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9 The What, How and When of Social Reliance and Cooperative Risk Management[1]

George Cvetkovich and Patricia L. Winter

One reaction to an earlier book in this series (Cvetkovich and Löfstedt, 1999) recognized a lack of consensus on definitions of key concepts regarding social reliance and trust (Fischhoff, 1999). Agreeing that this conceptual jumble hinders scientific advancement and handicaps the ability to offer effective practical advice, we cautiously make some suggestions. We offer these suggestions based on our joint research on cooperative management of US national forests, trust research within other cooperative risk management domains, and on the first author's examinations of trust in other domains of human functioning. There are many domain-specific aspects to relying on others. A child's trust of a parent or trust in a romantic partner, obviously, are different in many ways from trust in the individuals whom you have never met and who are in charge of an environmental protection or natural resource management agency. But there are also some important similarities. Recognition of the similarities as well as differences can aid the development of a consensus on basic definitions and directions for further research.

Our discussion addresses three questions:

1 The question of 'what?' deals with the definitions of three key terms – social reliance, trust and relational assurances. We deal in this section with questions about the nature of trust. Is trust a social emotion, a rational, objective judgement or something else?
2 The question of 'how?' deals with the social psychological processes underlying trust – how does trust, or distrust, come about?
3 The question of 'when?' deals with the identification of the circumstance determining the importance of trust to judgements about cooperative risk management. We conclude with a discussion of the conceptual, theoretical and practical implications of these distinctions.

WHAT IS TRUST?

Discussions about trust are in agreement on some general points. For example, trust involves risking betrayal, but provides certain potential benefits. Beyond some of these agreements about trust's basic properties and outcomes, there exists an amazing array of conceptualizations and definitions. Our view is that this babble will remain indeterminate and that new putative distinctions will continue to be creatively spawned unless conceptualizations are grounded in broader understandings of psychological functioning that are empirically tested.

We suggest that two aspects of functioning are important, even basic, to defining what trust is. The first aspect of functioning has to do with the mode of information processing. We use the labels 'implicit mode' and 'explicit mode' of information processing to mark these differences. The second aspect of functioning has to do with working out distinctions related to the kinds of representations that humans use when relying on others. We use the labels 'relational assurances' and 'trust' to mark these differences.

Implicit and explicit modes of information processing, trust and social reliance

Information processing is concerned with the manner by which sensations, perceptions, impressions and other 'inputs' are transformed or 'computed' into judgements, choices and actions. The human mind engages in two modes of information processing: an implicit, rapid, automatic mode and an explicit, slower, controlled mode. These differences are sometimes referred to as affect/emotion and cognition. Table 9.1 shows other commonly used labels and additional characteristics of the two modes. The distinction between the implicit and explicit modes has a long history[2] and has been supported by brain imaging studies (Damasio, 1994; Winston et al, 2002). Research on risk perception has recently begun to take these human dual modes of information processing seriously (Slovic, 1999; Trumbo, 1999; Finucane et al, 2000; Slovic et al, 2002, 2004).

Having recognized the mixed-mode nature of information processing, we hasten to add that it seems fair to conclude that with trust, the balance is clearly towards implicit mode processing.[3] If this is so, we can then conclude that trust is primarily a social emotion. Social emotions such as fear, happiness, sadness and trust are 'systems of coordinated changes in physiology, cognition and behaviour'. They are 'specialized modes of operation shaped by evolution that increase the capacity and tendency to respond adaptively to threats and opportunities' (Nesse, 1990).

As a social emotion, trust reflects the characteristics of implicit information processing shown in Table 9.1. This table shows that the computational rules used in implicit processing are simple unconscious associations of similarity in concrete or generic representations or tempo-

Table 9.1 *Characteristics of implicit and explicit modes of information processing*

	Implicit	*Explicit*
Common names	Emotion/affect Experiential mode Habit Heuristic processing Intuition Instinct 'Hearts' in the phrase 'hearts and minds'	Decision-making Logic Analysis Problem-solving Rational thought 'Minds' in the phrase 'hearts and minds'
Source of knowledge	Personal experience Evolved mechanisms	Language, culture and formal systems Symbol mediated experience
Level of awareness	Unconscious – unaware of process (aware of result)	Conscious – aware of process and result Used to explain process
Voluntary control	Involuntary Reflexive	Controlled Deliberate
Effort	Effortless	Effortful
Computation rules	Associations – similarities of structure and temporal contiguity (frequencies and correlations)	Rule based and symbol based Algorithms
Speed of processing	Rapid	Slow
Nature of representations	Concrete and generic concepts, images, stereotypes and feature sets Gist representations	Concrete and generic, as well as abstract concepts Abstracted features Compositional symbols Verbatim representations
Focus	Holistic/pattern	Constituent parts
Basis	Elicitation of evolved mechanism or well-learned expertise following identification of problem	Iterative interaction with the environment
Ability to communicate	Difficult or impossible	Possible
Criteria of truth/validity	Coherence	Correspondence

