nature immunology



# Minimaxing risk

The world is afraid. With the mass media providing the public a constant stream of over-hyped stories on breaches of public safety, worries are on the rise about the integrity of the food supply, infection by exotic and familiar pathogens, and which day's conflicting medical advice to follow. The result of this barrage is a growing belief that the modern world has become a more dangerous place, full of hidden threats. Emotional presentation by the press of sometimes unavoidably incomplete information has also induced a backlash against government 'spin doctors' and their scientific advisors. This crisis in trust forces the public to inquire as to when the government (or industry or scientists) knew of the current danger and to wonder how self-interests may be affecting the advice being promulgated to the public. The slow admittance of possible error or mismanagement by all three groups has led to a loss of government's credibility in their role as protector of the public.

Many lay citizens, unable to identify pseudoscientific media hype for what it is, are now convinced that most government advice reflects political expediency rather than a scientific analysis of data. This loss of trust promotes the use of a 'minimax' algorithm. Minimax is the term for minimizing the likelihood of your 'maximum regret', that is, your least-desired personal outcome, as opposed to making choices based on rational decision-making, which takes into consideration a public health decision's value to the community. This form of 'looking out for number one' leads to the irrational behavior in response to crises that is widely reported in the press, abetting a nasty cycle of media hype→half-true government pronouncements→loss of trust→minimax→media hype.

Life has actually become less risky, not more. In human prehistory, deaths from hunting, childbirth, building shelter, battling the elements or, secondarily, from infections incurred as a result thereof, were commonplace. As populations grew, competition for resources led to warfare with its inherent dangers, but overall, civilization was reducing those basic threats. In our current world order, however, terrorist acts, rogue diseases and tainted food supplies are contributing to the minimax need to 'feel safe'. Demand is emerging for governmental regulation of any risk that the public perceives may be in our power to control, with additional regulation being sought to prevent any new potential threats from taking root.

The SARS outbreaks exemplified this need to reduce new risks quickly. Reaction to the novel respiratory virus that killed 9% of those infected was swift. Frightened individuals throughout SARS-infected regions donned surgeon's masks, and others severely curtailed airline travel to and from these regions. Maps illustrating the spread of the virus populated the front pages of major newspapers worldwide. Once local governments admitted the problem, quarantines were imposed, scientists and epidemiologists were brought in and research commenced. International anxiety was strong, even though in most locales it was highly unlikely that one would be exposed. The public's effort to minimax is behind the continued 'newsworthiness' of the story and the assumption that governments are not doing enough to protect citizens.

The lack of trust in regulatory agencies overseeing public safety in the UK is a result of their previous yielding to political pressures. Official statements from British ministries on the safety of the beef supply in the 1990s during the European bovine spongiform encephalopathy (BSE) scare encouraged this skepticism. Americans, however, believed that US beef was safe, because their implicit trust in the US Food and Drug Administration and Department of Agriculture (USDA) had not yet been broken. Americans became more wary only as the furor in Europe intensified. When UK citizens were initially told that their beef was safe despite the BSE cases, only to eventually face the slaughter millions of cattle after over 100 cases of human spongiform disease were documented, Americans took notice. Thus, when BSE was recently found in Canada and then in the US, the pronouncements from the USDA were scrutinized harshly. However, the extent of BSE contamination of US beef is not clear, and beef consumption has not yet decreased, perhaps because the personal threat is still so vague.

People need to feel safe, but feeling safe is not equivalent to being safe. In the 12 January 2004 issue of *The New Yorker*, Malcolm Gladwell investigates why people buy SUVs, a topic inspired by Keith Bradsher's *High and Mighty SUVs: The World's Most Dangerous Vehicles and How They Got That Way* (PublicAffairs, New York, 2002). Driving in the US means contending with a growing fatalistic attitude that accidents will happen. Consumer research shows that the American penchant for SUVs is rooted in the passive safety provided by excessive height surrounded by massive steel—even though SUVs cannot pass the same safety criteria as can cars. This is in contrast to actually being safer when actively outmaneuvering obstacles in a more responsive sedan or sports car. The passive acceptance of the inevitability of a crash leads to a 'minimax' solution that seems protective to the driver, despite evidence that SUVs make the road less safe for other automobiles by increasing the risk overall.

Personal minimaxing, as in response to perceived major health threats, maintains the cycle fomented by the loss of trust in our information sources. The urge to minimax is much reduced when the public trusts the press and the government. Protecting its citizenry through transparent decision-making is every government's responsibility. Over-hyping or misrepresenting crises by the press to sell the news only aggravates the cycle. Being safe, rather than just feeling safe, is the goal for us all.