

CHANGING PERCEPTIONS OF RISK

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Abstract

The very existence of insurance companies, whatever their specific market niche, is wholly dependent on risk perceptions in the minds of prospective customers. If no risk is perceived there is no need for evasive action, no need for “hedging”, and indeed no need for any form of insurance in the formal or informal senses of the word.

The risk thermostat of the *person* on the Clapham omnibus is certainly being recalibrated as the new millennium progresses. By understanding the factors that influence risk perception, at the individual and community levels, we can observe how it has changed over time. In the current climate the factors that influence the variability and fluidity of risk perception, and hence drive the decision to insure or not to insure, have become more overt than ever before. How individuals *manage* risk and attempt to make the unacceptable acceptable, or at least tolerable, by using the monetary hedge that insurance provides, must be a factor that concerns the commercial domain.

This paper is structured around a broad discussion of the literature relating to the inter-woven issues of risk, changing perceptions of risk over time, its classification, and its management in the social rather than the scientific context.

Introduction

It has always been possible by taking an overview of changing technology and human behavior over the past one or even five hundred years to identify the drivers that have influenced changing perceptions of risk. Such factors as culturally founded beliefs, religious practice and scientific knowledge, can be seen to have impacted on peoples’ responses, or lack of response, to situations that we now know to be inherently dangerous or alternatively, inherently safe from our contemporary point of view. For example, what is known as the *miasmatic theory*, held sway for centuries. In a nutshell, “if it stinks its dangerous”. This theory informed, or misinformed for the most part, public and personal responses to the management of significant “health

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risks”, including bubonic plague and cholera, until it was debunked by germ theory at the end of the 19th century (Cipolla 1992). Heavy metals, carcinogens and many other *poisons*, once considered safe are now known to be contaminants.

Defining Risk

Put simply, risk is the measure of the likelihood of the realization of a hazard. At the individual level risk is that “interactive phenomenon that involve(s) both the biophysical and social worlds” (Kasperson and Kasperson 1996:96), and as individuals our attitudes towards risk vary according to what has happened to us, what we expect, what we feel, what we know, and what we care about” (Teuber 1990:235). Hence, as will be discussed in more detail later in this paper, our past experiences condition our daily risk responses.

Risk was once seen as a mathematical or scientific calculus and it is only in the past couple of decades that it has been put under the sociological microscope. In the world of science risk outcomes cease to be a *stroke of fate* and become “a calculable occurrence intrinsic to the logic of technological development” (Alario 1993).

Traditionally risk has referred to the chance or probability that some (usually undesirable) event will occur, with the word *gravity* being used to describe the event’s consequences. In current practice risk is taken to mean an expected value arrived at by multiplying consequences by the probability that they will occur (Krier 1996:176).

Mary Douglas (1990) identifies *risk* as the modern mutation of a word that once applied to games of chance and meant the prospect not only of loss, but also of gain. Douglas contrasts risk with sin or taboo that she relates to past or completed events. In so far as “risk” is predictive or future looking, stochastic, it has become a *forensic tool* used to evaluate the likelihood of both an event occurring and the magnitude of its outcomes.

Risk is characterised by Harding (1998) as a form of *uncertainty*. In so far as risk is measurable, or at least calculable within known parameters; the system in question is “basically well known, and the chances of different outcomes can be defined and quantified by structured analysis of mechanisms and probabilities” (Wynne 1987). Harding goes on to state that risk, as a form of uncertainty, can be contrasted with indeterminacy and ignorance, and “refers loosely to a combination of probability, or frequency, of occurrence of a defined hazard and the magnitude of the consequences of the occurrence”.

Clearly, risk assessment is both variable and extremely subjective as an individual’s sense of risk susceptibility can be influenced or altered by a single image, event or experience. At the same time, as society becomes more technologically complex and individuals may become

more sensitized to some dangers, and desensitized to others; the *risk calculus* becomes more complex.

Risk can be analysed, categorized and defined objectively and subjectively with reference to social, cultural and scientific disciplines. Yet, significantly, each perspective may produce a different outcome. Going beyond what can be termed the traditional evaluation of changing perceptions of risk over time we face the reality that the new millennium is an age of fear, doubt and skepticism. The overt risks we face from terrorism must inevitably influence personal mobility and lifestyle choices leading to explicit or implicit tradeoffs; what Calabresi refers to as *tragic choices*, between dollars and lifestyles (Bazon 1979).