Source: adapted from Sloman (1996)

ral continuity. In line with this characterization, trust is an example of peripheral processing (Petty and Cacioppo, 1986; Verplanken, 1991; Petty et al, 1994). Peripheral processing involves the influence of factors outside of the main content of a message. One peripheral factor is the judged trustworthiness of the communicator. The association of the trusted communicator with the message leads to acceptance of the message. Credibility of the communicator has been found to have more influence

on individuals who are using implicit rather than explicit processing. These are individuals for whom an issue is not personally relevant, who are less educated or who lack relevant technical expertise (Chaiken, 1980; Petty et al, 1981; Earle et al, 1990; Cacioppo et al, 1996). In contrast, explicit processing involves symbol-based rules applied to the content of the message. The message's content is evaluated as right or wrong on its own merits, regardless of the peripheral matter of who said it.

The standard of truth for the social emotion of trust and other forms of implicit information processing (see Table 9.1) is the internal standard of coherence (Hammond, 1996). A judgement is true if it is internally consistent, feels right and, in the colloquial phrase, 'makes sense'. The holistic comprehensive nature of trust, a characteristic of coherence, has often been noted. The standard of truth for the explicit mode processing is correspondence. Correspondence asks 'external' questions: does the judgement or conclusion fit available evidence? Was the judgement or conclusion reached through a logical, defensible process that can be explained to other people?

While trust primarily has the characteristics of a social emotion, trust-related judgements, like those related to other emotions, often involve some amount of explicit processing. Explicit processing is likely to be activated when people are called upon to communicate about or explain their trust. This includes when people are questioned about their trust by researchers. The two modes operate together, their relative contribution being weighted in different proportions at different times (Gray, 2004). People who are incapable of using one or the other mode due to traumatic or organic damage to parts of their brains make bad decisions (Damasio, 1994; Bechara et al, 2000).

Social reliance occurs when an individual risks allowing another person to control his health, safety or another aspect of well-being. The putative benefits motivating reliance have been extensively discussed. By relying on another person, one can reduce the time and effort required from information seeking, evaluation of evidence and decision-making. Relying on another person may also produce social capital by reducing transaction costs (Fukuyama, 1996; Putnam, 2000).

In addition to the distinction between implicit and explicit modes of information processing, we make a second distinction based on two routes of information processing. In agreement with other theorists, we have concluded that it is useful to conceptualize a route of relational assurances and a route of trust (Luhmann, 1979; Yamagishi et al, 1998a; Hardin, 1993; Earle et al, 2000; Siegrist et al, 2002).

The route of relational assurances

Toshio Yamagishi and his colleagues have conducted studies confounding common beliefs about national differences in trust (Yamagishi et al, 1998a;

Yamagishi et al, 1998b; Yamagishi and Yamagishi, 1994). Contrary to widely held stereotypes, this important research shows that Americans are more trusting than are the Japanese. Yamagishi and colleagues define trust in a similar fashion as we do here. It is reliance on another based on an assessment of the other's morality, personality, goals, motives or other personal characteristics. Americans base reliance on trust more often than do Japanese, who prefer basing reliance on the assurance of an established interpersonal social relationship.

Willingness to rely on another person might be based on another assurance besides an established interpersonal social relationship. Confidence has been identified in other chapters in this book (see Chapter 1) as reliance based on a record of past performance. Confidence based on past performance, in our view, is an example of relational assurance. In addition to established social relationships and past performance, other relational assurances that possibly induce reliance are systematically enforced laws, procedures attempting to ensure fair and just decisions, institutionalized accountability, and opportunities to voice one's view. Fukuyama (1996) identifies a number of innovations in trading and banking, such as letters of credit, which induced the level of reliance needed for the development of international trade in Europe during the Renaissance.

The evolution of eBay, the largest online auction site, is a recent history example of implementing new relational assurances to induce potential customers to rely on each other and on the internet trading network (Weidenbacher and Cvetkovich, 2003). Included among these assurances are Pay Pal, a system of payment that ensures anonymity of the buyer's credit card information, the exclusion of traders found to have used deception, the identification and elimination of shill betting, and the ability to use escrow accounts that release payment to a seller only if the buyer is satisfied with the quality of the purchase. An important relational assurance provided by eBay is making available purchasers' ratings of sellers' past performance.

The route of trust

Most of us, unless plagued by a phobic fear of flying, rely on the commercial airline industry because we are assured by safety regulations, crew training, anti-hijacking security measures, and other safety measures. Should something seem amiss, should we not feel assured, we may engage in efforts to characterize the individuals who should be protecting us or who may jeopardize us. The airline hijackings on 11 September 2001 resulted, in part, from failed airline security. Airline passengers no longer felt that their safety was ensured. Many began scrutinizing other passengers following the terrorist events. In one widely reported case, this scrutiny led passengers on one flight to conclude that a passenger could not be trusted, and there was a collective refusal to allow the plane to fly until this individual was made to leave the plane.

