the changing basis for assessment—point to increasing levels of stress, depression, and trauma in the aftermath of various incidents.

Second, the more likely scenario is that over a period of time, people grow used to ignoring such statements. Again, this could clearly have dramatic consequences. Recent polls suggest that on the whole people are going about their everyday lives ignoring the threat of terror in a pragmatic and resolute fashion. However, this insouciance is likely to be more representative of a growing, broader cynicism and mistrust of authority that now prevails throughout Western societies, rather than reflecting any deeply felt inner commitment or resolve.

Third, constant warnings readily lead to a self-fulfilling demand for the authorities to do something—distracting them and us from real risks and diverting social resources accordingly. Among other problems, this generates a situation best characterized as information overload. The demand for the public to be vigilant and report any unusual activity, combined with existing and new agencies' tasks to sift through these vast amounts of potential intelligence material, clogs up the system, triggering paralysis by analysis, and fails to identify and act upon more plausible threats and risks. Banks, now required to report any "suspicious" transaction to identify possible instances of money laundering, report a similar trend toward not being able to see the forest for the trees.

Sadly, as no serious local authorities can afford not to have revised their emergency plans and procedures in the light of these developments, it almost seems that if they do not assess themselves as potentially being on a terrorist hit list, then they cannot be taking their responsibilities seriously. A climate has been created whereby whatever measures the government, security, and emergency services take, there is an insatiable appetite for more and demands emerging from all quarters, both public and private, to the effect that not enough is being done. The problem is that many of the measures being put in place are totemic gestures rather than rational strategies.

It is also worth noting the significant element of commercial interests in such matters. Security is big business and indeed, due to our exaggerated sense of insecurity, one of the fastest growing sectors today. Accordingly, there are numerous risk and security consultants, as well as scientists and engineers, of varying abilities and distinctions, who have a financial interest in maintaining both social and individual concern in these matters. These have encouraged companies to develop so-called "business continuity strategies" of dubious worth, focusing particularly on the

integrity of their information systems and the presumed cost of not doing so.

All this has led to an inevitable, if perverse, rise of a certain degree of wish fulfillment. One senior executive recently remarked to me that the supply side for respirators or gas masks was all ready and waiting; what he needed now was for the demand to be "stimulated."

What If?

As all issues are now examined through the prism of risk, there is a growing cultural proclivity to err on the side of caution. This emphasizes the negative aspects of particular situations, assuming far-fetched scenarios and acting as if these were true. Extrapolating from worst case evidence, or even uncorroborated data, has become the norm. This has led to a distinctive shift over recent years from asking scientific "What is?" type questions that call for specific evidence to asking more speculative or anticipatory "What if?" type questions. The latter appeals to a more general, emotionally driven response.

But once we start focusing upon What if?, an inexorable logic develops. For instance, once we have asked, "What if there were groups or individuals out there who might want to use a biological agent against us?", then we are led through a convoluted series of further presumptions, "What if they had access to such an agent?", "What if they were willing, and capable, of deploying it?", and so on. Despite the absence of evidence, and the numerous cumulative assumptions, there is little choice, lest they be accused of complacency, but for the authorities to begin to prepare our capacity to cope with such an attack.

Thus it was that smallpox, a disease recognized by the World Health Organization as having been eradicated in the 1970s, has come back to the fore. Despite the two known repositories of the virus, in the United States and the former Soviet Union, having had no reported breaches of security it was possible to speculate otherwise. In fact, smallpox would not pose particularly great problems, but vaccines were demanded so that public health agencies could establish a protective ring around any incident, just in case.

But, the What if's? did not stop there. After all, "What if those dispersing the agent had made a point of doing so in a variety of places including airports to ensure effective worldwide dispersal?" Then, clearly vaccine stocks needed to be sufficient to cover entire populations. In time, we would need to begin a process of actually inoculating first responders and then, in the interest of access and transparency, making the vaccine available to any other person who may wish to have it.

Unsurprisingly, what started as a speculative discourse and set of scenarios on one side of the Atlantic spread like a real disease across to the other side. Other nations followed suit. The next logical step is to ask the same questions with respect to the many other viruses and micro-organisms that could be identified as posing equivalent or significant risks, such as ebola, tularemia, Lassa fever, Marburg fever, e-coli, and botulinum, to name but a few.

Once the What if? questions have started, it is quite literally like knocking over a line of dominoes, except that each step can cost millions, as well as inflicting a tremendous social cost on entire populations who effectively grow accustomed to living in fear. Interestingly, the fear of bioterrorism has tremendous purchase over contemporary society because it also acts as a powerful metaphor for elite concerns as to the corrosion of society from within (Durodié, 2004b). Rather than analyzing such issues at face value, or in their own terms, as a recent report by the Royal Society did in relation to chemical and biological agents (2004), a broader historical and cultural perspective is required to understand why individuals and societies feel so vulnerable to what remain largely speculative scenarios.

Institutional Distractions

Speculation dominates the news after every high-profile arrest or incident. But rather than blaming the media for this, as many are prone to doing—thereby feeding a regulatory response—we would do well to examine the actions and statements of other key public institutions and individuals, ahead of such crises.

For instance, after the supposed discovery of the Category B agent ricin in a flat in north London, *The Financial Times* reported an official as saying, "There is a very serious threat out there still that chemicals that have not been found may be used by people who have not yet been identified" (Huband, Burns, & Krishna, 2003).A3 This statement of the obvious remains true whether there is a war on terror or not. But a banner headline stating "Chemical Weapons Factory Discovered in a London Flat" helped set the tone of the debate. Yet, while the media are guilty of uncritical reporting, thereby enhancing social presumptions, we should be clear that they alone do not set the tone. This latter rather reflects elite fears and the broader cultural perspective that inclines toward believing the worst.

Ironically, as more discretely reported in *The Sunday Times* at a later date, this particular story transpired to be largely false (Leppard, 2003). Analyses by scientists from the U.K. government's chemical weapons establishment at Porton Down found no evidence of ricin manufacture. Yet this aspect of the story was never officially reported or retracted by the authorities, and so the public assumption that it was true has remained. Presumably, it was felt to be a useful vehicle for keeping the public vigilant.

The media both reflect our cautionary climate and, in certain instances, help to amplify it. But it is nervous politicians and officials who are the real drivers as—lacking any vision of their own—they are unable to separate themselves effectively from the broader culture. In the United Kingdom, for instance, the newly established Health Protection Agency has issued numerous public health advisories through its "cascade system" to facilitate GPs in the presumed, anticipated task of having to identify the first signs of a chemical or biological attack.

This focus not only diverts resources from where they could best be used within the health service, it effectively helps to establish the context and content for future discussion. Worse, the failure to use specific expertise and to assess the real threat

appropriately posed distracts us from the real risks we continue to face, both from terrorism and from other everyday life. As has continuously been demonstrated, real terrorists prefer to use more reliable weapons such as high explosives and car bombs.

Leading scientists continue to identify nature as by far a greater threat to humanity than presumed acts of biological terrorism—although this danger too is prone to being exaggerated. There is little recognition given to the fact that advanced economies are better placed to deal with the consequences and contain the potential of such incidents. Rather, contemporary obsessions prevail, as can be seen by examining new funding priorities and programs, which dictate an unwarranted distortion of social resources and research priorities toward so-called "weapons of mass destruction."

Psychiatry Lessons

Overall, governments have sought to assuage public concerns through the provision of what they consider to be appropriate and accurate information. Ironically, this approach, advocated by the new gurus of risk management and communication, may serve to make matters worse by feeding the insatiable appetite for fear. It is widely contradicted by a wealth of literature emerging from the field of psychiatry that suggests the provision of information alone—outside an understanding of context and the sense of one's ability to shape this—can be a potentially futile and counterproductive exercise.

It is not so straightforward to reassure anxious people. Even when concerns are correctly identified and targeted, the evidence suggests that—while the more extreme manifestation of symptoms may abate temporarily—without tackling the deeper underlying concepts behind them, problems can soon re-emerge, manifesting themselves in an exaggerated form (Durodié & Wessely, 2002).

The bottom line is the need to challenge people's core beliefs about a situation head-on. But increasingly over recent years, we have become unwilling to do so. As a society we prioritize consensus seeking over confrontation. The latter appears too dismissive, or judgmental, to contemporary sensitivities. Furthermore, this is not a task that can be achieved by individual psychiatrists or therapists, even in the rare instances where these are not affected by the prevailing norms and values. If the surrounding culture continues to provide signals and messages reinforcing concerns, then the expert is likely to be ignored or questioned anyway.

The best that can be achieved in such circumstances is to habituate people to the world they now live in by encouraging an acceptance of uncertainty. But doing so serves to confirm the dominant social script establishing concern about terrorism. The real task would be to remind people that there is far more to life than terrorism. This has not been addressed by the authorities so far. It requires a focus on ends well beyond dealing with immediate problems. This is a political task that, far from distracting us from contemporary issues, should inform the very solutions we seek to put in place.

By taking a broader, longer-term view, we would become more conscious of the extent to which trauma itself is a social and historical construct. The widely used terminology of post-traumatic stress disorder did not emerge into professional circles until the mid-1980s. At the time, this was to explain the particular problems faced by certain Vietnam veterans in the United States.

These suffered not so much from their defeat in Southeast Asia, as from rejection by their own communities upon their return home. Shunned as pariahs and labeled psychopaths, the PTSD category eventually offered moral exculpation and access to compensation. But whereas older conditions such as "shell shock" and "battle fatigue" had been held to be specific, relating to a soldier's background and psyche, the new diagnosis was applied more generally—assumed to derive from the fundamentally traumatizing experience of war.

Originally framed as applying only to extreme events, PTSD spread rapidly, like a disease, to encompass relatively common happenings such as accidents, muggings, verbal or sexual harassment, and even workplace disputes. It finally entered the official *Diagnostic and Statistical Manual of Mental Disorders* in 1980 (American Psychiatric Association), and aid agencies now commonly assume whole populations to suffer from it in advance of detailed analysis.

Ironically, most veterans diagnosed with PTSD have had no combat experience, pointing to a self-justifying reconstruction of current problems through a narrative of past trauma. Research also suggests that PTSD is more serious and more common among international relief and development personnel than for the locals they seek to support (Pupavac, 2002). These facts indicate the category to be culturally constructed and its causes amplified through our particular Western obsession with risk and stress, often in pursuit of remediation or recognition.

Studies of those exposed to a range of natural and man-made disasters consistently show that beliefs held prior to an event coupled with one's understanding of it account for variation in symptoms far better than the particular characteristics or severity of the experiences encountered.

Accordingly, we should also be wary, as indicated earlier, of the figures regularly cited for incidence of trauma among the U.S. population post-9/11. These point to the extent to which even apparently objective data, such as that measuring people's anxieties in the aftermath of terrorist incidents, are themselves a cultural construct based upon assumptions of human vulnerability and their ability to cope. As Furedi (2004c) has noted, in the past, the dominant social script or narrative would have been one more focused on social and individual resilience and initiative.

Technical Fixations

Despite all the evidence pointing to the urgent need for greater clarity of purpose and direction, most activity since September 11 has focused narrowly upon the technical means to combat terror. The standard fare of conferences and papers revolves around the assumed need for better intelligence, more surveillance, new detection equipment, protective clothing, and computer models to predict behavior. When

the public is engaged, it is at the more basic level of identifying means for effectively communicating predetermined messages and information or to exhort the need for further vigilance under the banal and general slogan of "alert, not alarmed."

It is also the case that whatever the government does in these regards there is an insatiable appetite for more. This comes from the posturing of opposition politicians, from the practical demands of emergency responders, as well as from the commercial interests of security providers and consultants, who all appeal to the public's understandable concerns. Some propose the creation of a U.S.-style Department of Homeland Security. Others too, inured by years of cynicism and mistrust in authority, are now inclined to assume the worst and presume a cover-up.

The urgent need to engage in a broader debate as to social aims and direction, based upon clearly principled beliefs and the desire to engender among the population a sense of purpose that would truly make it resilient to acts of terror, is continuously put off for some other time, or not even considered. Yet, it is this sense of mission in the world that, having broken down at home, leaves us incredibly unarmed in the face of the limited threat posed by the likes of al Qaeda and, failing that, what increasingly become labeled as their "sympathizers."

If the war on terror was ever hoped to help society rediscover a sense of unity and purpose, then what we are actually witnessing could not be any further from such goals. Far from bringing people together, it has proven deeply divisive and revealed the deep cracks that currently run through society and its institutions. Furthermore, technical barriers or solutions to the problem of terror make things only worse as they encourage people to become ever more suspicious and mistrustful as to the activity of their neighbors—rather than bring people together as the times require.