Axiomatically, the definition of *homo prudens*, (the prudent man), is correspondingly becoming more elusive. Many would argue that life and progress are inevitably about taking risks. One of the challenges of modern society, therefore, is to determine how to live with risk; deciding how hazards are to be managed and what risks can be tolerated as the price of *progress*. The management of risk, which implies a determination of what is *tolerable risk*, is therefore a critical issue. For example, an insurance policy, which offers monetary compensation or recompense for loss, arguably stretches the bounds of tolerability.

John Adams, in his 1995 book simply entitled *Risk*, acknowledges the complexities of attempting to define risk. Echoing Heisenberg's *Uncertainty Principle*, Adams discusses the *reflexivity of risk*; "the world and our perceptions of it are *constantly* being transformed by our effect on the world" (Adams 1995). The awareness of risk, and the actual or implicit measurement of the risk, may induce behavioural responses which alter the reality of the risk. In a sense, an unidentified hazard is perceived as no risk at all. Once perceived, a risk can be subjectively estimated, reduced, avoided or 'hedged'.

Uncertainty is a critical aspect of the risk equation and plays a role in the individual calibration of risk. Risk is not always discernible, or if identified, is not always measurable. Limits to our collective or in-built data bases, linked to sheer necessity, means that we often have to take decisions without knowing all the consequences of our actions.

In defining risk Beck (1986, 1992 translation) states very broadly that risks are defined as the probabilities of physical harm due to given technological or other processes. He then adds three qualifications, supported by Adam's culturally constructed concept of risk. Risks, Beck argues, are always created and effected in social systems, for example, by organisations and institutions which are supposed to control the risky activity; secondly, the magnitude of physical risks is therefore a direct function of the quality of social relations and processes and, thirdly, the primary risk, even for the most technologically intensive activities, is therefore that of social dependency upon institutions and actors who may well be, and arguably are, increasingly alien, obscure and inaccessible to most people affected by the risks in question (Beck 1992).

At the time it was argued by many that Beck placed humanity, communities and individuals at the mercy of the Leviathan of government. However, remembering that Beck initially published in 1986, his views predated the AIDS epidemic, and more recent scourges including SARS, avian flu strains and the systematized terrorism that currently assails world populations. Beck, by default, illustrates the extent to which the risk calculus has changed as the world in which we live has become more risky.

Ewald (1991:199) observes that “Nothing is a risk in itself; there is no risk in reality. But on the other hand anything can be a risk; it all depends on how one analyses the danger, considers the event”. Sensitivity to risk as *danger* is an intuitive primal human response yet it is far from uniform across individuals or communities. Saul Alinsky (1946) makes the salient observation, oft repeated by others, that “the Chinese write the word for “crisis” with two characters. One means “danger” and the other means “opportunity”. He goes on to postulate that danger is fear of the future and is often used as a synonym for “risk”. It is *predictive* or *future looking*, and carries with it negative connotations. John Adams (1995:7-10) postulated that we all come equipped with “risk thermostats”; “risk” is detriment, “a numerical measure of the expected harm or loss associated with an adverse event”. Park (1993:24) discusses the notion of the *prison of experience*, to describe the way in which past experiences influence our view of risk and hazard threat.

The ability to sense and avoid harmful environmental conditions is necessary for the survival of all living organisms. Survival is aided by an ability to codify and learn from past experience. Humans have the additional capability that allows them to alter their environment as well as respond to it. This capacity both creates and reduces risk (Slovic 1987).

In an article entitled *Theories of Risk Perception: Who Fears What and Why?*, Wildavsky and Dake (1990) argued that cultural selection of risk was not linked to objective risk measurements or the physical reality of risk. Rather, “the selection of risk reflected moral, political, economic, and power positions that were all value-laden and culturally constructed” (Cutter 1993). Cutter goes on to state that the cultural forces that either down played or amplified risks were used as leverage to control social groups. The fact that oppositional groups in communities tend to politicize issues to gain visibility adds a political dimension to risk definition.