Reliance based on the route of trust involves the making of attributions about other individuals. Attributions about others reflect social representations of who they are – what their motives, goals, personal characteristics and, especially, their morality are. Social representations are shared knowledge: sets of organized attitudes, values and beliefs about something (Breakwell, 2001; Moscovici, 2001). Social representations serve two functions:

1 They provide understanding and allow us to derive meaning.
2 They allow us to communicate with others.

Trust involves knowledge of how the human mind works and the meaning of particular actions. These representations might be specific to a particular individual or they might be about people who are members of a particular group (for example, bureaucrats, police and elected officials), or they might be about how all human minds work. The information involved in trust couples relevant representations about the human mind with representations of what a particular person did, said or even looks like to arrive at a generalization about the characteristics of the person, including their trustworthiness. The colourful term 'mind reading' has been applied to this process.

To summarize, we have made a distinction between two routes to relying on other people – trust and relational assurances. We rely on another person when we have concluded that there are conditions assuring the nature of our relationship to another. We trust when we have concluded that an individual's mind operates in ways that will result in reliable judgements and behaviours.

Those of us interested in cooperative risk management have not given much attention to relational assurances. Our focus has been mostly on trust (at least in name). In keeping with the theme of this book, we will focus primarily on trust in much of the remainder of the chapter.

THE 'HOW' OF TRUST: SOCIAL PSYCHOLOGICAL PROCESSES INVOLVED IN TRUSTING

Our discussion of the 'what?' of reliance indicates that trust is based on attributions about the other person's psychological characteristics. It is a conclusion that the other person has the characteristic of being trustworthy. On what grounds is the conclusion of trustworthiness reached? The salient values similarity (SVS) model offers an answer to this question on the basis of relevant social representations. Trust is an in-group phenomena; it is an emotional reaction to other group members. Distrust is an out-group phenomenon; it is an emotional reaction to members of other groups. Social identity is an important aspect of trust, risk perception and judgements about risk management (see the Chapter 2 in this book;

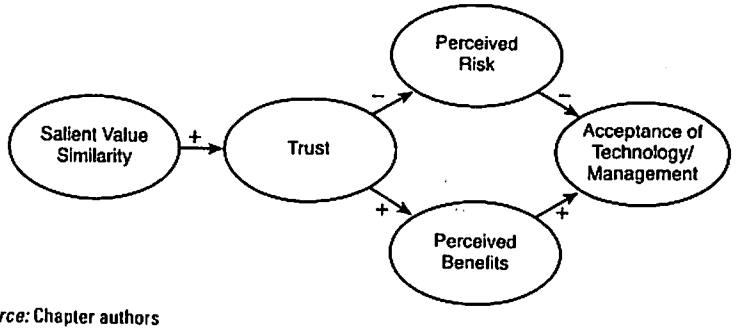
Breakwell, 1986; Satterfield, 2002; Clayton and Opotow, 2003). Trusting someone occurs when there is a recognition that the person is similar to one's self and is, therefore, 'one of us'. Distrusting someone occurs when the person is identified as being dissimilar to one's self and is, therefore, 'one of them'.

In his classic best-selling book *The Nature of Prejudice*, social psychologist Gordon Allport (1954, p433) has described this issue thus:

> ... human beings are characterized by *obligatory interdependence*... For long-term survival, we must be willing to rely on others for information, aid and shared resources, and we must be willing to give information and aid and to share resources with others. At the individual level, potential benefits (receiving resources from others) and costs (giving resources to others) of mutual cooperation go hand in hand and set natural limits on cooperative interdependence. The decision to cooperate ... is a dilemma of trust since the ultimate benefits depend on everyone else's willingness to do the same. A cooperative system requires that trust dominate over distrust. But indiscriminate trust (or indiscriminate altruism) is not an effective individual strategy; altruism must be contingent on the probability that others will cooperate as well.
>
> Social differentiation and clear group boundaries provide one mechanism for achieving the benefits of cooperative interdependence without the risk of excessive costs... in-groups (are) bounded communities of mutual trust and obligation that delimit mutual interdependence and cooperation.

The SVS model identifies two important sets of trust-relevant social representations: *salient values* are the individual's representations of the goals and means that should be followed in responding to a problem. Salient value representations include implicit and explicit meanings, such as an understanding of what problem is being faced, what options are available and the likely consequences of options. *Value similarity* representations consist of comparing one's own salient values to those that are concluded to be salient for the person whose trustworthiness is being judged. If the other person's represented salient values are similar to one's own salient values, that individual will be deemed trustworthy, the risk of trusting is assumed and the person will be relied upon. If the other person's represented salient values are dissimilar to one's own salient values, that person will be deemed untrustworthy and the person will be distrusted. One frequently important salient value in human interactions is honesty about one's motives. Perceived efforts to conceal motives produce conclusions of salient value dissimilarity and distrust.