Resilience is not a technology that can be bought. Rather it is an attitude reflecting wider patterns of social development and outlook. Accordingly, attempts to develop technical solutions to the problem of terrorism simply end up reflecting and reinforcing existing values. Focusing on the means and losing sight of the ends builds only lack of direction into the system. Presumably those who are willing to risk their lives fighting fires or combating other emergencies do so not so that their children can go on to do the same, but for some broader purpose. It is this of which we seem to have lost sight.

Real Resilience

The concept of "resilience"—the ability to withstand or recover from adverse conditions—has come of age subsequent to the terrorist attacks of September 11. Politicians, emergency planners, and other officials now talk of the need to "build," "engender," "improve," or "enhance" resilience in society. Unfortunately, by framing the discussion in the fashionable language of "risk," an element of passivity and inevitability has been built into the solutions proffered.

The U.K. Cabinet Office describes the aim of "building resilience" in terms of reducing susceptibility to challenges "by reducing the probability of their occurrence and their likely effects" (Cabinet Office, 2003). The notion that it may be possible to

shape conditions, outlooks, and perceptions in advance, by setting a clearer political agenda, is not particularly considered. Hence, despite inherent elements of resilience, society continuously seems to downplay such factors, becoming fixated on more immediate problems and undermined by self-doubt.

In reality of course, people and systems continue to display a remarkable degree of resilience given the chance (Furedi, 2004). Those directly affected by the events of 9/11 have had little choice but to get on with their lives and, with few exceptions, that is what they have done. It is also the case that the total financial cost of these events, both structural and in terms of compensation, amounted to less than 1 percent of the U.S. gross domestic product in any one year. To put this into perspective, it is worth noting that the Enron saga that followed cost a great deal more.

Building on such spontaneous responses, rather than undermining them, requires promoting a clearer sense of who we are and what we are for. This would necessitate truly engaging the public in a political debate as to aims and values. It would also force a need to be more judgmental of others than contemporary society allows. And in turn, this would emphasize the need for collective purpose over individual security in order to achieve predetermined social goals. Sadly, a focus on knowing, engaging, judging, and acting is not so straightforward today.

Despite this being the real role and responsibility of those in positions of authority, there is good reason to anticipate their reluctance to do so. If we were to characterize resilient people as having a greater sense of whom they are and of what they can achieve together, along with a willingness to judge others and take action accordingly, it is quite possible to question whether the authorities in the United Kingdom, the United States, or anywhere else nowadays would view such a project with any degree of optimism. Resilient people are not necessarily easy to manage. They demand more from those in authority than maybe these latter are willing, or able, to provide.

Accordingly, it is likely, for the foreseeable future at least, that there will be much talk about the need to engender social resilience, but very little by way of effective action. It is far easier to make glib references to the need to defend "our way of life," "our values," or even "freedom and democracy" than it is to provide real content to such concepts through a concerted campaign to re-engage the public in political discourse. Indeed, few of the authorities concerned with civil defense or homeland security consider it their responsibility to lead on such an agenda.

There is, of course, a reason as to why these matters are not being addressed; that is, there is a failure to recognize that the problem has anything to do with the domestic situation at all. Terrorism is usually perceived as being a problem relating to others, out there. The notion that an absence of direction at home may somehow drive our perception of terrorist acts, as well as undermining resilience and encouraging the perpetrators themselves, is a novel one for those in authority.

Indeed, there is an even more direct relation between us and the terrorists; that is, terrorism often reflects the dominant forms of social understanding and values it emerges within. When society asserted the need to recognize the independent sovereignty of nation-state, terrorists fought politically motivated national liberation struggles. Now, on the other hand, we live in an age when political debate—beyond

the confines of the personal—is weak, or nonexistent. One consequence of this is the advent of terrorists without stated aims or goals. Furthermore, this nihilistic lashing out against modernity is unrestrained by any sense of moral purpose and draws encouragement from the broader self-loathing evident in Western culture.

Giving it a name, such as al Qaeda, rather misses the point. Its perpetrators are as likely to be found at home as anywhere else. They include Timothy McVeigh, the Oklahoma bomber, the Aum Shinrikyo cult, who planted the chemical agent sarin on the Tokyo subway in 1995, and even the 9/11 hijackers themselves who, far from being poor kids from the Gaza strip, were relatively wealthy and well educated. They had all spent some considerable time attending Western universities and, ultimately, reflected our own dominant norms and values.

This points to a final problem relating to the war on terror; that is, even if Osama bin Laden and all his acolytes were captured or killed tomorrow, still the problem of terror would not have gone away. This is because a key driver to our perception and response to these events has been our own insecurities. And these are not about to go away. Furthermore, by advertising how vulnerable we feel and how frail we have become in relation to any activity, at any time, in any location, we have effectively educated a new generation of the future disaffected, whether terrorists, animal-rights activists, hoaxers, loners, or cranks, as to how easy it is to undermine our society using little more than plastic knives and bags of sugar.

The sorry truth that lies at the heart of the war on terror is that the West is at war with itself. The acts of September 11, having been perpetrated by outsiders, served as a useful distraction from addressing where the problems really lie. In fact, those individuals proved so effective because in many ways they reflect our own nihilist culture. It is just that, consciously or not, they have captured this better than we do ourselves.

Conclusions

From the preceding discussion a number of tentative conclusions can be drawn:

1. A focus on our own societies' psychology and culture is a missing element necessary for understanding both our response to recent acts of terrorism and the particular salience we attribute to them.
2. More research is required to explore the largely Western origins of antihuman, antimodern, and anti-Western ideas, as well as how these then become adopted by others.
3. The erosion of social bonds in our society has left a weak, self-centered form of individualism that may be less capable of withstanding difficulties or of perceiving of a greater common good or purpose.
4. A proper understanding of risk perception has to take into account the determining influence of social factors, such as political disengagement and stasis, as well as being grounded in scientific evidence.
5. The key asymmetry used by terrorists is that of our respective attitudes toward risk taking. We must reassert the inevitability of risk in all activity and highlight the fact that without taking risks nothing can be gained.

6. Government should neither make fatalistic statements about terrorism nor offer the promise to protect us from all risks. Above all, there should remain a clear distinction between private intelligence and public information.
7. The public is the primary target of terrorism and, accordingly, the real first responder. Its attitude and values in advance of such incidents are key to shaping outcomes.
8. People and systems are already resilient. Contrary to popular perception, in an emergency, the public rarely panics—displaying both rational and prosocial behavior—and vital processes continue to function.
9. Real resilience is an attitude, or mind-set. It derives from the quiet confidence of having a broader common purpose, combined with a willingness to judge others and to act when necessary.
10. Building real resilience requires re-engaging the public in an active sense, building from their spontaneous cooperative responses, rather than bypassing these using technical means.
11. Technical solutions, when used as an end in themselves—as opposed to a means to a broader end—can push people apart, promoting mistrust and suspicion and thereby further corroding social bonds.
12. Counterterrorism strategies and national resilience need to be guided by, and embedded within, a broader framework of aims and values for the whole of society.
13. There is an urgent need to restore the centrality of a principled and positive political agenda for society that opposes the use of fear as a vehicle for winning arguments or building coalitions.
14. Social leaders need to focus society on a broader vision, beyond the immediacy of terrorism. It is only through this that they may hope to secure real loyalty and active engagement in achieving their purposes.

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Risk and the social construction of 'Gulf War Syndrome'

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Fifteen years since the events that are held by some to have caused it, Gulf War Syndrome continues to exercise the mind and energies of numerous researchers across the world, as well as those who purport to be its victims and their advocates in the media, law and politics.

But it may be that the search for a scientific or medical solution to this issue was misguided in the first place, for Gulf War Syndrome, if there is such an entity, appears to have much in common with other 'illnesses of modernity', whose roots are more socially and culturally driven than what doctors would conventionally consider to be diseases.

The reasons for this are complex, but derive from our contemporary proclivity to understand humanity as being frail and vulnerable in an age marked by an exaggerated perception of risk and a growing use of the 'politics of fear'. It is the breakdown of social solidarities across the twentieth century that has facilitated this process.

Unfortunately, as this paper explores, our inability to understand the social origins of self-hood and illness, combined with a growing cynicism towards all sources of authority, whether political, scientific, medical or corporate, has produced a powerful demand for blame and retribution deriving from a resolute few who continue to oppose all of the evidence raised against them.

Sadly, this analysis suggests that Gulf War Syndrome is likely to prove only one of numerous such instances that are likely to emerge over the coming years.

Keywords: Gulf; war; syndrome; illness; health; risk

1. PREAMBLE

> We are on average as resilient as the culture we live in expects us to be.
>
> (Summerfield 2006)

Illness is a private experience. But, although we perceive it subjectively, as individuals, we have come to conceive of it as often having an objective, or real, basis. So, while the experience of being ill is unique and intensely personal, we also understand some illnesses to have certain common or more general characteristics.

Our appreciation, both as individuals and as a society, of the linkages and interactions between these internal factors and their external influences is imperfect. Hence, the identification and treatment of illness, as well as how we address and organize these processes, depend on the state of the society we happen to find ourselves in.

All of these contributory elements are historically contingent and, in some instances, politically contested. And, it is not just the connection of effects with causes, or the definition and remediation of illness that are culturally determined. So too are the assessment and recognition of what is normal—and even of what is an individual.

How we expect people to behave varies according to cultural values and social settings. For instance, when someone hopes or is determined to get well, when they trust those who look after them or have confidence in their knowledge and expertise, then the experience of illness is different to when these conditions do not apply.

This means that illness is also a social phenomenon and—like an individual—a product of its time. If we do not grasp the mood and dynamic of those times accurately, then we are unlikely to understand either the patient or the problem. It is this tension that lies at the heart of the debate surrounding Gulf War Syndrome.

2. BACKGROUND

After the Iraqi invasion of Kuwait in August 1990, approximately 700 000 US troops and 50 000 British troops, along with smaller detachments from other Western allies, were deployed to the Persian Gulf over the period spanning September 1990 to June 1991. This consisted of a five-month build-up culminating in a 39-day air war followed by a 4-day ground war in February 1991 (Hyams *et al.* 1996).

The Iraqi death toll was estimated at around 180 000, brought about by everything from hi-tech 'smart' bombs to low-tech bulldozers used to bury Iraqi conscripts alive in the desert. By contrast, far fewer casualties than expected occurred among Coalition forces—467 were injured among US units, although as

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One contribution of 17 to a Theme Issue 'The health of Gulf War veterans'.

many as 40 000 had been predicted (Straus 1999)—and morbidity rates were low compared to those in previous conflicts (Writer *et al.* 1996)—around 150, many of which resulted from 'friendly fire' and other mishaps.

Despite the relatively light toll of casualties however, in the years following their return from the Gulf War, troops from America, Canada and Britain have complained of a wide range of symptoms, which many have attributed to their experience in Kuwait and Iraq. Notably, similar symptoms were not reported by French, Saudi, Egyptian, Syrian or Moroccan troops, nor by native Kuwaitis (Hyams 2005). Nobody seems to have enquired about any such complaints among surviving Iraqi soldiers.

The range of symptoms presented by Gulf War veterans is vast. The most common are chronic fatigue, joint and muscle pains, defects of memory and concentration, anxiety and depression, insomnia, skin rashes, chest pain and breathing problems. Others include sensory symptoms, loss of balance, diarrhoea and other gastrointestinal complaints, bladder dysfunction, sweating disorders, burning semen sensation, acute allergies and accelerated tooth decay. Some have claimed that genetic abnormalities in the children of veterans are a delayed consequence of the war.

Undoubtedly, some Gulf War veterans have become ill, but incidence of disease—with the disputed exception of motor neuron disease among US veterans—matches that afflicting ordinary individuals over time—and often at a lower rate. It is only the reporting of symptoms that was markedly higher among Gulf War veterans—roughly somewhat over twice as likely—than among equivalent military cohorts.

Unfortunately, as it is both relatively easy and quite common to confuse the symptoms of illness for a disease, this has led many to assume—or be encouraged to assume—a putative cause for their condition. It is this that has been labelled Gulf War Syndrome by some. However, almost every scientific, epidemiological and medical study conducted since has found no evidence of an all-encompassing or unique syndrome.

Nevertheless, a large number of possible causes have been put forward as potential agents for such a syndrome at various times. These are as diverse as the symptoms and ailments they seek to explain. They include exposure to depleted uranium, chemical and biological weapons, organophosphate pesticides and insect repellents, multiple immunizations, indigenous infectious diseases, nerve gas prophylaxis, toxic fumes from burning oil wells and even the wearing of protective clothing.

