

# FAILURES OF REWARD-DRIVEN BEHAVIOUR IN INDUSTRY: A CASE OF SYSTEMS, MANAGEMENT AND CREATIVITY

Stenmark, Dick, Göteborg University, Department of Informatics, P.O.Box 620, 40530  
Göteborg, Sweden, email: [stenmark@informatik.gu.se](mailto:stenmark@informatik.gu.se)

## Abstract

*Creativity is a much needed quality in today's business and therefore an important research area. Whilst implementing and evaluating computer support for electronic brainstorming, it was noticed that the sheer presence of technology does neither guarantee usage nor success. Factors such as organisational culture and attitudes seem to have an equally important role, and this observation called for a more focused analysis of the motivational aspects of creativity management. Based on the empirical data from the electronic brainstorming system evaluation and literature on the social psychology of creativity, five pieces of managerial advice to promote corporate creativity are presented: reconsider extrinsic rewards; recognise creative initiatives; encourage entrepreneurship; allow redundancy, and; support interest-driven activities.*

*Keywords: creativity management, intrinsic motivation, reward systems.*

# 1 A NEED FOR CREATIVITY

As noted by many commentators, the importance of creativity in industry has risen dramatically during the last few decades. During the peak of the industrial era, a company could prosper from slowly developing and refining one single product or service. The increasing pace with which business now reshapes itself – propelled by the new capabilities offered by information technology (IT) – places higher demand on the organisational members to be able to see and grasp new opportunities. Globalisation, and the competition that accompanies it, further adds to the need for creativity in an entrepreneurial way, and it is argued that employees of tomorrow will be valued more for their ability to create new knowledge than for being able to manage known facts (di Sessa, 1988; Reich, 1991; 2002; Drucker, 1993; Carr, 1994). Successful handling of creativity is therefore a factor of increasing importance and should be considered a vital aspect of (knowledge) management.

Although creativity is highly unpredictable, it can still be promoted. If you in a library start reading book after book looking for a particular word, you cannot predict when and where it will show up, but you know with certainty that you will eventually find it. However, by carefully choosing what shelf to start from, you may increase the probability for the sought word to turn up. Similarly, managing creativity is about raising the probability for creative acts to happen by stimulating the factors that works in favour of creativity (Robinson and Stern, 1997).

## 1.1 Traditional suggestion systems

The traditional way for industry to address this need for continual improvements has been to implement some form of suggestion system and to encourage employees to submit improvement proposals to it. This approach has been used in US and European companies since at least 1880 (Robinson and Stern, 1997). The proposals and ideas submitted are then typically attended to and reviewed by Proposal-Handling Committees (PHCs). Good suggestions are usually rewarded in some way, whilst not so good proposals are rejected. However, serious shortcomings with such systems have been identified (Stenmark, 2001b). Firstly, there is a problem of communication. Suggestions are seldom shared within the organisation. Good ideas may be implemented locally but remain unheard of in other parts of the organisation, resulting in the “reinventing-the-wheel”-syndrome. Other ideas may be prematurely rejected due to the proposer’s problem to accurately communicate the vision that he or she has, or the PHC’s limited capacity to understand and appreciate the quality of a perhaps innovative – and thus unconventional – suggestion. Had these ideas only been made public, they could have started other creative ideas elsewhere in the organisation.

Secondly, many ideas are never proposed at all – for several reasons. One thing generally recognised as a serious performance blocker is evaluation apprehension: the fear of being measured by ones’ peers. We are reluctant to present “silly” ideas if we risk losing face in front of our colleagues. Instead, we keep our potentially revolutionary ideas to ourselves, again missing an opportunity for organisational benefit. Another reason is the threshold an official suggestion system constitutes: we may feel that our idea is not worthy of being submitted as an official proposal or we may lack the ability or motivation to write-up our proposal in the form required for a suggestion to be accepted

## 1.2 An alternative approach

Another tradition with a long history in both industry and academia is brainstorming (Osborn, 1953). Ever since introduced in the 1950’s, brainstorming has existed alongside the suggestion systems approach, but although the two traditions have more or less the same objective, the two tracks have never met. The work described in this paper is the result of an attempt to improve corporate creativity by designing and implementing IT support for a brainstorming-based approach to idea generation. By adding the principles underpinning brainstorming as posited by Osborn – *i.e.*, quantity over quality,

elaboration on others' ideas, and absence of criticism – to an online suggestion system, the problems mentioned above could be addressed. This hybrid approach resulted in Mindpool – an electronic brainstorming application prototypes. The technical features of this prototype have been described in detail elsewhere (cf. Stenmark, 2001b). The focus in this paper is on the managerial implications derived from the evaluation of the system.

Next, we are going to look at existing theories on creativity before describing the site and the research methodology used in this work in section three. Section four briefly describes some of the fundamental features of the electronic brainstorming prototype used in this research. Thereafter, the results are accounted for in section five and discussed in detail in section six. The paper finishes with conclusions and managerial implications in section seven.

