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ABSTRACT

This paper explains and discusses the outcomes from an action research study into on-line participation. Two, often countervailing notions of rationality are examined, firstly by deconstructing individually held, subjective constructs of trust and power and, secondly, by examining collectivist assumptions regarding the formation of online communities. We contest assumptions from the literatures, which over emphasise the importance of IT in 'constructing' online communities, stemming from the adoption of a wholly rationalist view of the human participants – as pursuers of knowledge, regulated and directed by rational principles.

Keywords

Action Research, Bounded Rationality, Business Communities, Community of Practice, Deconstruction, e-Collaboration, Rationality, Trust, Power.

INTRODUCTION

The subject of individual and interpersonal trust within communities has captured the attention of sociologists and psychologists for many decades, having intensified with the advent of virtual or online communities and their potential for increasing social inclusion. E-collaboration, particularly for business purposes, requires the communication of 'rich' information (Daft & Lengel, 1986), of high utility value to its recipients, such that it facilitates 'rational action' (Ulrich, 2001).

Communities are identifiable by the levels of trust, reciprocity, dependence and formality exhibited by their members. The development of such e-communities has presented IS developers with a long standing and on-going problem articulated by Kollock and Smith (1996, p. 109) as follows: "At the root of the problem of cooperation is the fact that there is often a tension between individual and collective rationality". This 'tension' has led to confusion amongst researchers and developers, with the result that individual and collective rationalities have often been conflated.

In response to this problem, this paper deals explicitly with individual rationality, *distinct from* but *related to* the collective. We adopt for this purpose, Simon's (1957) notion of 'bounded rationality' to explain how individuals recognise the cost of gathering and processing information and how its utility contains multiple values. Among the multiple values under consideration, the presence of trust is of primary concern for would-be, on-line collaborators. Trust is a complex entity, affecting individual and group attitudes and behaviours. Its presence in both techno-scientific and social science literatures on e-collaboration is recognition of its importance. It is considered to be an essential feature of economy and commerce in reducing complexity by providing "internal security" before taking action (Abdul-Rahman and Hailes, 2000). By deconstructing the elements of individual trust, this paper provides systems developers with a modus for managing and enabling e-collaboration.

BACKGROUND

European Union (EU) and UK Governmental policy for providing assistance to small and medium sized enterprises (SMEs) has evoked criticism from many quarters (Lightfoot, 1998; Storey, 1993). The quality of information and the way it is disseminated to SMEs, is regarded as being designed primarily to fit the providers' internal cost systems, resulting in less than ten per cent of SMEs actually receiving assistance (IIB, 2002). SMEs exist at the lowest of a three tier hierarchy in which they are classified as 'beneficiaries' of business improvement programmes and packages established at EU /Government

level, who operate as resource holders at the topmost tier. At the second level are the agencies; selected according to predetermined organisational rationales, "from a distinct auspice of power and knowledge" (Clegg 1989:192) to administer and implement programmes in accordance with rules and procedures. In this way, power is delegated and simultaneously increased, with obedient agencies directing routines with little autonomy or discretion. Nolan (2005) examined the power structures from within this scenario together their resulting inequalities, by utilising Clegg's (op cit.) Foucauldian 'Circuits of Power' framework.

In order to counter the inequalities outlined in the scenario above, a demand-led, on-line learning network/community was developed in which SMEs could engage on their own terms with their information providers thus overcoming the top-down nature which characterised information delivery. By utilising relevant software (groupware) tools, the on-line community would be a totally interactive entity, thus differentiating it from the passive, information-retrieval modes used by government and its agencies. The authors conceptualised the information system from the 'infological' perspective, focussing upon the social system, which organises the provision of information. (Baskerville and Wood-Harper, 1998: Mumford, 2001).

The 'problem' of engendering on-line trust is conceptualised differently according to two schools of practice: either as an engineering problem or as a social problem. Engineering developments have demonstrated the effectiveness of online community tools at connecting people to one another and helping them to share information. Developments and discussions amongst the technocrats naturally look towards possibilities for making these tools even more powerful. Jordan et al. (2003), for instance, seek to enhance trust by this method and thereby to "further public discourse" in online communities.

To the engineer, trust is seen as a feature and a subsystem - an engineering problem that could be overcome, someday, with the right combination of usability design, standards, and architecture. The formal programs and features embedded within so called 'trust-mark' brands (Durkin et al, 2003) as Ebay and Amazon's systems are often cited as exemplars of trust enabling mechanisms for virtual 'communities of consumption' (Kozinets, 1999). Reed, meanwhile, (2001) asserts that the utility of large social networks scales exponentially with interconnectivity; the engineering community thus appears to assume a direct, causal relationship between connectivity and trust. Yet in relation to the broad literature covering trust, developments at the user interface relate only to one form of online trust relationship: the impersonal institutional phenomenon variously known as 'structural' or 'system' trust. According to McKnight and Chervany (1996), system trust is not founded on any property or state of the trustee, but rather on the perceived properties or reliance on the system or institution within which that trust exists. The engineers' supposition regarding the relationship between connectivity and trust appears rather tenuous when, according to Kollock (1996), the problems of social interaction and order are often ignored in the software and online industry in their discourse on 'social computing'. He considers this to be a "thin term" applying more to the user interface design than to actual social interaction between two or more people.