Figure 9.1 presents a general model of relationships between salient value similarity, trust and judgements related to cooperative risk management, such as the acceptability of hazardous technological activities and



Source: Chapter authors

Figure 9.1 *Model of salient value similarities, trust and evaluations*

the acceptability of risk management policy. Studies examining risk management in a number of different domains provide support for various aspects of this general model of relationships. These include studies on genetic modified organisms (Siegrist, 1999); research on old growth forests (Cvetkovich et al, 1995); protection of threatened and endangered species (Cvetkovich and Winter, 2003); preservation of water quality (Cvetkovich and Winter, 1998); prevention and control of wildfires (Winter and Cvetkovich, 2002); users' fees to support costs of forest management (Winter et al, 1999); government and business responses to the Y2K computer bug (Ottaway et al, 2001); the perception of cancer clusters (Gutscher et al, 2001; Siegrist et al, 2001); and an assortment of other technologies and hazardous activities (Siegrist and Cvetkovich, 2000; Siegrist et al, 2000). Additionally, during the 2000 US presidential election campaign, both implicit and explicit pre-election candidate preferences correlated with trust, and trust correlated with shared value similarity between voters/respondents and candidates and to actual vote (Bain, 2001; Halfacre et al, 2001).

We draw two main conclusions from this research, reflected in Figure 9.1:

1 Trust is important to judgements about characteristics, such as risks and benefits, that relate to conclusions about the acceptability of both potentially hazardous activities and technologies and to management policies.
2 Judgements of trust are based on representations of salient value similarities.[4]

Research has begun to explore some of the complexities of how salient value similarities operate in cooperative risk management situations. These explorations suggest some additions to, and elaborations upon, the general model of trust and evaluations of management policies. We discuss two lines of research:

1 studies on the effects of perceived consistency between values and actions and the legitimacy of inconsistencies; and
2 studies on the effects of new information on judgements of trust.

In both cases, representations of what the risk manager did or did not do are examined relative to representations of how the manager's mind works and resulting trust of risk managers.

Value/action consistency and the legitimacy of inconsistencies

As part of our ongoing collaborative research, we conducted discussions with forest users whose objectives focused on managing threatened and endangered species (Cvetkovich and Winter, 2003). We examined the relationship between trust and management actions taken with California citizens who had a strong interest in forest management. Four patterns of relationships between trust, salient value similarity and perceptions of management actions were identified based on focus group discussions.

Two of the four identified patterns of representations of trust directly parallel expectations based on the SVS model. One of these patterns depicted the Forest Service as not sharing respondent's salient value that human use should be the dominant goal of forest management. Individuals with this pattern of representation distrusted the Forest Service (pattern 1 in Table 9.2). The other expected pattern represented the Forest Service as sharing the respondent's salient value of the primacy of species protection as the dominant goal of forest management (pattern 4 in Table 9.2). Individuals with this pattern of representation trusted the Forest Service.

The two unexpected patterns also represented the Forest Service as sharing the respondent's salient value of species protection as the dominant goal. These two patterns were also similar in that both represented the Forest Service as not always acting based on this shared value. However, people with these two patterns differed in another representation. Individuals with one of these patterns (pattern 3 in Table 9.2) further represented the Forest Service as not being responsible for failures to act on shared values. This representation held that the Forest Service failed to act in a value-consistent way because of budget and other resource constraints, political pressures or other extenuating circumstances. Individuals with this pattern of representations tended to trust the Forest Service. Individuals with the fourth pattern (pattern 2 in Table 9.2) further represented the Forest Service as being responsible for failing to act on shared values. This representation held that the Forest Service was responsible for allowing itself to be affected by influences such as budget and other resource constraints or political pressure. Individuals with this pattern of representations tended to distrust the Forest Service, but not as extremely as those who represented the Forest Service as not sharing their salient values.

Results of telephone interviews with larger representative samples of people living in Arizona, Colorado and New Mexico confirm these patterns of relationships between trust, perceived consistency of values and actions, and judged legitimacy of inconsistencies for managing threatened and endangered species and wildfires (Cvetkovich and Winter, 2004). As shown in Table 9.3, evaluating the effectiveness and approval of management practices for both issues was predicted by salient value similarity, perceived inconsistency between values and actions, followed by the judged legitimacy of inconsistencies. These relationships were consistent across states and genders. Together, the results of the in-depth small sample study and the larger representative sample surveys indicate an important possible addition to the basic SVS model of trust.