While some have sought to blame the psychological stress of war, others have pointed out that the campaign was a short and successful one and interviews have failed to confirm any excessive pressures. In any case, proponents of Gulf War Syndrome generally prefer some notion of toxic exposure—which appears in their minds to confer greater medical legitimacy—as opposed to psychological explanations.

What is clear is that the resulting debate and confusion has helped to poison relations between military personnel and their political leaders, as well as exacerbating a sense of mistrust and frustration with the health care system and the judiciary. Authoritative dismissals of specific illnesses are unlikely to curtail a wave of claims from purported victims and their legal advocates for—as one commentator noted early on—'Gulf War Syndrome has shifted from medicine to politics' (Greenberg 1996).

3. CHRONOLOGY

Anecdotal reports of disorders affecting US troops who fought in the Gulf first surfaced in the months after the end of the conflict, as veterans began to approach Veterans Affairs (VA) offices about health issues. US authorities expected these to focus on air pollution in Kuwait, although by November 1991 attention shifted to the incidence of leishmaniasis, a disease caused by parasites sometimes carried by sandflies. This led to a ban on blood donations by US servicemen who had served during Desert Shield/Storm—a decision revoked in January 1993 once the number of cases detected had been found to be low (Ministry of Defence 1997).

In January 1992, unexplained chronic illnesses were reported among Gulf War veterans from an army reserve unit in Indiana, USA (DeFraites *et al.* 1992). The idea now emerged that US Gulf War veterans might be suffering from unusual or unexpected health problems. By September 1992, the House of Representatives VA Committee was taking testimony on vaccination issues, while the VA Persian Gulf War Veterans Registry dates from November 1992. The Department of Defense Comprehensive Clinical Evaluation Program was not established until June 1994.

By the beginning of 1993, however, there was still little widespread interest on these matters in the UK. According to the then Ministry of Defence Surgeon General, Peter Beale, 'when troops returned to the UK the daily sickness rate did not increase'. It was only some 18–24 months later that his services 'became aware of a campaign by lawyers to recognise a specific Gulf illness' (Beale 1997).

In January 1993, a US Gulf War veteran wrote to the Queen describing his illness and asking if UK Gulf War veterans were also sick. The Ministry of Defence were asked to reply and indicated that no British Armed Forces personnel suffered from the symptoms described. A similar letter from another US Gulf War veteran addressed directly to the Ministry of Defence was answered in the same way in March 1993.

Then, on 7 June 1993, an item broadcast on the BBC television programme *Newsnight* highlighted the health concerns of US Gulf War veterans (Unwin *et al.* 1999). The first Parliamentary Questions followed within days of the programme being aired and a follow-up item on *Newsnight* appeared on 5 July 1993, featuring the then Armed Forces Minister, Jeremy Hanley MP and some British Gulf War veterans.

As, at that stage, the Ministry of Defence had no record of any Service personnel, or ex-Service personnel, suffering from unexplained illnesses acquired during Operation GRANBY—the British name for the deployment to the Gulf—the Minister, when pressed, responded by asking for anyone who

believed that they were ill as a result of serving in the conflict to write to him personally.

Despite the publicity, the initial response to this appeal was limited—only 220 Gulf War veterans came forward in the first 18 months—effectively less than 0.5% of the cohort by the end of 1995. Nevertheless, as early as October 1993, a consultant physician, Wing Commander Bill Coker, had been appointed as the single access point for all referrals.

The process was by now sufficiently well established to be known as the Gulf War Medical Assessment Programme. This provided clinical diagnosis to presenting patients with treatment to be handled by standard procedures according to whether the individual was still serving or had returned to civilian life. The programme was not engaged in research or charged with reporting back to the Ministry of Defence, although clearly the data it collected would eventually form important sources of information.

For some reason, interest in the programme picked up somewhat over the course of 1996 and hence, according to Peter Beale, 'numbers increased so that by January 1997, 1100 had been registered'. This figure has risen steadily since, reaching almost 3000 in September 2001 (Chalder *et al.* 2001) over 10 years after the original conflict. In 1996, with initial funding from the US Department of Defense, researchers from the Guy's, King's and St Thomas's Medical School in London established the Gulf War Illness Research Unit. This was to provide a more rigorous analysis on a random sample—over 4000—of the Gulf War cohort, with appropriate comparisons of equivalent cohorts who had not been deployed to the Gulf.

After an initial pilot phase, questionnaires were sent to all participants in August and September 1997. Repeat mailings to non-responders were done between November 1997 and June 1998, with follow-up ending in November 1998. The outcome of this research, reported in *The Lancet* in January 1999—while demonstrating for the first time a significant increase in the subjective experience of symptoms—confirmed the negative response of the numerous surveys that had by then been conducted in the US.

The latter included expert reports by the military, the National Institutes of Health, the Rand Corporation, the Institute of Medicine and a number of prestigious universities, as well as a study by the Centers for Disease Control and Prevention. The mandate of the Presidential Advisory Committee on Gulf War Veterans' Illnesses (the then President, Bill Clinton, took a close interest in these matters) had been extended in 1996, because the US government refused to accept its verdict that it could find no evidence of Gulf War Syndrome. The Committee returned the same conclusion a year later.

Regardless, a number of veterans and their advisors, buoyed-up by sympathetic media reporting as to their plight, have remained thoroughly unconvinced as to this weight of evidence, as well as that which has ensued since which, to date, has cost in excess of $300 million to conduct in the US alone (Clauw 2003).

In concluding this section, it is worth quoting more extensively from one of the leading American researchers with regards to the issue of mistrust that has now arisen;

> Allegations of a cover-up are common responses to difficulties demonstrating a war-related syndrome. From the medical standpoint, this explanation is the least plausible because it is based on the premise that numerous private and government health professionals would participate in a conspiracy. In reality, a concerted clinical and research program has been established in three countries to identify the causes of veterans' illnesses and provide medical care. Physicians and researchers have had no incentive to hide the truth because whoever finds answers to these health questions will receive substantial professional recognition and personal gratification from helping veterans.
>
> (Hyams & Roswell 1998, p. 339)

4. CONTEXT

The purpose of this paper is not to review the medical evidence, which is examined elsewhere in this journal, but rather to explore other determining factors—in the main social, cultural and political—to the debacle. Many researchers now believe the standard medical and scientific avenues of investigation have been rigorously researched and that it is time to move elsewhere in searching for an explanation (Wessely 2001). None of this is to suggest that there do not remain a disproportionate number of veterans who are genuinely ill, or at least perceive themselves as such.

It is worth noting from the outset that the Gulf War of 1991 occurred at a time of unprecedented change in the history of the twentieth century. It was the first post-Cold War conflict and the period immediately preceding this, as well as that which ensued, have been marked by remarkable transformations in social, cultural and political values, perceptions and mores.

For instance, in a recent book reviewing the controversy in the UK surrounding the introduction of the MMR (measles, mumps and rubella) triple-vaccine, the medical commentator and general practitioner, Michael Fitzpatrick, identifies these times as having been marked by a 'resonance for an apparently endless series of health scares' (Fitzpatrick 2004). These have included anxieties expressed about issues from mobile phones to toxic chemicals and genetically modified organisms.

In particular, Fitzpatrick shows that concern as to the introduction of the new vaccine predated the publication in *The Lancet* of the now infamous paper suggesting a possible link between MMR and childhood autism by Andrew Wakefield and his colleagues at the Royal Free Hospital in North London in February 1998. So, while inoculation rates declined steadily subsequent to this event, Fitzpatrick points to the fact that this 'was not the only factor'. He and others suggest that a heightened sense of individual insecurity was already finding expression in a popular mood of risk aversion and a culture of litigation affecting broad layers of society (Furedi 1999).

Tracing the full origins of this changing social climate would require considerably more space than is available here. Nevertheless, a growing number of fears expressed across a wide range of issues, both

scientific and social, serve as a useful marker. One of the most significant of these—the debate surrounding the possibility of the transmission of bovine spongiform encephalopathy, commonly known as 'mad cow disease', to humans in the form of variant Creutzfeldt–Jakob disease—gained particular notoriety at the time of the announcement in the House of Commons by the former British Health Secretary, Stephen Dorrell, in March 1996 that there may be such a link.

Coinciding with, and feeding into, the rise in registration of former veterans to the Gulf War Medical Assessment Programme, the affair was held to symbolize the breakdown of trust in politicians, scientists and industry, and in part was undoubtedly responsible for cementing the downfall of the then Conservative administration at the general election the following year.

It is worth noting, however, that this episode too, serves more as a confirmation of existing trends rather than being their cause. Famously, as early as May 1990, the then Agriculture Minister, John Selwyn Gummer, had been widely ridiculed for publicly attempting to feed his young daughter Cordelia a hamburger in order to placate concerns as to the safety of British beef. Clearly then, awareness of these issues focusing more on image than insight, as well as a growing mood of mistrust and cynicism in authority were evolving well before the Gulf War.

The reasons for this are complex, but they relate in part to a number of processes that have been widely commented on and that evolved gradually over the course of the latter half of the twentieth century. These include a gradual process of disengagement from political life, a disconnection in the web of social existence and growing disenchantment with science. These were propelled to the fore and accelerated considerably through the period of transformation and confusion surrounding the end of the Cold War.

A number of social commentators have described the mechanisms whereby the breakdown of existing forms of collectivity and systems of social meaning left the public feeling more isolated and insecure than previously. Harvard professor Robert Putnam has described this process as an erosion of 'social capital' (Putnam 2000). Worse, those in positions of authority also appear to have suffered from a similar existential crisis, combined with an absence of any evident political direction and conviction (Laïdi 1998).

5. RISK

In 1992, the book 'Risk Society', by the German sociologist Ulrich Beck, was translated into English (Beck 1992). Beck's ability to discern some of the changing contours of the political landscape transformed this into an unexpected best-seller. Originally published in 1987, Beck sought to suggest that the world was now confronting the limitations of the industrial age. For Beck, and others, such as the British sociologist Anthony Giddens, risk had become reflexive or, in other words, humanity now had to deal with the new 'manufactured risks' of its own creation.

Certainly, more and more social problems have begun to be examined through the prism of risk. But the question remains whether this is due to people having to confront a growing number or quantity of risks, a transformation in the type or quality of risks, or whether they are somehow simply more conscious of risks. Elsewhere I have argued that it may be more productive to understand these issues as deriving not so much from a risk society, but rather as revealing a 'risk perception society' (Durodié 2005).

The gradual erosion of collective forms of social association, both in the formal sphere of political participation, as well as in the informal sphere of everyday life, has had a remarkable impact upon how people view themselves and the world around them. As the academic and social commentator Frank Furedi has noted, even the way we use the word 'risk' has been transformed to reflect this growing disengagement. A word that was often used as a verb with positive connotations, as in 'to take a risk', has increasingly become a noun understood largely in negative terms, as in 'to be at risk' (Furedi 1997).

Our understanding and use of the word 'risk' reflects our own confidence—or lack of it—in the potential of human will and agency to transform society. Increasingly divorced from social solidarities and trusted networks, which used to provide a framework of meaning, people become inclined to view events as out of control or inevitable. Being disconnected from society allows subjective impressions of reality to grow unchecked, or unmediated, through active membership of a wider group or trusted community, lending itself to problem identification and risk inflation.

These developments have had a quite devastating and stultifying impact. The breakdown of social collectivities has, in the absence of any coherent replacements, enhanced the sense which isolated individuals have of themselves, as being frail and vulnerable. It should be noted that this social transformation is additional to, distinct from and more recent than, the usual psychological variations that have been noted by many as determining how an individual perceives risk—such as whether an activity is undertaken voluntarily or can be controlled and the degree of understanding or dread that people have of it (Slovic 2000).

An exaggerated perception of risk also lends itself to increasing demands for greater regulation and social control. Accordingly, people have increasingly looked to those in authority to enhance their sense of security by mitigating the worst effects of particular products and activities, as well as legislating against those they hold responsible for these. Lacking any broader vision or direction of their own, the elite have willingly embraced this new agenda (Furedi 2005), repackaging themselves as societal risk managers—particularly around the issues of health and security.

The erosion of social forces also enhances the sense that people have of the significance of scientific and technological developments upon their lives, way beyond their true impact and importance. Over the course of the twentieth century, groups who had previously grasped the progressive capabilities and liberatory potential of scientific advance for driving social transformation now viewed this with growing suspicion. But behind the crisis of faith in science lies

a collapse of confidence in humanity, driven by a breakdown of social networks. Ironically, this means we now expect scientists to be held accountable by politicians and committees who increasingly are not.