The conclusion, from a sociological perspective, is that what is identified or classified by individuals or communities as dangerous or risky is often a sociological rather than a technical outcome; put simply, subjective rather than objective. Adams echoes Cutter in stating that risk is *culturally constructed* particularly where issues of health and safety are unresolved; “all risks are conditional” (Adams 1995).

Risk and Science

Science can define a risk, or uncertainties, only by artificially “freezing” a surrounding context which may or may not be this way in real-life situations. The resultant knowledge is, therefore, conditional knowledge depending on whether these pre-analytical assumptions might turn out to be valid (Wynne 1992 in Harding 1998).

Classical Newtonian science has problems in the risk arena. Risk, and in particular the lack of measurability of risk in many instances, poses a fundamental conflict for the positivist scientific mind. Lord Kelvin’s dictum that “Anything that exists, exists in some quantity and can therefore be measured” lies at the nub of the conundrum. The *Kelvinistic* view of risk is at odds with the “relativistic, airy-fairy nonsense that risk is culturally constructed” (Adams 1995).

Science is often called in aid in assessing risk yet science itself is often at odds with the conclusions reached by *individuals* in assessing risks. Science is in many senses the *Jekyll and Hyde* of risk in so far it has spawned many of the risks that it is then called in aid to solve. Smith discusses the increasing paradox between science as a *societal benefactor*, and science the hazard generator (Smith 1996). The reality remains that the perception and assessment of risk in the mind of the observer, whether real or unreal, actual or prospective, and however biased, skewed or ill founded, rational or irrational becomes the reality of the risk perceived by the individual (Thompson 1998). It is therefore not surprising that *risk definition* has become a point of tension between sociology and science. Cutter quotes Bazelon in the sociology versus science debate:

In primitive [sic] societieschoices were often made by the tribal witch doctor. When the need to choose between cherished but conflicting values threatened to disrupt society, the simplest path was decision by a shaman, or wizard, who claimed special and miraculous insight. In our time shamans carry the title of doctor instead of wizard, and wear lab coats and black robes instead of religious garb. (Bazelon 1979:277 in Cutter 1993).

As indicated, there are philosophical, sociological, and scientific complexities inherent in any discussion of *risk*. As these appear to revolve around the indeterminacy of risk and the related issues of *risk definition*, *risk perception* and *risk measurement*, it may be useful to adopt these headings as *trig points* for discussion in attempting to traverse this difficult terrain; the landscape of risk.

Risk and Hazard

Risk is often seen as synonymous with hazard. Yet the subtle distinction lies in risk being the *actual exposure* to a (pre-existing) hazard that might be naturally occurring, or human-induced

(Smith 1996). Cutter (1993) defines risk as “the measure of the likelihood of occurrence of hazard.” Perhaps the word *occurrence* in the above context might best be interpreted as *realization* or *actualization*. Yet ‘hazard’ is a broad concept that encapsulates the *probability* that an event may or may not happen, and includes the impact or magnitude of that happening as well as the social or political contexts of the event. Citing Kates and Kasperson (1983), Cutter expounds the view that “Hazards are threats to people and the things they value, whereas risks are measures of the threat of the hazards” (Cutter 1993).