Social science switches the focus of attention away from the system-individual relationship onto interpersonal relationships between individuals. The notion of 'interpersonal' trust can be thought of as the everyday meaning of trust as, in order for meaningful outcomes to occur, one person trusts another specific person or persons. For partners in business or retail transactions, it is often defined in terms of trusting beliefs about the other party's predictability, benevolence, honesty and competence plus a weighting given to events that provide information about the person's motives for being in the relationship (McKnight and Chervany, op cit). Identity based trust is a further subset of interpersonal trust (Lewicki and Bunker, 1996), which pervades when individuals are able to comprehend and appreciate the needs of each other: where shared meanings and culture are manifested and there is a commitment to common values, objectives and a collective identity. However, if not developed, the lack of identity based trust can be extremely detrimental to group process and performance.

Castelfranchi and Falcone (1998) with their 'five element strategy' addressed a wider agenda, encompassing both the engineering and social paradigms approaches comprising: human-computer (or systems) trust, interpersonal trust relationships and dispositional trust, together with risk and attitude, and potential gain. They and others, point out the necessity for understanding that virtual communities and their supporting ICTs are embedded in human interpersonal, social and legal relationships, (see also: Hartmann, (1995) and Leiwo and Heikkuri, (1998)). Kollock (op cit.) deals comprehensively with individuals' perceptions of risk within a range of community based contexts, where risk and trust are dynamically related (see also: Abdul-Rahman and Hailes, op cit; Tan and Thoen, 1999; Marsh, 1994). Three 'important' properties of trust have been identified as a) its dependency on the context (Coetzee and Elof, 2005), b) the view that trust is a measurable belief that reflects its strength

(Grandison, 2003) and c) whereby trust is considered as a subjective entity, evolving with time through new experiences and observations (Dimitrakos et al, 2003). This third property provides the focus for the remainder of this paper.

E-collaboration involves the transfer of 'rich' information. Due to its capacity for facilitating the transfer of tacit knowledge, the type of community, which most epitomises information richness, is, perhaps, Wenger's (1991, 1998) Community of Practice (CoP). It has also proven to be the most elusive to IS development (Congla and Rizutto, 2004), due to its inherent characteristics, to which Wenger alerts us when explaining that: [it is] not something that can be determined in the abstract, but by analysing the way the group operates, [making them] an analytical concept existing in a theoretician's mind, while existing in an actual social structure, because they exist in the world and can be seen. If CoPs provide the best example of *where* e-collaboration takes place, the *process* of e-collaboration is explained partly through the notion of Legitimate Peripheral Participation (LPP) (Lave and Wenger, 1991). LPP is a complex and composite supposition, in which the three constituent aspects, legitimation, peripherality and participation are indispensable in defining each other and which cannot be considered in isolation (Kimble et al. 2001). Whilst LPP explains contributions in terms of social situatedness, social identity and social orientation theories also resonate strongly with this inquiry. Mullins and Hogg (1999) propose that social identification affects both self-conception and intergroup orientation focussing on how the self is defined by group membership.

Of particular relevance is the notion of 'social loafing' (Karau and Williams, 1993). They propose in their Collective Effort Model that LPP is influenced by a set of individual and group factors which explain why individuals will withhold contributions to a group or community. Social loafing is common where groups undertake 'additive tasks' i.e. where the group output is greater than individuals' contribution. This phenomenon can be reduced by ensuring that individual contribution is noted and valued by others and the individuals themselves; by enhancing the importance of tasks and information; by providing some form of reinforcement (reward or punishment). Small groups are better in providing social cohesiveness, whilst time pressure (an important factor within business communities) is important and can lead to members withholding important information.

METHODOLOGY

An Action Research (AR) approach was adopted due to the practicalities of information systems development (ISD). Firstly, AR emphasises collaboration between researchers and practitioners (Avison et al., 2001) – a necessary condition for ISD. Secondly, it presented the researchers with the dual challenges of bringing about improvements to the problematic situation such as that outlined above, whilst generating new knowledge and understanding (Mumford, op cit.; McKay and Marshall, 2001). The AR process was designed in accordance with Baskeville and Wood-Harper's (op cit.) process model, which stipulates collaboration and ISD (the 'primary goal'), within a 'rigorous' structure. The iterations took the form of three cyclical 'interventions', adhering with Susman's (1983) process model, involving a five stage model of diagnosis, action planning, action taking, evaluating and specifying learning. Rigour was assured through the action of contextualised evaluation and learning, from which the key issue (trust) was identified and later became the focus of the study.