Being less connected also leaves people less corrected. Views and values which, in the past, would have been filtered and scrutinized through various layers of knowledge and insight, come today to form unchallenged personal frameworks for understanding the world. Individual obsessions often grow into all-consuming worldviews that are rarely held to reasoned interrogation or debate. Today, what would once have been considered to be mere opinion or anecdote can become inextricably and existentially bound to a person's emotional identity.

In such a climate, confronting people with robust evidence that might contradict their perceptions is felt by many to be patronizing. Such an approach could damage the fragile mandate of those in authority. Hence, a more inclusive process of risk management and a demand for public dialogue also appear to have become the norm (Durodié 2003*a*).

Unfortunately, the more such concerns are highlighted and treated at face-value, the more difficult it becomes for the authorities to satiate the insecurities they thereby give credence to. Recognition of social concerns readily becomes their driver. Hence, alongside disengagement and alienation has come a concomitant disillusionment and mistrust in all sources of authority, whether political, scientific or corporate, as these are invariably unable to live-up to the new expectations they themselves have helped to shape. This corrosion of trust—in outlook if not in practice (O'Neill 2002)—has also accelerated the replacement of healthy scepticism by an uncritical cynicism.

In numerous situations today, the public have become accustomed—and encouraged—to assume the worst and presume a cover-up. Many policy advocates have become risk entrepreneurs in this regard. But a focus on worst-case scenarios also lies at the heart of the precautionary approach that is now held by governments to be a necessary aspect of effective risk management procedures (Durodié 2004). This encourages the rise of rumours and conspiracy theories in those situations where people do not consider their views, opinions and claims to have been addressed adequately.

Finally, these developments have also fed into new demands for the attribution of blame and compensation. The vast majority of veterans, while expecting war pensions to which they are entitled, have been loathe to pursue such litigious avenues, seeing them and the media campaigns that surround them as antithetical to military culture. Nevertheless, there is a powerful expectation for redress across society that also attaches blame for misfortune, irrespective of the weight of objective evidence to the contrary.

6. SYMPTOMS

Numerous surveys confirm that many people who consult their doctor present symptoms which cannot be explained according to recognized disease categories. It appears that such complaints are especially common in public services—the armed forces and the police, health, education and local government. The common features of these occupational groups today are low morale and a widespread sense of being overworked, underpaid and undervalued.

Nor is Gulf War Syndrome a problem unique to the military. Its symptoms overlap with numerous other similar supposed syndromes, such as multiple chemical sensitivity, irritable bowel syndrome, chronic fatigue disorder and repetitive strain injury (Wessely 2005). Many of these are likewise blamed on possible environmental hazards that are difficult to assess or quantify, such as low-level radiation, chemicals, food additives, pesticides and pollution (Aceves-Avilla *et al.* 2004). This has even led some to propose that these syndromes should be labelled 'illnesses of modernity' (Petrie & Wessely 2002).

New syndromes can give everyday symptoms a medical-sounding label and so make them a legitimate explanation for illness, absence from work and claiming benefits. They also offer a target for litigation and a potential source of compensation, both moral and financial. Notably, the *Diagnostic and Statistical Manual* of American psychiatry expanded its list of abnormal behaviours from 60 in 1952 to 384 (plus 28 'floating' diagnoses) in 1994.

Foremost among this ever-expanding list of new syndromes has been post-traumatic stress disorder (PTSD). Originally framed as applying to particular individuals in extreme circumstances—the category PTSD was advocated and fought for by anti-war lawyers and psychiatrists wanting to offer moral exculpation and financial compensation to veterans of the Vietnam war (Shephard 2000)—it has expanded rapidly ever since to encompass everyday happenings such as accidents, verbal harassment and workplace disputes (Summerfield 2000).

A common feature of these syndromes is the perception of damage to the so-called immune system, resulting from vaccinations, toxins or radiation. But the immune system is more a physiological concept than an anatomical entity. In that sense it appears to have become a metaphor for the heightened sense of individual vulnerability people now sense in the contemporary period (Martin 1994).

In addition to misunderstood symptoms, causes are sometimes misdiagnosed. Veterans can fall prey to the *post hoc* fallacy, confusing correlation with causation. Just because one event occurred after another event does not mean it is a result of that event. Careful study has demonstrated that some veterans carried illnesses before they ever set foot in the Gulf.

A striking example of this was the case of American army reservist Michael Adcock, the first death widely attributed to Gulf War Syndrome. He died in 1992 of lymphoma, which his family blamed on what had happened to him in the Gulf, and testified to that effect before Congress (Fienberg 1999). In fact, Adcock had started to show symptoms of lymphoma 6 days before deployment to the Gulf. As lymphoma usually takes more than 10 years to develop, it effectively excludes any link to the Gulf War.

There are numerous other examples of misguided diagnoses. Irrespective of this, the number of veterans

receiving payments for PTSD has grown rapidly from approximately 120 000 cases in 1999 to 216 000 in 2004. Now, the US government is wanting to review 72 000 cases in which veterans have been diagnosed with severe PTSD, claiming that mistakes and fraud have inflated the numbers (Benjamin 2005).

Predictably, and understandably under the circumstances—considering how expectations have been raised and society gradually reorganized around such syndromes—numerous outraged veterans and their supporters have seen this as a callous attempt to curtail expenditure. They are unlikely to be satisfied by any outcome other than that which they have already assumed.

Nevertheless, it is also worth noting that, for whatever reason, more days are now lost at work from people self-reporting themselves as suffering stress than were lost by people going on strike at the height of the period of trade union militancy in the late 1970s (Marsden & Hyland 2004). This shift from an active engagement in society—however disagreeable it may have been for the authorities at the time—to virtual passivity, reflects the changing patterns of political and social engagement described earlier. There could hardly be a better index of how our cultural outlooks and expectations have shifted over recent times.

7. ADVOCATES

In a world marked by the demise in political participation, organization and debate, individual campaigners can have a disproportionate impact on particular issues. Some commentators have also noted how, in the absence of a coherent political opposition, the media have increasingly tried to assume this role. Both these phenomena are evident in the Gulf War Syndrome story.

Apart from those who helped establish the category of PTSD there are many other instances of interested parties impacting on the debate significantly. For instance, subsequent to the *Newsnight* programme that helped establish concern about Gulf War Syndrome in the UK, the *Today* newspaper decided to turn this into a major campaign and carried a series of articles on various aspects of the subject.

The standard of their reporting varied widely and at the time this forced the Ministry of Defence to become reactive to media activity as some of the underlying concepts were not well understood and serious misconceptions could arise. This kind of campaigning journalism is not restricted to Gulf War Syndrome though. It too is a product of the new political and social landscape, as has been rigorously examined elsewhere in relation to campaigns relating to mobile phone radiation (Burgess 2004).

Other policy advocates, including members in both the Houses of Parliament, have raised a series of Parliamentary Questions relating to the possibility of illnesses among veterans and their families having been driven by organophosphate poisoning. In doing so, they have sought to harness these developments onto their pre-existing campaigns and concerns, effectively providing the latter with a new lease of life in a manner akin to the activity of many other campaigners.

Factual errors by both the UK Ministry of Defence and the US Department of Defense in answering questions combined with concessions brought about by a sense of the need to countenance any possibility of exposure to toxic agents, no matter how implausible, simply made things worse.

The impact of this over-zealous desire to be seen to be open and transparent, as well as engaging in a dialogue with families as to their concerns was evident in relation to the possibility of US troops having been exposed to nerve gas and other chemical agents as a consequence of the post-war demolition of an Iraqi munitions depot at Kamisayah in March 1991.

Official estimates of those affected were steadily increased from none to 400, then 5000, 15 000 and possibly substantially more. Yet even now there remains serious doubt as to whether any troops at all had been in the vicinity of this incident. Understandably, such shifts, regardless of evidence, have simply enhanced the sense of those who thought the facts were being kept away from them in the first place and simply served to compound the mistrust surrounding these issues.

Finally, as with other similar debates, a small number of maverick scientists and interested entrepreneurs also helped fuel matters. Regardless of their dubious credentials and publication track-record, as well as the inability of other scientists to replicate their results, governments regularly leapfrogged the usual scientific research process and standard funding procedures, allotting some of them substantial grants in their desperation to come up with any solution.

Predictably, this only served to fuel some of their bizarre claims. And sadly, veterans and others who would profess to have lost their faith in the ability of scientists and clinicians to be objective and understand their concerns were nevertheless quite prepared to place their trust in these rival experts, so long as they confirmed their claims. Unfortunately, as wide layers of society now appear to consider expertise and experience to be elitist and knowledge to be biased or unattainable, such beliefs are to be expected.

8. CONCLUSIONS

Every conflict seems to have its own syndrome. But, the internal battles fought over the recognition of Gulf War Syndrome suggest far deeper problems for society. Military morale depends on a sense of mission and domestic support (Durodié 2003*b*), but nowadays principled values and beliefs are noticeably absent. In an age marked by a breakdown of solidarities, troops also have a far more individuated experience of war. Perceptions of risk, sickness and stress loom in their minds, as well as those of their commanders and other officials at home. When everything around them suggests that war will make them ill, it is not surprising that claims of post-conflict illness are on the rise.

As a society we also now feel less able to justify individual sacrifice in the name of a collective aim. With a growing absence of any sense of what it is that they are being asked to fight for, pain and illness are less likely to be accepted and endured. What's more, as the definition of disorders widens, while the primacy of

values such as resilience and composure are eroded, many more people present symptoms to their doctors today than ever before, often in pursuit of financial remediation or moral recognition. Values, belief, purpose and understanding are important in fighting, winning and surviving war. It is not courage and ability alone that determine such matters—but rather conviction and will.

In the mean time, much of what passes for public health concerns and research today forms part of a broader agenda—consciously or not—serving to reconnect a nervous elite with the public by addressing their presumed insecurities. Unable to demonstrate a conclusive link between particular problems and their assumed causes, governments fall back on advocating preventative strategies or restraint, as well as endless research into purported risk factors to demonstrate their concern.

But, far from being scientifically driven and medically resolvable it seems evident that it has been the various social and cultural transformations outlined previously that have shaped these changes, as well as the individuals who are also a product of these times as are the illnesses that they now present.

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What can the Science and Technology Community Contribute?

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Abstract. This Chapter explores the role attributed to science and technology in combating the global war on terror in an age when social bonds have been eroded and our sense of the need for social solutions diminished accordingly. One consequence of this is the exaggeration of risks presented by science and by terrorists to the point of ignoring the more mundane and probable threats that confront us. Prioritising technical means to build social resilience over cultural change is also likely to be counter-productive by further fragmenting the ordinary human bonds that actually make society truly resilient. A political debate over societal values is required if we are to re-engage the public and deal appropriately with all-manner of disasters, including terrorist attacks.

1. Introduction

Science and engineering have always played a part in war. The advent of new technologies has only increased this potential role. The global war on terror is no different to other wars in that regards. Many proposed options for dealing with terrorism have an explicit technological angle. These include, the need for better intelligence and surveillance, the development of new instruments for detecting chemical, biological and radiological agents, specialist clothing and equipment for emergency responders, and computer models for predicting behaviour or orchestrating responses.

It is understandable, even commendable, that well-meaning experts and professionals should wish to get involved. Further, a significant amount of social resources are being diverted to tackling the problems raised. Accordingly, those with an eye on sources of funding to explore new areas of inquiry are likely to be interested. Indeed, beyond the explicit development of technical capabilities, the war raises numerous implicit issues for scientists and engineers to deal with. Who has access to the technologies they develop? And, how much should be made available in the public domain?

Before diving in off the deep end, however, those of a more critical disposition - as any true scientist should be - would do well to examine the broader context within which these events and issues have occurred and how they have been framed. Things are rarely as they seem. The primary task of all concerned ought to be to grasp the underlying essence of what is going on Failing to do so could lead to the development of proposed solutions that, at best, merely contain perceived threats, at worst, exacerbate them significantly, not least by undermining our own capabilities to be resilient in the long run.

Many perceived problems in the world today are driven more by their social context than by their scientific content. Scientists and engineers need to be alert to this, not least because science occupies a peculiar position in contemporary life. A diminished sense of the significance of, as well as the desire and ability to shape, social forces, has led to an increased focus on the importance and impact of science upon our lives. In response to this

elevation and exaggeration of science, socicty has increasingly become preoccupied with science as a potential source of new risks.