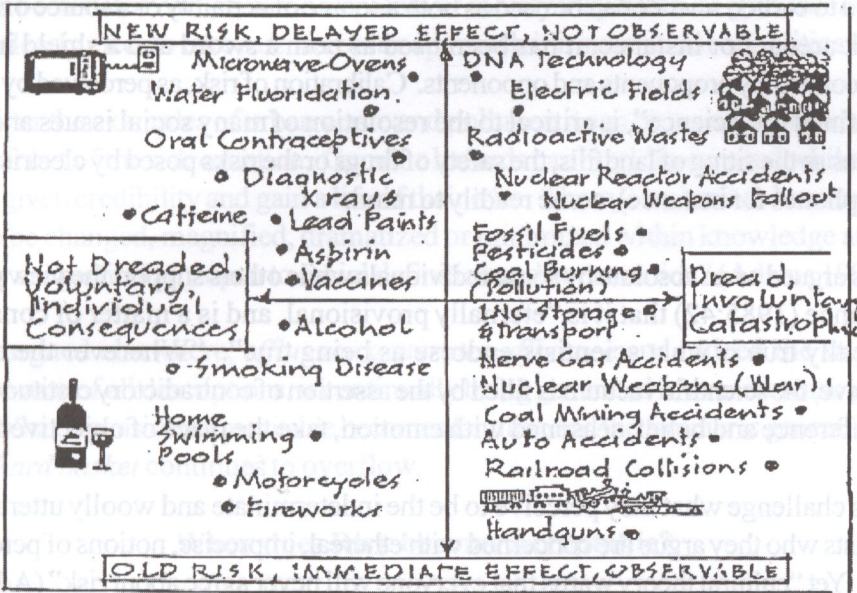
Hazard knowledge is linked to experience. An individual’s grasp of facts about survival, nature and technology are linked to his or her *in-built* personalized assessment processes, or *heuristics*. These cognitive, fluid “rules of thumb influence the way the data we perceive is processed. Heuristics, as they relate to risks, inform responsive action to potential hazards (Johnson 1999). In everyday life “people rely on a limited number of heuristic principles which reduce complex tasks of assessing probabilities and predicting values to simpler judgmental operations” (Tversky and Kahneman 1974:1124). The authors go on to state that, while heuristics are quite useful, they can lead to *severe and systematic* errors due to the subjective nature of the assessment and the possibility of bias. This issue was explored in an earlier volume of this Journal by Dr Michael Theil (2003).

Personal perceptions of risk, as outcomes that are guided by subjective risk assessments, are determinative of the fact that there is no such thing as absolute objectivity in the risk arena. *Risk* is riddled with relativity and indeterminacy and, as Adams states, there “are as many frames of reference (for a particular risk) as there are observers” (Adams 1995). These individual “frames of reference” are behavioral, and often learnt in so far as personal experience and knowledge acquisition generally sensitize us all to risks that then exist in “the archives of our minds” (Cutter 1993). We modify our behavior in terms of our past experience and behavior.

It is only in the last fifty years that the taxonomy of risk has been systematically analysed. Ralph Nader, in his acclaimed work *Unsafe at Any Speed*, distinguished voluntary from involuntary risk (Nader 1965). Driving a vehicle was identified as inherently risky or dangerous, yet individuals continue to drive on busy highways and on rough back roads, optimistically believing that if the risk is (seemingly) within their control it becomes more acceptable. When an individual is a passenger in an aircraft, he or she may experience more fear, that is, consider it more risky, than driving a car. This response is attributed to the fact that the aircraft is outside a passenger’s control. We tend to accept the *familiar*, routinely ignoring the dangers of driving at high speeds, cigarette smoking and sun-bathing.

This was highlighted by Chauncey Starr in his text *Social Benefit versus Technological Risk* in 1969 which explored voluntary and involuntary risk and concluded, *inter alia*, that “society arrives at a balance between risks and benefits by trial and error” (Starr 1969) (Starr 1969).

These themes have also been examined by (Cutter 1993) who defines risk categories in terms of low-probability/high-consequence events, such as 747 collisions, and events like the Three Mile Island nuclear accident, which she compares with high-probability/low-consequence events such as smog or water pollution. The former have an element of unpredictability, the latter periodicity/predictability.



Two dimensional risk characterisation map. (Source: Cutter 1993:19, Figure 2.2).

Cutter (1993:20) postulates that the disturbance, or the social impact, of an accident is predictably less if it occurs in a familiar and well-known system in contrast to the level of angst or disturbance if it occurs in a little known system. This is an interpretation that links back into the notion of the “unknown” and “dread” factors in risk perception; the converse of Nader’s (1965) conclusions that focus on acceptance of the familiar. The psychometric paradigm developed by Cutter, represented above, is a composite model based the work of Lichtenstein (1978), Fischhoff (1978) and Slovic (1987).

This model is predicated on the contentious assertion that perceptions of risk are in fact quantifiable and predictable. Quoting (Slovic 1987) Slovic (1987) Cutter states that the psychometric paradigm “utilises a taxonomy of hazards to produce quantitative measurements of risk perceptions and attitudes or, more precisely, a cognitive map of risk”. “Risks are viewed as more acceptable if they are familiar, controllable, have low catastrophic potential and/or are equally shared” (Cutter 1993). The risk perception associated with SARS is, on this analysis, of the highest order. Another contemporary case in point in Thailand is Chicken Flu virus. The source and causes are now known, and even though chicken flu virus continues to pose a significant threat as it mutates and produces more deadly strains (Bangkok Post 15/09/04), it appears that the ‘dread factor’ has retreated. People have ceased to be concerned

to the extent that chicken, for some time off the menu, has returned to restaurants and sidewalk cafes throughout Bangkok.