Table 9.2 *Four identified patterns of trust*

Pattern of trust	*Forest Service shares management values, goals and views*	*Perceived consistency of Forest Service actions and own values*	*Legitimacy of Forest Service inconsistency*
1 Distrust	No	Inconsistent	(Not relevant)
2 (Dis)trust somewhat	Yes	Inconsistent	Not justified
3 Trust	Yes	Inconsistent	Justified
4 Trust	Yes	Consistent	(Not relevant)

Table 9.3 *Regression analyses of evaluations (effectiveness and approval) of management practices for total samples, states and genders*

	Beta weights					
	Salient value similarity	*Forest Service value/action inconsistency*	*Legitimacy of Forest Service inconsistency*	*Adj. R*	*F*	*p*
Threatened and endangered species survey						
Total sample	.428	−.274	.158	.54	682.20	< .0001
Arizona	.380	−.350	.137	.51	230.93	< .0001
Colorado	.395	−.315	.182	.59	169.11	< .0001
New Mexico	.537	−.294	.181	.63	203.57	< .0001
Males	.428	−.283	.160	.56	233.64	< .0001
Females	.427	−.293	.181	.58	240.12	< .0001
Wildland and wilderness fires survey						
Total sample	.442	−.286	.169	.58	495.70	< .0001
Arizona	.470	−.198	.202	.54	144.90	< .0001
Colorado	.448	−.248	.144	.51	127.07	< .0001
New Mexico	.372	−.375	.118	.55	147.54	< .0001
Males	.411	−.264	.176	.53	213.25	< .0001
Females	.440	−.287	.134	.52	188.57	< .0001

New information and trust

Risk managers have a strong practical interest in increasing trust. There is more research in demonstrating the difficulty of doing this than there is in examining the processes involved in how trust develops and changes. Not surprisingly, the available research does not yield the sought-after simple answers to the question of how to increase trust. One of the conclusions uncritically repeated in published discussions is Deutsch's (1958) statement that trust is slow to develop. The asymmetry principle also addresses the presumed difficulty of gaining (and retaining) trust (Slovic, 1993). The asymmetrical principle states that it is much easier to lose trust than it is to gain it because negative information triggers a stronger emotional reaction, is more diagnostic and is more credible than positive information. The SVS model, grounded on assumptions about mind-reading processes, indicates that speed of assessing trustworthiness should depend upon the difficulty of reaching conclusions about the other person's salient value similarities. When this is very difficult, as it would be in the minimal social interaction situations studied by Deutsch, trust will be slow to develop. SVS suggests that changes in trust should depend upon existing level of trust, a possibility not suggested by the asymmetry principle.

Bob Woodworth's (2004) book *Plan of Attack* provides an example of how existing levels of trust focus on interpretations of new information. *Plan of Attack* has been described as 'akin to raw intelligence. It is a rough record ... equivalent of the kind of satellite photograph that cannot distinguish objects less than 1 foot in diameter. For this reason, and because neither analysis nor context ... is part of the Woodward package, the information he provides is open to multiple, and highly inconsistent, points of view' (Hertzberg, 2004). Existing trust provides the frame for representing actions depicted in the book. The nature of the resulting representations of actions leads to persistence of initial trust or distrust. The 'Re-elect George W. Bush' website includes *Plan of Attack* on its suggested reading list apparently because the book conveys the image of a strong, decisive leader. John Kerry, the Democratic contender for president, also recommends *Plan of Attack*, apparently because the book conveys an image of impulsive, ineffective leadership.

Two studies support the trust-as-an-interpretive-lens expectation of the SVS model (Cvetkovich et al, 2002). Reactions to positive and negative information about managers involved in two different risk domains – the operation of nuclear power plants, and food production and distribution – indicated what appeared to be a double asymmetry effect. Overall, bad news had a stronger effect on decreasing trust than good news had on increasing trust, as expected by the original asymmetry principle. However, as expected by the SVS model, good news about trusted managers increased trust more than good news about distrusted managers. Bad news about distrusted managers decreased trust more than bad news about trusted managers. Subsequent research replicates both effects and

also indicates that what appears in Cvetkovich et al (2002) to be double asymmetry effects may be one effect (White et al, 2003). Bad news may have a stronger effect than good because of people's existing expectations. Bad news has a stronger effect than good news when people expect bad news. If people expect bad news, either about a particular distrusted person or, more generally, about a perceived risky activity, hearing this bad news will have a more profound effect than hearing good news. Bad news about distrusted individuals and good news about trusted individuals is expected as more likely than the reverse. Trust may change the diagnostic value of news by influencing the expectation.

THE 'WHEN' OF TRUST

Most of us who are interested in cooperative risk management have come to see trust as an important determinant of risk perceptions (Slovic, 1999). It has been a rare voice that questions the propositions that:

- It is difficult for people, in general, to directly know about and manage large-scale risks.
- Therefore, trust of those with management responsibilities strongly affects perceptions of risk, safety, benefits and other characteristics of potentially hazardous activities and evaluations of risk management (compare Sjöberg, 1999).