This has led to the highlighting and fetishisation of purported scientific and technological solutions to what remain essentially social problems, as well as a concomitant and distorted perception of threat from anything remotely scientific in content. A recent publication from the Royal Society, the United Kingdom's leading scientific institution, is quite apposite in this regards [1]. The report; *Making the UK Safer: Detecting and Decontaminating Chemical and Biological Agents*, is undoubtedly rigorous in scope and methodology. However, it is the unquestioning acceptance of the social context that needs examining.

In it, some of the UK's leading scientists take at face value the notion that; "Recent global events have given greater prominence to the threat of chemical and biological agents being used malevolently against civil targets", and further that; "Science, engineering and technology are central to reducing this threat". Both of these assumptions would benefit from interrogation. Indeed, questioning the axioms of a debate ought to be the first step in making it truly objective. Otherwise we may be left with a technically competent, but ultimately unscientific report.

It is not just the job of social scientists, but scientists too, to question whether this purported "greater prominence" is real. Assuming that it is, scientists true to their tradition would then start by asking what this fact represents. Whether this is a media construct, or a more deeply held social concern, across different layers of society. If it is the latter, it ought to be considered that such a concern may have little relation to the actual probability of the threat they fear. The fact that something is possible, may cause alarm, but is the best way of assuaging this to assume those fears to be real and then seek to mitigate their outcomes, or alternatively, to interrogate those fears?

Ultimately, the Royal Society report may be of use to a highly limited number of technical specialists who, in the extremely unlikely eventuality of such a situation arising, would be charged with dealing with it. However, it is not obvious what its use is beyond that, in the public domain. Surely, publication of the report itself could now serve to confirm people's exaggerated perceptions of threat? It has certainly contributed to the "greater prominence' that it originally sought to address. People might assume that if the UK's leading scientists are investigating such matters then their presumptions are more likely to be true.

2. Science and Society

The emphasis often given as to the importance of science for effecting social change is one-sided. Science can transform society, but it is also a product of society. Its advances and remit, as well as being shaped by material reality, are circumscribed by the nature and values of the society within which it develops. The ambition and imagination of that society – or lack of these – is important here. Hence, whilst the world of antiquity yielded many intellectual insights, constrained by its social structures, these proved to be of little practical consequence [2].

It was only when the largely static feudal order dissolved, through the development of trade, that new demands were raised on individuals and society. A marriage of intellectual activity with practical needs encouraged innovation and, through the accumulation of wealth, challenged the old social order. As well as delivering remarkable achievements, social and scientific developments raised expectations as to what was possible [3]. This was about more than simply an advance in scientific knowledge – it was part of a wider shift in attitudes and beliefs.

The aspiration for social progress gave humanity confidence in the power of its own reason – a factor that then proved of significant importance to the development of science. The Scientific Revolution represented the triumph of rationality and experimentation over the superstition, speculation, diktat and domination that had gone before. It was a practical battering-ram with which to challenge perception, prejudice and power. But science was merely the product of a broader social dynamism, as well as becoming an essential contributor to it.

Just as the initial dynamic behind science was social change, so social change, or more particularly the lack of it, could circumscribe it too. Initially this came from the vociferous rejection of the old religious and monarchical orders it had supplanted. Then the advent of positivism consciously sought to restore order by decoupling science from wider political aspirations to transform society [4]. This reflected the inherent limitations and world view of the new industrial elite who derived their wealth and influence from simple mechanical processes linking cause and effect by uniform rules.

However, over the course of the twentieth century a wider layer of society lost its faith in the progressive capabilities of scientific transformation. Two world wars, separated by a depression and followed by continuing poverty and conflict in the developing world generated doubts as to the possibility of universal human progress [5]. Radicals, who had traditionally championed the liberating potential of scientific advance, now came to view it with increased suspicion. They also associated the Manhattan project and the Apollo programme with American militarism.

Some now argued that aspiration itself – rather than its failure as evidenced in the collapse of confidence in social progress – was dangerous [6]. Science was seen as the amoral steamroller of a dispassionate new modernity that crushed communities and tradition. What is so poignant about the modern disenchantment with science, is that it has emerged at a time when its achievements are without precedent. Behind the current crisis of faith in science, however, lies a collapse of confidence in humanity, and hence in the desirability and possibility of social transformation [7].

The defeat of the old Left externally, symbolised by the disintegration of the former Soviet Union and its satellite states, and the taming of the Left internally, symbolised in the UK through a series of political defeats over the course of the 1980s, now led it to make new alliances, including with the environmental movement – traditionally the preserve of the romantic Right – in order to boost its numbers, and leading it to shape a new, more individual or consumer-oriented agenda. At the same time, the diminished sense of the possibility of shaping social factors also made science appear to play a more important role in determining things.

3. Social Erosion

In parallel with the gradual disillusionment of society with science, has come an equally significant process of disengagement of society from politics. For the vast majority of ordinary citizens this has been exacerbated by a growing sense of social disconnection. At both the formal and informal levels of social engagement, social bonds have been severely eroded over the last decade or so. The resultant sense of isolation and insecurity across society has become the key element shaping perceptions of risk.

At the formal level, people in advanced Western societies are increasingly unlikely to participate in the political process. This effect is most striking among younger age groups. Electoral turnouts are at an all-time low and in the few instances where these are high, emotion appears to rule over reason. Few are active, or even passive, members of political parties or trade unions as their forebears were, and there is little attempt to engage

in, or raise the standard of, debate. When people do vote, it is often on a negative basis – against an incumbent, rather than for a replacement.

At the informal level, the changes are even more striking. Many have commented on the growing pressures faced by communities, neighbourhoods and families. In his book on this theme, "Bowling Alone", the American academic Robert Putnam also pointed to the demise of informal clubs and associations [8]. Meeting up with friends, occurs less frequently than previously too. In other words, people are not just politically disengaged but also, increasingly socially disconnected. This loss of social capital has occurred and been experienced within a generation.

Not so long ago, for example, it was still possible across most urban centres, to send children to school on their own, assuming that other adults would act *in loco parentis* – chastising them if they were misbehaving and helping them if they were in trouble. Today, such a straightforward social arrangement can no longer be taken for granted. None of us ever signed a contract saying that we would look after other people's children. It was simply an unstated and self-evident social good. This loss of a social sense of responsibility makes the individual task of parenting harder [9].

In a similar way, ordinary communities, at the turn of the last century, invested a great deal of effort in establishing and running their own institutions. These took a wide variety of forms from churches, to working men's clubs, schools and trade unions. It is almost impossible to find a similar process at work within society today. This is not to suggest some kind of golden-age of community activism. Clearly, past societies were also associated with a wide manner of activities we are quite glad to have seen the back of. However, the resulting erosion of social connectedness is significant.

Being less connected, leaves people less corrected. It allows their subjective impression of reality to go unmediated or unmoderated through membership of a wider group, association or trusted community. Without a sense of the possibility of social solutions, personal obsessions grow into all-consuming worldviews that are rarely open to reasoned interrogation or debate. In part, it is this that explains our recent proclivity to emphasise or exaggerate all of the so-called risks that are held to confront us [10].

Rather than the world changing any faster today than in the past, or becoming a more dangerous, unpredictable or complex place, it may be our diminished, and more isolated, sense of self that has altered our confidence to deal with change and the problems it gives rise to [11].

Those who talk of a "Runaway World" [12], would be hard pressed to show how the pace of change today is any greater than say, over the sixty-five year period two centuries ago between the creation of Richard Trevithick's first steam locomotive and the advent of transcontinental railroads across the United States of America. Alternatively, note the pace of change over the same period a century ago between the Wright brothers first powered flight and man walking on the moon. If anything, change today appears somewhat attenuated.

Much of the focus recently has been on the largely undelivered promises of biotechnology – a technology now passed its fiftieth anniversary – and the potential of the internet. But whilst the latter may have led us to being more networked virtually, it has not driven much change in the real world. Radically overhauling existing transport networks, a transformation not currently envisaged, would most likely have greater social and scientific consequences.

In our technically networked world, we may be more aware – but we are also easier to scare, than previously. Being more isolated leaves us more self-centred, as well as risk averse. In turn, these developments reduce the likelihood of our acting for some greater common good and end up making us less resilient, both as individuals and as a society.

From BSE to GMOs; from mobile phones to MMR, all new developments are now viewed through the prism of a heightened and individuated consciousness of risk. Nor are our fears restricted to the realms of science and technology. Age-old activities and processes have been reinterpreted to fit our new sense of isolation and fear. Bullying, sun-bathing and even sex have joined an ever-growing panoply of concerns, along with maverick doctors, crime, food and paedophiles.

Worse, this state of affairs has been exacerbated by the various authorities themselves, who suffer from their own existential crisis of isolation and insecurity. As we no longer vote, so ruling parties appear increasingly illegitimate and divorced from everyday concerns. A less than 50% turnout when split two or three ways produces governments with at best a 20-25% mandate. The real figure as reflected by demographics, negative voting and actual local election results is often well below this, languishing around the 10-15% mark.

This crisis of legitimacy has been further accentuated by a certain lack of purpose that has set in since the dissolution of the old Cold War divide. Then, an ideological divide separated a supposedly socialist Left from the free-market Right. Far from the demise of the Left revealing the 'End of History" [13], it actually exposed the Right's own lack of ideas and dynamism. In an age when social change has been problematised, the pursuit of profit through innovation no longer bestows moral authority as easily. Now all parties fight for the centre ground and desperately seek issues that mitigate change and will re-connect with voters.

Latching on to the general climate of fear and insecurity, politicians have learnt to repackage themselves as societal risk managers around issues such as security, health and the environment. They pose as the people who will protect us from our fears and regulate the world accordingly. But the petty lifestyle concerns they focus on, as reflected in incessant debates about smoking, smacking, eating and drinking are unlikely to inspire and engage a new generation of voters. Nor will doom-laden predictions relating to terrorism and global warming.

Indeed, the more such concerns are highlighted, the more it becomes impossible for the authorities to satiate the insecurities they create. Hence, alongside disengagement and alienation, has come a concomitant disillusionment and mistrust in all forms of authority, whether political, corporate, or scientific. Healthy scepticism has increasingly been replaced by unthinking cynicism. In many situations today, the public tend to assume the worst and presume a cover-up. Rumour and myth abound over evidence and reason.

4. Creating Fears

At a recent forum in London, a member of the security service informed an audience of bankers that, whist it was true that the probability of a chemical, biological, radiological and even nuclear terrorist attack was low, this could not be ruled out. It was suggested that groups such as Al Qa'ida may have relatively poor capabilities in such techniques but their intention to develop these was clear, and if they did the consequences might be devastating.

This, in essence, captures the logic of our times; "Never mind the evidence, just focus on the possibility". It is a logic that allows entirely vacuous statements such as that of an official after the supposed discovery of the chemical agent ricin at a flat in North London, who was reported as saying; "There is a very serious threat out there still that chemicals that have not been found may be used by people who have not yet been identified" [14].

Yet undiscovered threats from unidentified quarters have allowed an all-too-real reorganisation of everyday life. The US government has provided $3 billion to enhance

bioterrorism preparedness [15]. Developed nations across the globe have felt obliged to stockpile smallpox vaccines following a process, akin to knocking over a line of dominoes, whereby one speculative "What if?" type question, regarding the possibility of terrorists acquiring the virus, led to others regarding their ability to deploy it, and so on. Health advisories to help GPs spot the early signs of tularemia and viral haemorrahagic fever have cascaded through the UK's urgent alert system. Homes across the land have received the government's considered message for such incidents; "Go in, stay in, tune in" [16].

Like all social fears, there is a rational kernel behind these concerns. Yet this is distorted by our contemporary cultural proclivity to assume the worst. It is the fear of bioterrorism that is truly contagious, and it is a fear that distracts us from more plausible sources of danger, diverting social resources accordingly, and exposing us all to greater risk [17]. It is also a fear that has bred a cynical industry of security advisors and consultants, out to make a fast buck by exploiting public concerns, and thereby driving those concerns still further.

There is a long history of bioterrorism incidents of which the anthrax attacks on politicians and the media in the U.S. in 2001 were but the latest [18]. Corpses infected with bubonic plague were thrown over the walls of Kaffa by the Black Sea in the mid-fourteenth century. At best, these are tactical devices with limited consequence, but not strategic weapons. It is the advent of biotechnology and the more recent, if overstated, possibility of genetically engineering agents to target biological systems at a molecular level, that is now held to pose a new challenge [19].

Few commentators point to the difficulties in developing, producing and deploying biological agents. This is evidenced by the failures of the Japanese cult, Aum Shinrikyo, in this regards only a decade ago. It was this that led them to settle for the rather more limited impact produced by the chemical agent sarin, despite their resources and scientific capabilities [20]. The Tokyo subway attack that ensued had rather more impact upon our fevered imagination, than in reality.