## 2 THEORIES ON CREATIVE WORK

Much has been written on creativity and from many different perspectives. Amabile's work on the social psychology of creativity (cf. Amabile, 1983; Amabile *et al.*, 1996) seems to be a common denominator and her work is generally regarded as a classic in the empirical study of creativity. One fundamental principle for creative work identified by Amabile is the importance of intrinsic motivation. Intrinsic motivation is defined as "motivation that arises from the individual's positive reaction to qualities of the task itself; this reaction can be experienced as interests, involvement, curiosity, satisfaction, or positive challenge" (Amabile *et al.*, 1996, p. 115). Extrinsic motivation, in contrast, is defined as "motivation that arises from sources outside the task itself; these sources include expected evaluation, contracted-for reward, external directives, or any other similar source" (Amabile *et al.*, 1996, p. 115).

Strong evidence exists showing that the use of rewards in creative work has a detrimental effect on performance, especially if the reward is used to induce people to do things they otherwise would not. The presence of rewards causes a focus on extrinsic motivation even if an intrinsic motive existed at the outset. The negative effect reward has on intrinsic motivation, and thus on creativity, increases as the reward becomes more salient. However, it should be mentioned that under certain circumstances, *e.g.*, when the reward is used to signal the positive values the organisation places on creativity, rewards *can* have a positive effect on creativity. In general, though, rewards should be understood as extrinsic motivation with all the negative effects just accounted for.

According to Amabile's work, there are six social factors, of which reward is the first and strongest, that have particularly high impact on organisational creativity. We shall next briefly describe these.

1. Reward has since long been the main reason for work, and most adults would not engage in their profession without monetary compensation. However, consistent reports show that working primarily for extrinsic motivation has a negative impact on creativity (cf. Robinson and Stern, 1997). Fortunately, there are ways to limit this negative effect, or even, under the right circumstances, turn it into a facilitator.
2. Control from administrative superiors, both financially and conceptual, typically affect creativity negatively. Higher degree of self-control over one's work – including both choice of task and method for completing task – stimulates and enhances creativity. Nonaka refer to this sort of self-organising as individual autonomy (Nonaka, 1994; Nonaka and Takeuchi, 1995).
3. Play at work occurs when people have enough time and freedom to constructively experiment with ideas not immediately useful from a business perspective. Though not all play is creative, all creative acts include an element of play. Enabling this at an organisational level requires an amount of redundancy not often seen in today's slim organisations (Nonaka and Takeuchi, 1995).
4. Organisational climate can include inhibiting factors such as fear of failure, pre-occupation with routines and traditions, excessive reliance on salient rewards, suspicion towards new ideas, lack of management support for innovations, or a too rigid organisational structure that cannot adjust to the changes innovation may bring. It may also contain the exact opposite.

5. Work settings with low levels of surveillance generally offer better conditions for creativity since evaluation apprehension has been recognised as a major hampering factor in brainstorming (Diehl and Stroebe, 1987). This suggests that group work, or other similar arrangements where people are able to observe each other's performance, should be avoided for creative work.
6. Individual differences are obviously important to understand. Some individuals might have developed particularly high resistance to the negative effects just mentioned, and thus be able to act creatively even under surveillance, evaluation, and in the face of extrinsic rewards. As always when dealing with individual, a collective approach will not fit everyone.

We shall use these six social factors, and reward in particular, when analysing and discussing the empirical data. Before starting with the data, however, we need to learn more about the setting of this research and how the investigation was carried out, and go through a quick explanation of the electronic brainstorming system used.

### 3 SITE AND METHODOLOGY

This research was carried out at Volvo Information Technology's headquarters in Göteborg, Sweden. Volvo IT is an IT service providing company within the Volvo group, and at the time for the research, they had approximately 2,500 employees worldwide. Roughly 900 of these worked at the head office.

Despite being an IT service company, Volvo IT was heavily influenced by the industry legacy from its manufacturing siblings. Volvo IT had a process-oriented organisational arranged to meet the business requirements of the other corporate companies, which for many years had been the only customers. Volvo IT tried to maintain a governance function for IT solutions, assuring that synergies between the various companies within the Group were exploited. A high degree of standardisation was thus hailed as the optimal situation, and Volvo IT's centralised mainframe operation, which had received several international awards for high efficiency and cost-effectiveness, had always been the milk-cow of the company. Volvo IT was, however, not the exclusive provider of IT services within the Group, who could purchase their services also from external providers. As long as mainframe processing was the core of the business, Volvo IT was on top of the competition, but the shift towards more web-enabled solutions opened the field for new and smaller players. This put new demands on creativity and the ability to quickly produce new business solutions.