Evidence from SVS studies, reviewed in the previous section, adds to other research that supports this notion.

But trust is not always important. As already noted, and as demonstrated by Yamagishi's research, trust is one of two routes towards reliance. Trust may not be as relevant to perceptions of risk when strong relational assurances of reliable behaviour exist. Institutionalized accountability – a relational assurance – might increase reliance and cooperation (see Frewer et al, 1998).

Trust, and distrust, should also *de*crease in relevance as the need to rely on risk managers *de*creases. The already-noted studies on the relative importance of credibility seem to support this conclusion. As expected, strong correlations between social trust and judged risks and benefits have been found for hazards about which people did not possess much knowledge (Siegrist and Cvetkovich, 2000). No significant correlations between social trust and judged risks and benefits occurred for hazards about which people were knowledgeable.

Nevertheless, the results of our telephone surveys on the forest management policies of representative residents of Arizona, Colorado and New Mexico, as well as California, provide mixed evidence about the importance of self-assessed knowledge (Cvetkovich and Winter, 2004). Evaluations of the effectiveness and acceptability of forest practices to protect species indicate that trust of the Forest Service is more important for those with lower self-assessed knowledge than for those with higher assessed knowledge. But the difference does not seem to be as strong as that reported in the earlier study. Trust was a significant predictor at both high and low levels of self-assessed knowledge of evaluations of the wildfire management practices of mechanical interventions, bans/closures and signs/restrictions on use (Winter and Cvetkovich, 2002). For other wildfire management practices, the amount of variance in evaluations explained by trust differed according to levels of self-assessed knowledge, although not always in the expected direction. Levels of self-assessed knowledge may be an important consideration in determining the role of trust in public attitudes and perceptions. However, these results indicate that its actual weight may sometimes be insignificant, and that its specific role is somewhat unclear. Even a very knowledgeable individual has little direct ability to mitigate many important hazards.

DISCUSSION

What is trust?

Our discussion of the 'what' of trust makes two suggestions: the differentiation of simultaneous modes of processing that contribute to the products of information processing, and differentiation between the two paths of reliance – trust and assurance. In both cases, we believe that there is multiple-level evidence to indicate that these distinctions are valid and useful. Here we deal with a few of the issues and implications of these distinctions.

Modes of information processing

As we collectively build on the distinction of modes of information processing in developing our understandings of trust and cooperative risk management, our conceptualizations should reflect the mutually dependent nature of the two modes of processing. We should avoid thinking of these as two separate dimensions or states.

Significant research measurement and design questions are raised by dual-mode processing. Frequently used paper-and-pencil self-report measures alone may not yield valid measures or produce comprehensive understandings of the mutual functioning of both modes. There are increasing examples of research that uses various qualitative data collection methods (see Walker et al, 1999; Earle, 2004; Chapter 5 in this book; our focus group study mentioned earlier). A combination of types of research across studies, if not in the same study, is required not only to better understand dual-mode information processing, but other aspects of trust, as well.

What practical implications for cooperative risk management in democratic societies do we take from our recognition of dual-mode

processing? Paul Slovic and colleagues (Slovic, 1999; Slovic et al, 2004) have begun exploring some of the possibilities. In the past, we often assumed that people should be operating in the explicit mode and, therefore, would be responsive directly to scientific and technical information. As we become increasingly aware of the primary importance of implicit processes, what importance should emotions and heuristic-based judgements have in cooperative risk management? Rejection of the importance of emotion has been referred to as 'Descartes' error' (Damasio, 1994). We should take care not to commit the opposite of 'Descartes' error' (the 'New Age' error?) and allow emotion to become the trump card in our discourses on cooperative risk management. Recognizing the role of both emotion (specifically through personal values and importance of things to self) and fact-based alternatives seems to lead to better collaborative decisions when the public is involved (Arvai et al, 2001).

An interesting and important avenue of future exploration is the examination of the possibility that trust and distrust differ in the balance of implicit and explicit information processing. The agreement underlying trust may induce less active explicit information processing than does the disagreement underlying distrust. Earle (2004) found that the number of comments made while talking aloud about a statement on global climate change, an indication of conscious thought, was negatively related to the level of trust felt for the person making the statement. Individuals described by Pidgeon, Woortinga and Walls (see Chapter 5 in this book) as having 'critical trust' seem to be in an active explicit mode of information processing.