More than a dozen forms of AR have been identified (Davison et al., 2004). Klein & Myers (1999) observe that the underlying epistemological assumptions for AR may be positivist, interpretivist or critical in nature. Accordingly, Participative Action Research (PAR) was adopted due to its "close harmony" with critical epistemology (Klein and Myers, op cit.; Reason, 1994). The aims of PAR are firstly, to produce knowledge and action directly useful to a group of people. The second aim is to empower people at a deeper level through the process of constructing and using their own knowledge: enabling them to 'see through' the ways in which the establishment monopolises the production and use of knowledge for the benefit of its members. This has been coined as consciousness-raising or 'conscientisation' (Freire, 1970): a "process of self-awareness through collective self-inquiry and reflection". Its third aim is the establishment of genuine collaboration and co-learning between researchers and participants in the shared desire to produce solutions to local problems (Pauleen and Yoong, 2001; Elden and Levin, 1991). Whilst historically, PAR has been associated with political and liberation movements, it has since been widely applied to contexts including organisational change (Santos, 1991).

Thus PAR, whilst driven by 'political' motives, shares similar principles and characteristics with Susman's (op cit.) iterative model, as well as its "primary goals" (Baskerville and Wood-Harper, op cit).: the production of knowledge through action, local solutions, collaboration and joint learning

within a research community. As a means for ensuring that rigor and relevance in the AR process match that acceptable within other methodologies, Davison et al. (op cit.), advocate the use of 'Canonical' AR (CAR) in the form of principles and criteria for evaluating IS research.

ANALYSIS

Data was collected from interviews, meetings and observation, at each of the three AR 'cycles'. The authors adopted a process of continual re-examination, reflexivity and refinement, through interpretation of interview data and comparison with the relevant literature (hermeneutics).

The first constituent element of individual trust for e-collaboration was found to be the information's Utility value (measured by high information quality such that it can be absorbed into immediate practice). Recipients assess Utility through a cognitive process relating to the degree to which information can be applied through action (Ulrich, op cit). Where Utility value is low, the information, whilst of personal interest, adds little value to an individual's decision making process. This situation is common to Communities of Interest, which describes a group of people connected by a common interest in a specific subject or endeavour (Rheingold, 1993). The level of interest may range from passing to intense, and may, over time, develop into expertise on a subject, but with participation within these communities generally limited to information seeking around pastimes or hobbies they hold only peripheral relevance for businesses.

Disclosing personal or proprietary information involves Risk, with individuals judging the likelihood of information falling into the wrong hands, or being misused by its recipient. The system's security too comes under scrutiny – the firewalls, methods for authenticating membership and how the system is monitored – each impact upon the perceived risk. Trust reduces the risks associated with information sharing. Individuals differ in regards to their risk thresholds, which can be low if the value of the transaction is high, or high if the individual is a risk seeker (Castelfranchi, and Falcone op cit, Lewicki and Bunker op cit). Where an individual believes that information is of high Utility value, this factor will outweigh the social, 'interpersonal' element of Risk.

Information givers demand reciprocity or Benefits to accrue in return for giving. Benefits accrue from an overall perception that involvement will provide individual gain. High Utility value information is a benefit but, in addition, 'soft' benefits also accrue from full participation within a community, such as the ability to participate in group decisions, the general feeling of 'belongingness' and the facility to share problems with others. In addition an individual must perceive that the Benefits outweigh the Effort expended in gaining them. Whilst online systems make it easier to share information due to the availability of technologies and the speed of connections, the expenditure of effort is still required in order to form trusting relationships with unknown persons, in evaluating the trustworthiness of information and so on.