As with the anthrax attacks, this incident suggested that bioterrorism is more likely to originate amongst malcontents at home, due to greater access and capabilities in developing, such weapons there. Advanced economies are also better placed to deal with the consequences of bioterrorism, a fact that significantly undermines their purpose, especially to outsiders. Nevertheless, suicidal foreign malefactors bent on undermining western democracies continue to be presented as the greater threat.

Recognising the extremely low probability and limited consequences of such incidents, some scientists point to the longer-term psychological impacts as being the more important [21]. There is an element of truth to this. Psychological casualties are a real phenomenon. In certain emergencies these can rapidly overwhelm existing healthcare resources and thereby undermine the treatment of those more directly affected [22]. Yet they can also become a self-fulfilling prophecy. Indeed, by increasingly framing social problems through the prism of individual emotions, people have been encouraged to feel powerless and ill [23].

The arrival of television cameras or emergency workers wearing decontamination suits act as powerful confirming triggers for the spread of mass psychogenic illness [24]. So too can psychosocial interventions, such as debriefing subsequent to an incident [25]. These can undermine constructive, pro-social and rational responses, including the expression of strong emotions such as anger [26]. Hence, despite good intentions, psychiatrists can become complicit in shaping social ills. This is because few are prepared to question the dominant cultural script emphasising social and individual vulnerability, and the need for professional intervention and support.

Rather than critically questioning the framing of the debate, many, like the scientists of the Royal Society mentioned earlier, now simply accept the possibility of chemical,

biological, radiological and nuclear terrorism as a given. There is little understanding of how our exaggerated sense of risk is both historically contingent, predating 2001 quite significantly, and culturally determining, giving shape to and driving much of the agenda.

One medical historian and epidemiologist, has noted that "experts were using the threat of novel diseases" as a rationale for change long before any recent incident, and that contemporary responses draw on "a repertoire of metaphors, images and values" [27]. He suggests that "American concerns about global social change are refracted through the lens of infectious disease". This coincides with the view of others who see bioterrorism as providing a powerful metaphor for elite fears of social corrosion from within [28].

Despite incidents since 2001 pointing to the preferred use of car bombs, high explosives and poorly deployed surface-to-air missiles, the authorities have, through their pronouncements, encouraged the media to hype weapons of mass destruction. This is despite any terrorist's capabilities being pathetic compared to our own and the consequences being more likely to devastate them than us. We have stockpiled smallpox vaccines, but notably, have run out of influenza jabs. In the extremely unlikely eventuality of an incident occurring, we assume that the public will panic and be unable to cope without long-term therapeutic counselling.

In an age readily gripped by morbid fantasies and poisonous nightmares, few surpass the pathological projection of our own isolation much better than the fear of bioterrorism. All of this rather begs the question as to who is corrupting civilisation the most. The fantasy bombers or the worst-case speculators?

5. Cultural Responses

In fact, how we, as individuals and as a society, define and respond to disasters, is only partly dependent upon causal agents and scale. Historically evolving cultural attitudes and outlooks, as well as other social factors, play a far greater role. In objective terms, risk may be defined as a function of hazard and probability, but that some product or event is perceived of as a risk, or is treated as a disaster, depends on subjective factors.

This human element is missing from mechanistic risk calculus and technical solutions. Technical definitions of risk and resilience not only omit key elements of understanding and response - such as our degree of trust in authority, in other human beings and in ourselves - but may also serve to further undermine such factors, which are crucial in responding effectively.

The contemporary cultural proclivity to speculate wildly as to the likelihood of adverse events and to demand high-profile responses and capabilities based on worst-case scenarios may, in the end, only serve to distract attention and divert social resources in a way that is not warranted by a more pragmatic assessment and prioritisation of all of the risks that we face.

Technique and technology certainly help in the face of disaster. Ultimately, however, the fact that particular societies both choose and have the capacity to prioritise such elements, is also socially determined. More broadly, it is possible to say that resilience – loosely defined as the ability of individuals and society to keep going after a shock – is most definitely a function of cultural attitude or outlook. It is not an item that can readily be purchased.

Cultural values point to why it is that, at certain times and in certain societies, a widespread loss of life fails to be a point of discussion, whilst at other times or in a different society, even a very limited loss can become a key cultural reference point. This evolving context and framework of cultural meanings explains such variations as our widespread indifference to the daily loss of life upon our roads, as opposed to, for instance, the shock

and national mourning that ensued from the loss of just seven lives aboard the Challenger spacecraft in 1986.

The loss of Challenger represented a low-point in our cultural assessment of our own technological capabilities. It was a blow to our assumption of steady scientific and technological progress that no number of everyday car accidents could replicate. It fed into and drove a debate that continues to this day regarding our relationship with nature and a presumed human arrogance in seeking to pursue goals beyond ourselves.

Hence, emergencies and disasters, including terrorist attacks, take on a different role dependent upon what they represent to particular societies at particular times, rather than solely on the basis of objective indicators, such as real costs and lives lost. In this sense, our response to terrorist incidents, such as that which occurred on September 11th 2001, teaches us far more about ourselves than about the terrorists [29].

On the whole, the history of human responses to disaster, including terrorist attacks, is quite heartening. People tend to be at their most co-operative and focused at such times. There are very few instances of panic [30]. The recent earthquake and tsunami in the Indian Ocean serve as a salutary reminder of this. Amidst the tales of devastation and woe, numerous individual and collective acts of bravery and sacrifice stand out, reminding us of the ordinary courage and conviction that are part of the human condition.

People often come together in an emergency in new, and largely unexpected ways, re-affirming core social bonds and their common humanity. Research reveals communities that were considered to be better off through having had to cope with adversity or a crisis [31]. Rather than being psychologically scared, it appears equally possible to emerge enhanced. In other words, whilst a disaster, including a terrorist attack, destroys physical and economic capital, it has the potential to serve as a rare opportunity in contemporary society to build-up social capital.

Of course, terrorists hope that their acts will lead to a breakdown in social cohesion. Whether this is so, is up to us. Civilians are the true first responders and first line of defence at such times. Their support prior to, and their reactions subsequent to any incident, are crucial. Disasters act as one of the best indicators of the strength of pre-existing social bonds across a community. Societies that are together, pull together – those that are apart, are more likely to fall apart.

Whilst there is much empirical evidence pointing to the positive elements of ordinary human responses to disaster, it is usually after the immediate danger has subsided that the real values of society as a whole come to the fore. It is then that the cultural outlook and impact of social leaders and their responses begins to hold sway. These determine whether the focus is on reconstruction and the future, or on retribution and the past. A more recent development has been the trend to encourage mass outpourings of public grief, minutes of silence or some other symbols of "conspicuous compassion".

Sadly, despite the variety of ways in which it is possible to interpret and respond to different emergencies, the onus today seems to veer away from a celebration of human spirit and societal resilience, towards a focus on compensation and individual vulnerability. In large part this is driven by a narrowly technical view of risk and resilience.

6. Technical Resilience

Since September 11th 2001 much focus has been placed upon the concept of resilience, understood as the ability to withstand or recover from adverse conditions or disruptive challenges. Politicians, emergency planners and others, talk of the need to "build", "engender", "improve" or "enhance" resilience in society [32].

Unfortunately, much of this debate is framed in the fashionable, but limited, language of risk management and risk communication. Senior officials regularly point to the central role they attribute to risk reduction. This is understood in narrowly technical terms as consisting of horizon scanning, investment in equipment, training, business continuity planning, new legislation and the like [33].

This outlook itself reveals the absence of purpose and direction in society at large. After all, risk reduction is a means, not an end. In the past, society was not so much focused on reducing risk as upon enhancing capabilities towards some wider goal. Risk reduction was a by-product of such broader purposes and activities.

Presumably, people were prepared to risk their lives fighting fires or fighting a war, not so that their children could, in their turn, grow up to fight fires and fight wars, but because they believed that there was something more important to life worth fighting for. It is the catastrophic absence of any discussion as to what that something more important is, that leaves us fundamentally unarmed in the face of adversity today. In that regards, risk management is both insufficient as an approach, as well as being fundamentally unambitious.

It is also worth noting, that in recent times, the concept of risk itself has gradually altered from one that captured possibility and engagement in the active sense of "taking a risk", to one that increasingly reflects our growing sense of doom and distance, as evidenced in growing reference to the passive phrase of "being at risk". Risk used to be a verb. Now it has become a noun.

This is a reflection of the wider passive disengagement across society at large and further drives this by gradually removing our sense of will and agency from the equation. Risks are now conceived as being entities in their own right, only minimally subject to human intervention [34]. They are inherently and implacably out there, coming our way. The best we can do is to identify them and prepare to deal with them.

Even when discussing prevention, the assumption is that we are merely anticipating and building capacity for "inevitable" challenges [35]. In the words of some senior officials, it is "only a matter of time", or "when, not if", a terrorist atrocity will occur in the United Kingdom using some kind of crude chemical, biological or radiological device [36]. The notion that it may be possible to shape conditions, or set the agenda, with a view to obtaining more desirable outcomes or altering our social mindset, independently of external forces, is rarely entertained.

Unfortunately, much of the rhetoric regarding the war on terror, far from being robust and resolute, reveals an almost resigned fatalism towards future events. There is no sense of changing *how* people will respond, simply a sense of preparing them *to* respond. This defensive responsiveness in turn can only further encourage, not just terrorists, but a whole host of other malcontents, loners, hoaxers and cranks in their activities.

At best, our strategy is one of re-acting to the presumed actions of others. They drive - we follow, or mitigate. Despite occasional references to the need to "defend our way of life" or "our values" [37], very little effort has been put into identifying what these might be. They tend to be assumed, or glossed over, in some cursory fashion. At best, tolerance, which is the passive virtue of putting up with other people's values, gets misconstrued as an active value.

No doubt, because societal aims and cultural values are deeply contested and debating these might appear to be divisive at a time when we need to act in unison, it is easier to face the other way. Yet this flagrant lack of clarification as to who we are, what we believe in and where we are heading as a society, fundamentally undermines any technical attempt to be resilient.

Real resilience, at a deeper social level, depends upon identifying what we are for, not just what we are against. That way we can orientate society and seek to build upon it,

not just anticipate what is coming and seek to respond. It is precisely by establishing our aims and values and then pursuing these, that we stand the most chance of winning hearts and minds, not just at home but also amongst the disaffected abroad.

This is not to deny the need for a small layer of highly-trained professionals in society to deal with the problem of terrorism in the here-and-now. Yet the debate about who we are and what we are for is not some abstract philosophical issue waiting for present hostilities to be over. It is most urgent and necessary right now. Without an eye on the ends, just as much as on the means, we may take decisions that drive us further from our goals than we appreciate.

What we do in the present, including the science and technology we develop, is inevitably shaped by our existing values, as well as the form of society we seek to create. There are already many signs that some of the actions that have been taken thus far have served to further exacerbate the deep mistrust and cynicism in government and authority that is already quite widely felt. Worse, despite good intentions, encouraging people to be "alert", rather than alarmed, may well further erode the very social bonds of ordinary human trust we need to depend upon if we are truly to be resilient as a society.

As identified earlier, the usual list of measures taken to enhance social resilience since September 11th 2001 consists amongst others of the need for better surveillance and intelligence, more effective models for predicting behaviour, new detection equipment and protective clothing, alternative modes for imparting information through "trusted" sources, as well as new structures of government and integrated response systems.

None of these serve to shore up ordinary social bonds and hence human and societal resilience. By encouraging the dominant paradigm of risk management in our understanding both of terrorism, as well as how to respond to it, we are encouraging a suspicion of others that effectively pushes people further apart and accentuates existing trends towards social atomisation. We have created a new bureaucracy but, as the figures show, we have failed to address the underlying insecurities [38].

Above all we have focused solely upon the form that terrorism now takes in the modern world – that relating in some increasingly tangential way, to Al Qa'ida – and largely ignored its content – a vehement anti-Americanism that rejects modernity and progress.

This reveals the real complacency of the dominant responses. One hardly needs to leave the West, to discover a whole host of other voices also expressing a hatred for America and progressive enlightenment values. This division is internal rather than external. Islamist terror is merely its most visible manifestation. Once "Stupid White Men" had become a best-seller on both sides of the Atlantic we should have been alert to a certain degree of cultural self-loathing at home [39].

Timothy McVeigh and the Aum Shinrikyo cult, pointed to our ability to create home-grown nihilist terrorism. It is well worth reminding ourselves that the 19 hijackers from September 11th 2001 had themselves all spent considerable time in the West, imbuing our values – or lack of them – and had largely been educated here.