Outside the normal range of psychological functioning, extreme distrust (paranoia) seems to involve both considerable amounts of explicit processing as well as 'hot' emotional implicit processing. Paranoid representations are characterized by an active suspicion that other people not only have ill intentions, but that they are attempting to conceal these intentions (Kramer, 1998, 1999a, 1999b; Kramer and Messick, 1998; Kramer and Wei, 1999). Active suspicion engenders a form of explicit processing that Kramer (1998) refers to as a 'ruminative mode of social interaction'. This information processing is characterized by hypervigilance and 'dysphoric self-consciousness'. Paranoid attributions about other people are self-conscious in that they primarily focus on implications for the person making the attribution. Self-referent content is continuously read into others' thoughts and behaviour: 'Other people are thinking about me and they have hostile intentions.' The attributions are dysphoric in that they produce uncomfortable, often extreme, negative emotional reactions.

By definition, paranoid beliefs are irrational in the sense that the underlying suspicion is not based on evidence. Most of us at some time have irrational thoughts about others' intentions towards us. An important distinction between pathological paranoia and normal paranoia is flexibility. While attributions of distrust, and trust, tend to persist (see the earlier section on 'The "how" of trust: Social psychological processes involved in trusting') most of us do not continue to persist in our irrational suspicions (Kramer, 1998). Investigations of flexibility comparing pathological and normal suspiciousness could yield important practical and conceptual results.

Assurance and trust

Differentiating between the two routes of reliance should promote the development of better conceptualizations and increase the likelihood that applied efforts will be effective. Confusing the routes of reliance leads to using the same terms for processes with different meanings on the functional level.

We think that a strong argument can be made for the theoretical and practical advantages of better understanding the joint operation of relational assurances and trust. While there are active areas of research and conceptualization on relational assurances – for example, on procedural justice – those of us interested in cooperative risk management have not given as much attention to assurance as perhaps we should. The focus of reliance research has been mostly on trust (at least in name). In many studies, trust has been used interchangeably with confidence, overlooking a possible difference between the two. This is one of the consequences of not distinguishing between the two routes of reliance. We discuss some possible ways in which assurance and trust influence each other below in the section on 'The "when" of trust'.

Recognizing the distinction between routes to reliance should lead to an increased focus on relational assurances. We suggest that it is important to redress this imbalance. Further support for greater attention to relational assurances is provided by Haslam and Fiske, who have concluded that mind reading, such as that involved in trust, may not play the dominant role in everyday social cognition. Mind reading 'is only one part of the social cognitive apparatus that underlies social expertise, and is not obviously pre-eminent among the different parts. Shared understandings of relationships ... are distinct and demonstrably important in everyday social cognition' (Haslam and Fiske, 2004, p3).

The 'how' of trust

The 'what' of trust section presents our framework of conceptual terms. Within this framework, our examination of the particulars of trust, the 'how' and the 'when,' uses the salient values similarity model. We have reviewed the results of research using the SVS model as an illustration of one direction that can be taken to reduce the conceptual jumble that the field of trust and cooperative risk management finds itself in.

The SVS-based studies reviewed are illustrative of an identified trend in trust research. Earle (2004) points out that 'the overall trend in studies

of trust in risk management over the past decade has been from the general and abstract to the specific and concrete'. Earlier studies assumed that trust is based on universal normative characteristics, such as 'objectivity' and 'fairness'. More recent studies, including the SVS-based studies discussed, recognizing the importance of social identity, have focused on the influences of context-specific characteristics.

The two lines of SVS research discussed focus on representations of the actions of risk managers. One of these lines of research indicates that the similarity of risk managers' values is the basis of trust, and demonstrates the importance of perceived value/action consistency and the judged legitimacy of inconsistency. Perceived value/action inconsistency and judged illegitimacy of inconsistency affect SVS-based attributions about the mind of risk managers by increasing suspicions of motives and morals, thereby decreasing trust. These findings suggest that risk managers should attempt to act consistently with shared values and to make efforts, when possible, to explain apparent inconsistencies.

The other line of research suggests that existing levels of trust affect the representation of new information about a risk manager. The representation, in turn, affects the amount of change in trust. Trust leads to an expectation about risk managers' actions. Actions that are consistent with expectations (trust based or otherwise) have a bigger effect than expectancy-inconsistent actions.

There are important limits on these conclusions. Measured effects in the reviewed studies are immediate, not long term, are self-report questionnaire based, and are often on topics not personally relevant to respondents. Distinctions between trust and confidence are not always made in these enquiries, and may be blended for our respondents. These studies on change focus on process, not static states. An important unanswered question about change is 'Under what circumstances do accumulated inconstancies become sufficient to overcome the inertia of expectancy/trust persistence?' Again, there is a suggested need for multiple innovative research methods and designs that move away from one-time research snapshots of trust.

The 'when' of trust

Trust is an important influence on perceptions of risk and evaluations of risk management policies, but not always. Efforts to identify when trust is important are needed. In this section, we consider two influences: self-assessed knowledge and existing assurances.