Power was shown to be a strong and pervasive element within the study, with 'Position' power, based upon predetermined hierarchical or status value (Wenger, 1998), particularly prevalent. CoPs value members according what they bring as a practitioner in terms of information and their willingness and ability to share it. Wenger maintains that the capacity to influence others because of specialised knowledge can only be exercised through legitimated inclusion within, and full participation at, the core of a community. Therefore, e-collaboration emphasises Expert Power over the more formalised notion of Personal/Position Power. Those who hold Personal/Position Power within co-located communities run the risk of losing it, which may lead them to attempt to block the community's transition towards e Collaboration. Conversely, those who are likely to gain power through their expertise or who envisage a liberal approach to information sharing are more likely to encourage the transition. The potential for conflict is huge and the likely outcome is that transition to e-collaboration will be blocked. Within the scope of our inquiry, we found that several co-located communities held back from making the transition to online, due the fear held by key people regarding their possible loss of power from such a move. The relationship between each of the elements is shown in figure 1 (below).
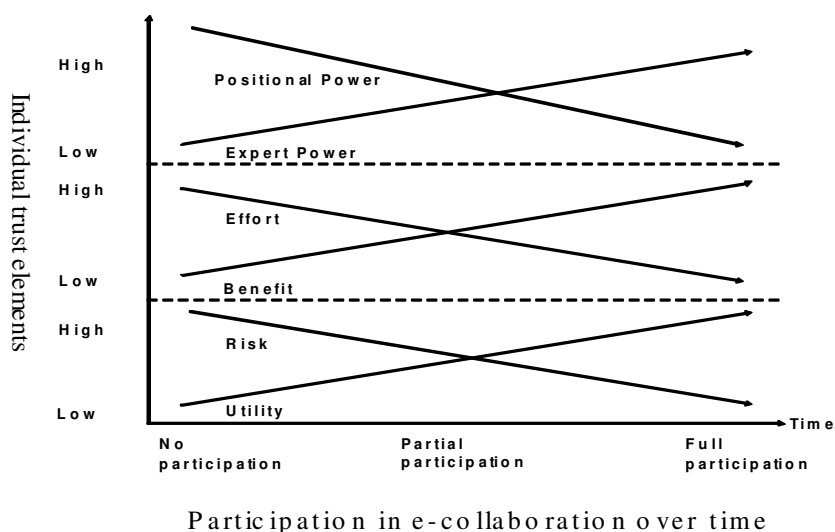
Participation in e-collaboration over time

Figure 1: The relationship between individual factors and e-collaboration

DISCUSSION

The focus on the interaction between trust and participation (in which technology and social variables are embedded), is an approach borrowed from Lee's (2001, p. iii) proposition that: "Research in the information systems field examines more than just the technological system, or just the social system, or even the two systems side by side; in addition, it investigates the phenomena that emerge when the two interact."

Within this section, we juxtapose these factors, drawing out lessons for IS developers and researchers.

Interaction has figured strongly across many research traditions, such as Actor Network Theory, Information Science, Constructivism and Critical Theory. This paper has examined interaction at a *meta* level - within and between each of the above traditions: the complexities of which are illustrated in Figure 1 (above). Technology provides connectivity between 'islands of knowledge' and will enhance trust. Yet the relationship between connectivity and trust is relatively weak, leading us to suggest that the presence of engineering-led design features should be considered as a 'hygiene' factor, such that the absence of community tools will hinder trust development, but their presence will not stimulate meaningful discourse *per se*. The balance therefore lies with social factors.

Both 'social loafing' and 'legitimate peripheral participation' explain why individuals will withhold contributions to a group or community. The dynamic presence of the trust elements signifies the fluid and temporal cognitive 'states' associated with each. An online community can disintegrate at an alarming rate, with the absence of physical cues making continued dialogic communication (or full participation) a critical factor in its continuance. When the numbers of part participants – those 'lurking' at the periphery, fall below a critical mass, even if for only a short period, trust and confidence held by those at the core can be eroded as they begin to doubt the others' motives.

CONCLUSION

Individual Trust has been deconstructed into its constituent sub-elements, from which a theoretical discourse links trust related behaviour to e-collaboration. Armed with the understanding that an imprudent reliance upon the techno-engineering paradigm will result in a technically enabled, discourse impoverished membership, the IS practitioner can operate with a light touch to achieve a balance between the technical and social requisites for e-collaboration. Furthermore, an awareness of the dynamics between the trust elements – Risk, Utility, Power, Effort and Benefit – enables the IS practitioner to diagnose the real-state nature of an online community and thereby overcome the difficulty presented by many experts and advisors who appear to imply that community development remains a largely intuitive pursuit.

The 'failure' to develop e-collaboration, whilst proving a salutary experience, provides a further lesson for practitioners. Often construed as an irrational form of resistance on the part of members, which can take on the "illusion of grand design", suggesting a uniform response (or resistance) from the user group (Introna, 1997), this 'resistance' merely confirms Avison et al. (op cit.) assertion that the 'real' power lies with the 'clients' and not with the researcher/developer. Power, as we have seen, is an enormous force and it is the wise IS practitioner who will heed Olesen and Myers' (1999) warning, "not to underestimate the power of the counter forces which exist to maintain the status quo".

Wenger's assertion that CoPs cannot be determined in the abstract but by the way in which they work, illustrates the existentialist nature of communities i.e. that they exist not because they have been created or formed by an outside power, *viz:* IS developer; but because they embody meaning to their members. Such communities can only be understood from the inside, in terms of the reality created within. A further misconception held by the IS community stems from the adoption of a wholly rationalist view of the human participants – as pursuers of knowledge, regulated and directed by rational principles. Such a viewpoint ignores the subjective and dynamic nature of the trust development process, evaluated and explained above and which cannot fail to distort the rationalist agenda.

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