Terrorism in every age reflects the dominant values of the most advanced societies. In the age when Western countries advanced and defended the sovereign rights of independent nation states, terrorists fought national liberation struggles. Today, in an age when it is not so clear what we truly believe in, we find terrorists that declare no aims and profess no responsibility for the carnage they create. Maybe it is time we examined ourselves more deeply rather than the final outcome of such values.

Cultural confusion as to who we are, what we are for and where we are going will undermine our attempts at instituting social resilience. Society today is less coherent than it was a generation or more ago, it is also less compliant, but above all it is less confident as to its aims and purposes. This will not be resolved by training ourselves to respond to

disasters, but by a much broader level of debate and engagement in society, not just relating to terrorism and other crises, but to far broader social issues.

7. Social Solutions

Historical comparisons of disaster, such as responses to the Second World War "Blitz", or to past episodes of flooding and epidemic disease, reveal a number of important lessons for today. Not least, is the extent and depth of social bonds and engagement at those times. During the war, there was a clear sense of the need to carry-on with normal life and everyday roles and responsibilities, rather than developing some kind of "shelter-mentality" [40], as is now encouraged through talk of stocking-up on batteries and fresh water.

However, the most striking change over the last fifty years has been in how we assume that ordinary human beings will react in a crisis. Beyond the grossly distorted belief in the likelihood of panic lies a more subtle, yet unspoken shift in cultural assumptions, that in itself undermines our capacity to be strong. That is, that in the past, the assumption was – on the whole born out by actual human behaviour – that people were resilient and would seek to cope in adverse circumstances.

Today, there is a widespread presumption of human vulnerability that influences both our discussion of disasters well before they have occurred, and that seeks to influence our responses to them long after. A new army of therapeutic counsellors and other assorted professionals are there to "help" people recover [41]. This presupposes our inability to do so unaided. Indeed, the belief that we can cope, and are robust, is often presented as outdated and misguided, or as an instance of being "in denial".

In some ways, this latter element, more than any other, best exemplifies and clarifies some of the existing confusions and struggles that lie ahead. If self-reliance is old fashioned and help-seeking actively promoted, for whatever well-intended reason, then we are unlikely to see a truly resilient society emerge.

This cultural shift is reflected in the figures that show that whereas in the United Kingdom, in the period of trade union militancy and unrest known as the "Winter of Discontent" of 1979, there were 29.5 million days lost through strikes, in 2002 there were 33 million days lost through stress [42].

We have shifted from being active agents of history to becoming passive subjects of it. This may suit social leaders lacking a clear agenda or direction. It may indeed be easier to manage the sick than those who struggle. Yet it also precludes the possibility of encouraging and establishing real resilience, resolve and purpose across society.

The standard way of dealing with disaster today is one that prioritises pushing the public out beyond the yellow-tape perimeter put up by the authorities [43]. At best the public are merely exhorted to display their support and to trust the professionals. Effectively, we deny people any role, responsibility or even insight into their own situation at such times. Yet, despite this, ordinary human beings are at their most social and rational in a crisis. It is this that should be supported, rather than subsumed or even subverted.

Handling social concerns as to the possibility of a terrorist attack is no easy feat. In part, this is because social fears today have little to do with the actuality, or even possibility, of the presumed threats that confront us. Rather, they are an expression of social isolation and mistrust, combined with an absence of direction and an elite crisis of confidence. Debates about the accessibility of technology and the reporting of science in the public domain have to be understood in this context, rather than being accepted and deliberated upon in their own terms.

The starting point to establishing real resilience and truly effective solutions will be to put the actual threat posed into an appropriate context. This means being honest as to the

objective evidence, as well as being able to clarify the social basis of subjective fears. Engaging the public in a political debate over societal values may be a longer-term goal than dealing with any imminent terrorist threat, but it is necessary to inform our approach as a society.

The incessant debate as to the possibility and consequences of an attack using chemical, biological, radiological or nuclear weapons, is a case in point [44]. Whilst Western societies have debated such nightmare scenarios as if they were real, terrorists have continued to display their proficiency in, and proclivity to use, conventional weapons, such as high explosives, car bombs and surface-to-air missiles.

Above-all, if as a society, we are to ascribe an appropriate cultural meaning to the events of September 11th 2001 – one that does not enhance domestic concerns and encourage us to become ever-more dependent on a limited number of "expert" professionals who will tell the public how to lead their lives at such times – then we need to promote a far more significant political debate as to our aims and purposes as a society.

Changing our cultural outlook is certainly a daunting task. It requires people in positions of authority to clarify and agree on a common direction and then to win others to it. The reluctance to engage in this fundamentally political process and the clear preference to concentrate instead upon more limited, technical goals, leaves us profoundly ill-equipped for the future. It speaks volumes as to our existing state of resilience and may serve to make matters worse.

Bizarrely, few of the authorities concerned consider it to be their responsibility to lead in this matter. Nor do they believe such cultural change to be a realistic possibility. Yet, in the eventuality of a major civil emergency, they hope that the public will pay attention to the risk warnings they provide and alter their behaviour accordingly. By then it will be too late.

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Chapter 12

Home-grown nihilism – the clash within civilisations

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Home-grown nihilism – the clash within civilisations

Terrorism reflects a wide spectrum of causes and beliefs. Individuals who trained in camps in Afghanistan have different motivations from those who act out of a sense of vengeance in the Gaza strip. Some groups may hold global pretensions, but most have a more limited, regional focus.

What concerns us here, however, is what it is that propels young men from Birmingham, Burnley, Leeds or Luton – individuals with no tangible connection to Afghanistan, Palestine, Iraq, Bosnia, Chechnya or anywhere else much beyond these shores – to choose to be, or to support, terrorists.

Our ability to understand this objectively is crucial; otherwise we may impute meanings and motivations to those involved solely on the basis of their own statements, or of our prejudices. We would then fail to grasp any broader dynamic involved and may end up making matters worse.

The search for meaning

On 11 May 2006 the British government published the *Report of the Official Account of the Bombings in London on 7th July 2005*.[66] This document examined what was known of the terrible events that had occurred the previous summer and that led to the loss of 52 innocent lives, in addition to those of the four perpetrators.

The preface to the report describes it as a "narrative", and that is an apt and telling description for what follows. The document presents a step-by-step account of *what* happened, *where* and *when* it happened, by *whom* it was carried out and even *how*, but – despite investigations lasting almost a year and a section devoted to the issue – little explanation as to *why*.

Yet it is precisely the *why* that should be of most interest. Without understanding why, there is little hope of precluding such incidents from happening again in the future. In addition, not being clear as to *why* allows all manner of self-appointed experts, pundits and commentators – according to their pre-existing political persuasions – to project their own pet theory on to the situation with a view to shaping ensuing policy.

66 HC 1087 (Norwich: HMSO, 2006)

Most common among these purported explanations has been the presumption that the attacks formed some kind of retribution for the British government having supported the US-led invasion of Iraq in 2003.[67] But oddly, the assumed ring-leader, Mohammad Sidique Khan, made no specific mention of Iraq in his so-called martyrdom video released soon after the bombings.

Others suggest the bombers to have been part of a resurgent and radical global Islamist movement or extremist conspiracy. Accordingly, the presumed influences of madrasas, mosques and mullahs have come under extensive scrutiny. Alternative explanations and justifications have been sought in the supposed social and economic backgrounds of the conspirators,[68] as well as their psychological profiles and educational performances.

Much has been made of the fact that two of the four had travelled to Pakistan, but the report indicates that who they may have met there "has not yet been established". There may be some evidence that these two learned their techniques there from an individual who also taught one of the failed bombers of 21 July 2005. But it is also clear that they only sought this support and endorsement after deciding to act and that neither group knew of the other.

In fact, the *Official Account* describes the backgrounds of the perpetrators of the London bombings as "unexceptional", their purported links to al-Qaeda as lacking "firm evidence", and their methods and materials as, respectively, requiring "no great expertise" and being "readily available".

Bombers did not represent a wider community

We should not take the assertions of the bombers to have acted on behalf of other Muslims at face value. They had not sought the views of other Muslims and did not represent these in any way. A parallel Report into the *London Terrorist Attacks on 7 July 2005*, issued by the Intelligence & Security Committee, also notes that the claimed responsibility for the attacks by Ayman al Zawaheri was "not supported by any firm evidence".[69]

67 Such a view has become mainstream across the political spectrum, migrating from George Galloway's tirade against Tony Blair upon being elected MP for the Respect Party in the London Borough of Tower Hamlets in 2005 to the authors of "Riding Pillion for Tackling Terrorism is a High-risk Policy", a paper in the Chatham House publication *Security, Terrorism & the UK*, ISP/NSC briefing paper 05/01 (London: RIIA, 2005)
68 Briggs, R, Fieschi, C and Lownsbrough, H *Bringing it Home: Community-based Approoches to Counter-terrorism* (London: Demos, 2006)
69 Cm 6785 (Norwich: HMSO, 2006)

By interpreting the available information according to their own preferred and uncritical models, many analysts have, in effect, been doing the terrorists' thinking and talking for them. They have helped to fill the vacuum of information and confusion otherwise left behind. These purported explanations may, in their turn, encourage and even serve as justifications to others intent on action. But are they right?

We will never know exactly what motivated the London bombers. Those truly responsible are no longer around to inform us. Yet many of the purported explanations seem to seek to excuse them of this responsibility. The publication of a rather limited "narrative", rather than of an in-depth political analysis, shows how difficult it has been for the authorities to establish the motives and drivers of those concerned. It suggests that much of the superficial speculation is not supported by any hard evidence.

There is little to indicate that Khan or his collaborators Shehzad Tanweer, Jermaine Lindsay and Hasib Hussain were particularly pious or held any deep appreciation of the Koran; still less that they had direct relations to anyone in Palestine, Bosnia or Iraq. They did not bother to ask their families, friends or neighbours what they thought about such matters. That is why these were so deeply shocked by their actions.

The bombers met in the local gymnasium rather than the local mosque, they went on outdoor activities together and, the day before the attacks, one of them played that quintessentially English game – cricket – in his local park. In the end, they acted alone – in isolation – a form of private gesture against a world they appeared to feel little connection with, let alone ability to influence. They took part in the ultimate "not in my name" protest – a trend and slogan manifested by many other interest groups nowadays.[70]

In other words, contrary to the popular image of an organised, global network of religiously inspired fanatics, determined to create mass destruction, the actual evidence points to a small group, operating in isolation, using rudimentary tools and looking to rationalise their rage through religion.

Pointless and meaningless acts

The real truth, then, about the London bombings may be that they were largely pointless and meaningless. This would suggest a problem entirely opposed to that presented by

70 "Not in my name" was the slogan used by many of those opposed to the Iraq war of 2003. Faisal Devji points to a growing usage of such non-political statements by a wide variety of groups encompassing environmental protestors and others in *Landscapes of the Jihad: Militancy, Morality, Modernity* (New Delhi: Foundation Books, 2005)

politicians and officials, media and other commentators alike. The bombers were fantasists – wannabe terrorists – searching for an identity and a meaning to their lives. They hoped to find it in a global cause that was not their own, but that appeared to give expression to their nihilistic sense of grievance. Islam was their motif, not their motive.

This interpretation may offer little solace to the relatives of those affected. Their demands, as well as those of others, for a public inquiry into the matter appear more like a desperate attempt to find a more substantial explanation or to attribute blame where, for now at least, none can be found.[71]

That is hardly surprising, as the desire to understand the causes of, or to attach some kind of meaning to, adversity is a strong one. It can be deflating or confusing to discover that some event did not have the profundity originally attached to it, or that it was largely pointless. Nevertheless, we could all learn from the mother of Theo van Gogh, the Dutch filmmaker murdered by a similar, self-styled radical Islamist, who indicated in relation to her plight: "What is so regrettable ... is that Theo has been murdered by such a loser, such an incoherent person. Murder or manslaughter is always a terrible thing but to be killed by such a figure makes it especially hard."[72]

Recognising the random and unpredictable character of her loss ensures it is not endowed with portentous meaning. It does not lead to a demand to reorganise society around the presumption of similar events occurring again. To do so would be to normalise extremes and thereby to marginalise what is normal. This would effectively "do the terrorists' job for them",[73] by institutionalising instability.

The usual rejoinder to this is to argue that terrorists "only need to be lucky once",[74] while governments and their security agencies must counter them at all times if they are not to lose the public's support. But the evidence from 7 July 2005 rather suggests this perception not to be true. Most people sought to go to work the following day rather than blame the authorities.