Measurement of Risk

As alluded to earlier, science can be used as both a source of certainty or a source of uncertainty in the risk arena. For instance, it has been used as both a sword and a shield in the urban planning context by proponents and opponents. Calibration of risk, as perceived by individuals and as defined by “science”, is critical to the resolution of many social issues and concerns. Such issues as the siting of landfills, the safety of drugs or the risks posed by electrical gadgetry, (mobile ‘phones for instance), come readily to mind.

Science is argued as an absolute by some individuals while others support the view put forward by Lowrance (1985:42) that it is “eternally provisional, and is a matter of consensus; the scientifically true is what scientists endorse as being true”. “Wherever the evidence is inconclusive, the scientific vacuum is filled by the assertion of contradictory certitudes” (Adams 1995). Inference and belief, seasoned with emotion, take the place of objective facts.

Scientists challenge what they perceive to be the indeterminate and woolly utterances of the behaviorists who they argue are concerned with ethereal, imprecise, notions of perception and response. Yet “cultural theory warns that everyone will never agree about risk” (Adams 1995). Even when it is identified, individuals may not be able to agree about the existence let alone the measurement of particular risks. *Risk* has a complex social dimension as “both the adverse nature of particular events and their probability are inherently subjective (Adams 1995).

As stated earlier, such writers as Adams argue that risk is *socially constructed*. The ætiology of risk lies in the domains of both “the technical” and the “non technical”. One aspect of the difficulty about risk is that the perception is often generated beyond the bounds of scientific measurement. Yet “the experts” are often preoccupied with measurement as reflected in the traditional, “if measurable”, methodology of science reflected in the words of Lord Kelvin referred to earlier (cited in Adams 1995:10). Yet it might still be argued that “Overall, science pursues two precariously consonant objectives at once; preserving orthodox knowledge and carefully building on it, all the while striving to supersede it with more powerful knowledge” (Lowrance 1985).

Managing technological hazards

The paradox is that people tend to put their *heads in the sand* and create their own thresholds of risk (Kaminstein 1991), (Douglas 1990) with respect to many obvious every- day situations, yet enter the emotive arena of *high outrage* when confronted with an easily imagined, but low probability, catastrophic risk. We live in a world that goes beyond acquiescence and glamorizes

cigarette smoking and traveling at high speed, yet becomes outraged by less immediate or lower hazardous situations. The (safe) disposal of nuclear waste highlights the paradox. “In contrast to the virtues of the *de minimus* approach....that ignores very low levels of hazard, our society seems to have adopted a *de ignoramus* approach that avoids knowing about many hazards” (Kates 1986 in Cutter 1993). This statement needs to be qualified in the light of what has been stated earlier; some elements of society may take a *de ignoramus* approach yet others clearly elect to take a *de maximus* approach if it suits social or political ends.

If we consider the examples of urban waste and pollution it can be seen that logic and reason are often left out of the risk equation. Genuine hazards can be glibly ignored while imagined threats are given credibility and gain a life of their own. There is no limit to human credulity. Risks “can be changed, magnified, dramatized or minimized within knowledge and, to that extent, they are particularly open to social definition and construction” (Adams 1995:181).

As I have argued elsewhere, *affluence generates effluence* and indeed the *stuff of risk*, hazardous waste of all descriptions, is continually being generated in ever increasing volumes annually. What is considered inevitable becomes familiar, and the familiar is generally ignored, as the *too hard basket* continues to overflow.

When does Risk become Acceptable?