Self-assessed knowledge

We have reviewed evidence indicating that risk perceptions and risk management evaluations are more strongly influenced by trust for individuals who assess their personal knowledge as low than for individuals who assess their knowledge as high. Since reliance on trust does not always decrease with increases in self-assessed knowledge, issue-specific characteristics may have an influence. One possibility that should be explored is the individual's assessment of the functionality of their own level of knowledge. A person may assess his or her own knowledge as high, but not as high as that of the risk managers. Or a person may assess their own knowledge as high, but have concluded that it makes little difference to effective risk management. The nature of the issue, the operation of the political system, or some other factor may 'disconnect' own knowledge from effective actions.

We have measured self-assessed knowledge rather than using objective knowledge tests for two reasons. The first reason is the difficulty of creating an objective measure of knowledge of risk management issues that is manageably short and comprehensive, measures functional knowledge, not esoterica, and is acceptable to 'experts'. On this last point, we have discovered no surer way of inducing critical questions and, at times, heated exchanges at professional meetings than by presenting a risk management knowledge test. The second and more significant reason for measuring self-assessed knowledge is an assumption of the psychological immediacy of self-assessed knowledge. We assume that a person's perception of who she or he is, including assessments of topical knowledge, more immediately relates to psychological functioning than does a measure of knowledge according to an external standard.

Having recognized the bases for our focus on self-assessed knowledge, we hasten to add that our identification of the trust-relevant constituents of social representations includes representations of knowledge as well as attitudes, values and other evaluations. We also recognize that in the context of cooperative risk management, there is often a need for understanding the content of people's knowledge. Simply to know that people think they are very knowledgeable or not, without knowing what the content of their understanding is, is often insufficient. Breakwell (2001) has recently integrated a mental models approach in an analysis of the social identity processes influencing the social representations of health and environmental hazards. She states that 'The particular value of the mental models approach for risk communication is that it requires one to think in terms of a complex interacting system of beliefs which underpins risk appreciation' (Breakwell, 2001, p342). The mental models approach offers suggestions for solving at least some of the measurement problems noted above, including comparisons of the understandings of the public with those of risk managers and others (Atman et al, 1994; Bostrom et al, 1994; Morgan et al, 2001; Niewöhner et al, 2004). We suggest that future research on knowledge and trust includes efforts that combine a focus on social representations and mental models.

Trust and relational assurances

One interpretation of Yamagishi's cross-national research (Yamagishi et al,

1998a; Yamagishi et al, 1999) is that reliance does not always require trust. The Japanese evidence seems to indicate that reliance can be based solely on well-established social relationships or, by extension, other assurances of dependability. In contrast to Americans, Japanese seemingly shun reliance based on (hastily) arrived-at representations of another person's character. This Japanese tendency may be shared by others from collectivistic societies who are much more likely than Americans to attribute the causes of behaviour to social context than to individual characteristics (Miller, 1984; Lee et al, 1996).

Understanding when trust is important requires understanding the range and frequency of occurrence of the possible range of relationships between trust and assurances. At times, as is indicated by the Yamagishi example, a relational assurance is the abiding route to reliance with trust serving, at most, as a fine-tuning function. In other cases, we might rely on others only based on trust without relational assurances, operating like a member of a high-flying trapeze team working without a safety net. As a third possibility, trust and assurance can be convergent routes to reliance. Reliance occurs both because the other individual is trusted and because there are convincing relational assurances present. In this case, there may be trade-offs between trust and assurances where the same level of reliance might be produced by various combinations of the two. The existence of both trust and assurances also raises questions of how the two affect each other. For example, might strong assurances result in a conclusion that a person is less trustworthy than if weaker, or no, assurances are present (compare Frewer et al, 1998)?

The relationship between trust, relational assurances, reliance and behaviour is in need of continuing exploration. The number of unanswered questions emerging in our discussion supports this. The continuing questions of risk managers focused on how to build, maintain and restore warranted trust also evidences this.

Notes

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2 Some selected references are Bargh (1997); Chaiken and Trope (1999); Chen et al (1999); Epstein (1994); Hammond (1996); Reyna and Adam (2003); Sloman (1996); Smith and DeCoster (2000); Winston et al (2002).

3 Thomas Hobbes recognized trust as a social emotion during the 17th century (see Hobbes, 1999). We will not provide extensive documentation for the claim that trust is a social emotion. Trust does share characteristics with other social emotions. In addition to preparing us in a holistic way to respond to another, it often occurs rapidly, and we often cannot specifically explain why we trust someone except in very general terms.

4 It is important to emphasize that our conceptualization is that salient value similarity affects levels of trust and that levels of trust affect evaluations of management policies and the acceptability of technologies. Salient value similarity may, in some (but not all) cases, directly affect evaluations; but this relationship is not part of our model. The finding that salient values also directly influence evaluation does not invalidate the model – compare Poortinga and Pidgeon (2003) and Chapter 5 in this book.

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