An absence of meaning is not just disorienting, it can be debilitating. In his book *Man's*

71 This is not to belittle the genuine grief of all those concerned, or indeed their understandable desire for support.
72 Cited in *De Telegraaf*, 26 July 2005. Available at: http://www.telegraaf.nl/binnenland/23285701/Moeder_Van_Gogh:_enige_juiste_straf.html
73 A common warning from the Prime Minister, the head of the security service and many others
74 A phrase attributed to the IRA after failing to assassinate the then Prime Minister, Margaret Thatcher

Search for Meaning, the Holocaust survivor and philosopher Viktor Frankl wrote: "Man is not destroyed by suffering; he is destroyed by suffering without meaning."[75] It is our failure to place things into an agreed framework that can readily make random events assume catastrophic proportions, thereby inducing a sense of fear and terror. In a similar vein, French political scientist Zaki Laïdi has suggested that the dissolution of the old - Cold War - world order was what in particular helped to create what he has termed "a world without meaning"[76] Accordingly, there is now a growing search for meaning and identity in society.

Within an assumed framework of meaning, or in pursuit of agreed goals, adverse events are understood and can be withstood - as was the case during the IRA's terror campaign on mainland Britain. Today, in an age when nothing is, or appears, so obvious any more, such incidents accentuate our uncertainties.

The causes of radicalisation

To some, what is happening was supposedly predicted. The idea of a "clash of civilisations", taken from the title of Samuel Huntington's book,[77] assumed that future conflicts would increasingly pit East against West in a fundamental conflict over values. This thesis benefited from renewed interest in the aftermath of the attacks upon America in September 2001. But few have inquired critically into the true ideological origins of those perpetrating acts of terrorism in the name of Islam.

Others have been more circumspect in their pronouncements, but in essence the core assumption remains. In a speech on security to the Foreign Policy Centre in London early in 2006,[78] British Prime Minister Tony Blair argued in reference to the on-going war on terror:

This is not a clash between civilisations. It is a clash about civilisation. It is the age-old battle between progress and reaction, between those who embrace and see opportunity in the modern world and those who reject its existence; between optimism and hope on the one hand, and pessimism and fear on the other.

75 Frankl, VE *Man's Search for Meaning* (Boston: Beacon Press, 1959)
76 Laïdi, Z *A World Without Meaning* (London: Taylor & Francis, 1998)
77 Huntington, SP *The Clash of Civilizations & the Remaking of World Order* (New York: Simon & Schuster, 1996)
78 Speech at the Foreign Policy Centre, London, 21 March 2006. Available at: http://fpc.org.uk/events/past/231

But the ideas and protagonists Tony Blair apparently had in mind in his "clash about civilisation" are all foreign in their origins, or, at least, externally oriented and focused. He continued: "The roots of global terrorism and extremism are indeed deep. They reach right down through decades of alienation, victimhood and political oppression in the Arab and Muslim world."

In a similar vein, the recently released British government document *Countering International Terrorism: The United Kingdom's Strotegy*[79] identifies the need for a "battle of ideas, challenging the ideological motivations that extremists believe justify the use of violence". This key strand of the strategy is described in terms indicating its having been solely conceptualised as affecting, or targeting, Muslims or Muslim communities.

So while most politicians and officials have slowly reconciled themselves to the fact that many of the perpetrators of contemporary acts of terror are Western-born or educated, the assumption remains that what drives them is a foreign ideology or agenda that only Muslims can understand or address – a point reasserted by the Prime Minister in subsequent comments to the House of Commons liaison committee,[80] and by the Home Secretary, Dr John Reid.[81]

But is the problem really a "clash about civilisation", or even, as the Home Secretary proposed, that we are having to manage the consequences of some kind of conflict within Islam? In some ways it seems we rather face a more profound cultural crisis domestically. To recognise the problem as such would be discomfiting for Western leaders and societies. It would require understanding the extent to which many of the ideas that inspire the nihilist terrorism we witness today are often home grown and inculcated.

Common explanation is poorly grounded

While conceding that many of the perpetrators and conspirators are increasingly turning out to have been Western in their origins, most, including Tony Blair, still presume their guiding influences to have been reactionary ideas and ideologies from the East. Hence, a lazy empirical approach has been employed to identify so-called "risk factors" that may

79 Cm 6888 (2006) (Norwich: HMSO)

80 Uncorrected transcript of oral evidence to the House of Commons liaison committee, 4 July 2006. Available at: http://www.publications.parliament.uk/pa/cm200506/cmselect/cmliaisn/uc709-iii/uc70902.htm

81 Speech to Muslim groups in east London, 20 September 2006. Available at: http://press.homeoffice.gov.uk/Speeches/sp-muslim-group-20-09-06

lead individuals to become "radicalised".[82] But this approach assumes a conclusion and then goes in search of the evidence to corroborate it. It is profoundly unscientific. Above all, it ignores the dominant social context within which most such individuals find themselves – that is, advanced Western societies.

Unsurprisingly, many researchers find their prejudices confirmed by using this method – that is what is wrong with it. Accordingly, an impoverished background, or having listened to the inflammatory rhetoric of an obscure cleric, are factors that appear to be confirmed in the minds of these researchers as "radicalising" influences. All agree that a deep sense of injustice as regards affairs in the Middle East is also key.[83]

But one could equally propose that being a billionaire, driving a white Mercedes or running the family business are significant risk factors. Certainly all three have featured in Osama bin Laden's life. Starting with an answer and then joining up the dots is child's play. It offers no insight beyond assumed conclusions.

The trial in London of the so-called "Crawley Group", accused of plotting further terrorist atrocities after acquiring a large quantity of ammonium nitrate fertiliser, is quite apposite in this regard. Their list of alleged intended targets included shoppers, drinkers, football supporters and "slags" in nightclubs.[84] The notion that these are major problems requiring to be regulated appears to reflect the ideas of certain policy makers and their exaggerated fears of social disorder in some sectors of society, rather more than verses from the Koran. So, could paying too much attention to contemporary commentators be a radicalising factor too?

As the academic Marc Sageman has pointed out in the most authoritative study of people associated with al-Qaeda,[85] there are no clear radicalising influences or predisposing risk factors that can be identified. If anything, these individuals are likely to a have a middle- or upper-class, secular background and to be reasonably well educated. That would put many of the critics and commentators at risk of becoming radicalised too.

82 There is a burgeoning literature on the causes of so-called radicalisation, emerging from a wide variety of organisations, very little of which is peer-reviewed.
83 *Towards a Community-based Approach to Counter-terrorism*, WPS06/5 (2006). Available at: http://www.wiltonpark.org.uk/documents/conferences/WPS06-5/pdfs/WPS06-5.pdf
84 "Gang 'Planned to Bomb London Nightclub'" in *The Guardian*, 25 May 2006
85 Sageman, M *Understanding Terror Networks* (University of Pennsylvania Press, 2004)

In particular, though, the individuals concerned were rarely recruited from above but rather seem actively to have sought out terrorist networks or sects that they might join. Some only converted to Islam after this. This would seem to confirm their desire to be part of something, but more importantly it raises the issue as to why they were unable to find that something closer to home.

What in the West is radicalising individuals?

The key is not what it is that attracts a minority from a variety of backgrounds, including some who are relatively privileged, to fringe Islamist organisations, but rather what it is about our own societies and culture that fails to provide aspirational, educated and energetic young individuals with a clear sense of purpose and collective direction through which to lead their lives and realise their ambitions, so that they are left looking for this elsewhere – including, for some, among various arcane and distorted belief systems.

In some ways the nihilist criminals that detonated their rudimentary devices in London in the summer of 2005 appear to reflect the sentiments of other disgruntled individuals and groups across the developed world today. Their acts seem more akin to the Columbine high-school massacre and other such incidents, where usually respectable young men, born and educated in the West, decide for various reasons – or none that we can work out – to kill themselves and scores of civilians.

Their ideas and influences appear to have far less to do with imams and mullahs, and far more in common with the dystopian views of numerous commentators who criticise Western society today. Indeed, a recently published compilation of Osama bin Laden's writings reveals how frequently he is inclined to cite Western writers, Western diplomats and Western thinkers.[86] At one point he even advises the White House to read Robert Fisk, rather than, as one might have supposed, the Koran.

It would be remiss to ignore the growing influence of a significant degree of what some have identified as a culture of self-loathing in the developed world. If one wants to discover anti-American views coherently expressed, or people who reject the benefits of science, progress and modernity, then one need not look far to find them. Such opinions are all around us.

86 Bin Laden, O, Lawrence, B (ed) and Howarth, J (transl) *Messages to the World: The Statements of Osama bin Laden* (London: Verso, 2005)

Indeed, less than two days had passed after 9/11 when Seumas Milne first used the term anti-American in a Guardian newspaper article, entitled "They Can't See Why They Are Hated".[87] On the same day, the Reverend Jerry Falwell, pastor of the 22,000-member Thomas Road Baptist Church of Lynchburg, Virginia, told US television viewers that God had given America "what we deserve".[88] Aside from such extremes, many others point to continued American intransigence over issues such as global warming and human rights as purported explanations for what happened.

Cultural self-loathing is widespread

It may be unpalatable or unpleasant to recall or recognise that a significant number of people, not all of whom were Muslim, were not that saddened to see the Twin Towers in New York going down. A sense that America had it coming was quite widespread in some supposedly respectable quarters, where a barely concealed Schadenfreude was in evidence. Many - including those in positions of authority or charged with defeating terrorism - are inclined to caricature contemporary culture as decadent and degenerate, or corrupt and selfish.

But this reflects a broader view of human action in the world. Increasingly, Western intellectuals have come to portray this as being largely negative.[89] Now mainstream milieus depict ambition as arrogant, development as dangerous and success as selfish. Within certain circles in America, too, power has become presented as egotism, freedom as illusory and the desire to defend oneself as the act of a bully.

Western society today is replete with individuals and institutions that appear determined to criticise and undermine human achievements. Even environmental agendas have been turned into sorry moral tales of human hubris, rather than an identification and celebration of the need for greater ingenuity.

Reflecting these trends, the President of the Royal Society called one of his latest books *Our Final Century: Will the Human Race Survive the Twenty-First Century?*,[90] while the Professor of European Thought at the London School of Economics & Political Science is comfortable describing human beings as being little more than a plague upon the planet

87 Milne, S "They Can't See Why They Are Hated" in *The Guardian*, 13 September 2001
88 Cited in "God Gave US 'What We Deserve', Falwell Says" in *Washington Post*, 14 September 2001
89 Bookchin, M *Re-enchanting Humanity: A Defense of the Human Spirit against Anti-Humanism, Misanthropy, Mysticism & Primitivism* (London: Cassell, 1995)
90 Rees, M (London: William Heinemann, 2003)

in his book *Straw Dogs: Thoughts on Humans & Other Animals*.[91] A recent edition of the prestigious UK science journal *New Scientist* speculated positively as to what the earth would be like without humans (and presumably without *New Scientist*) being there.[92]

Nor are such ideas limited to those of a few academics. Surely, when Michael Moore's *Stupid White Men* became the best-selling book on both sides of the Atlantic – selling over 300,000 copies in the UK in its first year of publication alone – a few bright minds in the security world and beyond should have noticed the growing depth of cynicism and disillusionment in society and their potentially adverse consequences?[93]

It is this cultural malaise and pessimistic outlook that forms the backdrop, and inevitably shapes, contemporary terrorism. Increasingly, it appears that this is sustained by two elements – the radical nihilists who are prepared to lose their lives and those of others around them in their misguided determination to leave their mark upon a world that they reject, and the nihilist intellectuals who help frame a public discourse and culture of apocalyptic failure and rejection.

Conclusion

Instead of imagining the root causes of terrorism in the UK as emanating from overseas, or reflecting some foreign ideology, it is time for us to recognise their domestic dimension. This is not, as some suppose, driven by social deprivation or exclusion, nor is it the consequence of a few influential individuals.

Rather it appears to reflect a broader sense of alienation and confusion that has gripped the modern world. Many today are in search of an identity and a meaning to their lives as the old networks and affiliations that used to provide these in the last century – national, religious and secular – have been eroded.

The uncertainty of our times has led many to view human action with concern, encouraging a destructive misanthropy that has been acted upon by some who view themselves as particular victims. It is this dominant dystopian culture, which is our own, that needs to be addressed if we are to defeat terrorism.

91 Gray, J (London: Granta, 2003)
92 "Earth Without People: What If We All Disappeared Tomorrow?" (14 October 2006)
93 Moore, M *Stupid White Men... & Other Sorry Excuses for the State of the Nation!* (London: Penguin, 2002)