Given the acknowledged inevitability of risk, the questions of risk management and the determination of what is a tolerable or acceptable level of risk come into focus. In a web-based article entitled *Acceptable Risk: A Conceptual Proposal*, Fischhoff draws on the findings of the American EPA’s review of vinyl chloride. Fischhoff comments that “No fixed level of risk could be identified as acceptable in all cases and under all regulatory programs.” He goes on to state that “acceptability of risk is a relative concept and involves a consideration of different factors”. These factors include the “certainty and severity of the risk; the reversibility of the health effects; the knowledge or familiarity of the risk; whether the risk is voluntarily accepted or involuntarily imposed; whether individuals are compensated for their exposure to the risk; the disadvantages of the activity; and the risks and advantages of any alternatives”². The parameters of acceptability outlined by Fischhoff are echoed in the analysis of risk by Cutter, Sandman and others (Sandman 1993). The observations by Fischhoff reinforce the conclusion that individual perceptions of risk are subjective and hence variable (Fischhoff 1994).

The two dimensional *risk characterisation map*, (Cutter 1993), can be adapted to chart the *social acceptability* of a risk. The “familiar, not dreaded, voluntary risk quadrant” is the most

²<http://www.fplc.edu/RISK/vol5/winter/Fischhof.htm>

acceptable of risks. Acceptability becomes part of each individual's risk identification continuum and therefore cannot be predicted as a certain or uniform outcome. Many individuals manage to blanket out concerns related to the common, everyday risks.

Yet many risks are unavoidable. In some instances this may be due to a lack of knowledge linked to the limitations of technology. Many risk outcomes in the environmental context, for example, may take years to become evident. Heimann (1997) makes the point in the preface to his work, *Acceptable Risks, Politics Policy and Risky Technology*, that "complex and risky technologies are an engine for economic growth in our society" however, "these new technologies also pose many problems for political leaders and policy makers responsible for overseeing them". In many senses though, the entire risk perception dynamic has changed.

Conclusion

While the objective realities of what poses a risk have not changed, perceptions and awareness of risk have changed. And while risk perceptions have been conditioned by factors that have been around for decades, if not centuries, a new range of risk determinants have suddenly emerged to impact on individuals' assessments. The *traditional* analysis of changing perceptions of risk over the preceding centuries and decades, tends to be swept away when we consider the fluidity of risk perception and relate that to the visual imagery of death, terror and destruction to which the consuming public are now exposed through the media.

Perception remains the key to risk response. Perceptions though are shown to be fluid. At a purely subjective level the unrecognized risk, a hazard pure and simple, remains responseless. Whether it is argued that fewer risks remain unrecognized or that more risks are being recognized, it is inevitable that the risk barometers of individuals are being recalibrated. How risk is communicated may be a key determinant of *individual* and *public* risk responses. In this regard the press, politicians and such organizations as the UN and its affiliates have now become significant as *risk definers* via the medium of the newspaper reporter and the newscaster.

In the context of the insurance industry risk assessments, whether by individuals or by the industry itself, have always been critical. However, I suggest risk-perception by individuals, influenced by enhanced communication of "hazard realization", is emerging as an even more crucial issue at the commercial level than ever before. The frontiers of tolerance are being stretched and whether an individual decides to travel or not to travel, and at the same time decides to insure or not to insure, have much in common. As never before individuals are now more hazard conscious, thresholds of risk awareness have been lowered. It is as if individuals have been startled out of decades of habituation by Hollywood-like disaster scenarios that are actually occurring in cities around the world and not on sound stages or studio back lots.

The redefinition of risk, in the mind of our archetypal person on the Clapham omnibus, is not influenced so much by the erudite discussion of scholars, as by the immediate and graphic images of death and destruction that assail all daily under the banner of television news broadcasts. For many people the psychological realisation or assessment of risks has suddenly taken on new meaning reflecting the fact that the physical realisations of hazards, hitherto considered unlikely or far fetched, have become more real. Given that this perceptual 'shift' has occurred, risk, is seen as both more inevitable and more immediate.

Hedging against risk, the compensation in monetary terms offered by insurance, is the leaven that makes the unacceptable acceptable, or at least, tolerable. It may be argued that this must surely be the *raison d'être* of the insurance industry in the twenty-first century. More than ever before we live, in the words of Ulrich Beck (1986), in a risk society, there is no such thing as zero risk

The role of the actuary, the surveyor and the analyst, upon whom risk assessment, and the viability of the insurance industry depends has become at once both more complex and more critical in this environment. Ultimately though, the risk perceptions of individuals in the market place will determine the economic survival of insurance companies.

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