Although not institutionalised, brainstorming as a method for idea generation and problem-solving was widely adopted within the company and had been used for many years. Brainstorming should here not be understood in the strict Osbornian sense but rather as an unprejudiced and informal meeting where also "wild" and tentative ideas were allowed and encouraged. In the 1980's, the Volvo School – the Group's internal provider of courses and seminars – regularly gave courses in *lateral thinking*, a method for enhancing creativity developed by de Bono, and *mind-mapping*, a technique for developing a more creative and innovative approach to thinking introduced by Buzan. Such non-IT-related topics were removed from the menu during the recession in the early 90's and although the school eventually recovered from the cut backs, courses targeted at enhancing creativity are no longer available.

Instead, Volvo IT maintained a traditional suggestion system, based on the box-on-the-wall principle that has been used in European and US companies for over 100 years (Robinson and Stern, 1997). Employees were supposed to submit ideas and suggestions for improvement to a proposal-handling committee (PHC), which would honour the proposer of a good idea with a financial remuneration. The policy was to let half of the company's first year's savings, which might come to a substantial amount of money, go to the proposer. During 1999, the PHC received 226 proposals and spent a sum of approximately US\$ 45,000 on individual rewards. The numbers for the following years are of the same magnitude. Even if proposals could be sent collectively by a group of people, most of them were submitted by individuals, and it was more usual to see several submissions from the same individual than group submissions.

Diffusion and adoption of technology depends not only on technology itself, but also on structural and cognitive factors such as culture, motivation, trust, and mindset (Orlikowski, 1992). Knowledge management systems in particular must not be seen as stand-alone systems but as a symbiosis between social processes and technology. For these reasons, this research takes place in a real-world industry setting. Having a desire not only to study and understand but also to intervene in and influence the processes under study, this research approach may be described as action case (Braa and Vidgen, 1999). This hybrid is a mix of understanding and change, designed to balance the trade-offs between being an observer capable of making interpretations and a researcher involved in creating change in practice.

Instrumental in this research was the web-based brainstorming application prototype – Mindpool – developed by the author to act as a change agent. The Mindpool prototype system is briefly described in section four. Before installing and evaluating Mindpool, a base line was established by having a master student conducting ten semi-structured interviews with employees about their views on creativity, suggestion systems, and management. These interviews, lasting approximately 40 minutes, included both members of the Proposal-Handling Committee (PHC), *i.e.* the people responsible for evaluating submitted ideas, and ordinary office workers. All interviews were taped and analysed by the author and the master student independently. The results from these 10 semi-structured interviews are reported in section 5.1 below.

Mindpool was implemented and made generally available to all employees on the corporate intranet. In addition, we explicitly invited 32 users to test the application. Amongst these 32 were the 10 people interviewed earlier. Not all invited users took the opportunity to try the application but the log files revealed that 52 different users accessed the application, indicating that it was instead found and used by people other than only those invited. Most people did only read the suggestions without making suggestions of their own, and this sort of “lurking” was an expected behaviour. During the three-week test Mindpool received 22 suggestions submitted by eight different users and 14 of these were submitted the very first week.

After the test period, the application log files were used to randomly select eight users who were interviewed concerning their views of the application. Section 5.2 below summarises these findings. Finally, the result of the master thesis work was presented and discussed at a workshop, which the master student, the author, and some 20 organisational members attended. The notes from this discussion and the interview transcripts were thereafter analysed by the author using the categories suggested by Amabile’s work on social factors for creativity.

#### **4 THE MINDPOOL PROTOTYPE**

Mindpool is an intranet electronic brainstorming system (EBS) prototype, available to the entire organisation. The most fundamental design principles for Mindpool are that work is carried out asynchronously, users are anonymous yet able to contact, and the entire organisation may be involved in the process, rather than just a group of a selected few. The idea is to mimic the creative atmosphere found in brainstorm sessions, where no suggestions are turned down but instead used to spawn new and possibly even better ideas (Osborn, 1953). Unlike ordinary EBS, Mindpool supports asynchronous brainstorming. Users do not have to be active simultaneously, which removes the temporal restriction present in other media, *e.g.* chat forums.

The system further allows the proposer to be anonymous whilst yet providing a mechanism for letting people contact them. The reasons for anonymity are two; firstly, it eliminates evaluation apprehension and thus enables users to submit proposals without risking making fools of themselves – a fact known to have a positive effect on the amount of ideas (Diehl and Stroebe, 1987). Secondly, not revealing the contributor helps separating personalities from the issues, thus promoting a more objective evaluation; especially so when power differences exist amongst the participants (Nunamaker *et al.*, 1991).

Suggestions are submitted as emails and automatically added to a web page. The web is accessible from all platforms and the persistent nature allows the idea to linger long enough for it to be found by many different people in different locations and contexts, thereby allowing ideas to develop long after the point of introduction.

The possibility to add comments directly to the proposal, as is the case in news groups, is absent in Mindpool. This helps shielding the new idea from public negative critique. Still, a mechanism that made it possible to contact the proposer either to ask for or to provide more information was provided. Though the latter may contain criticism, the original idea remains publicly available and can serve as a seed for others, whilst the critique is not displayed. The fact that each contributor can be traced also enables individual recognition, which is otherwise a problem in anonymous EBS. For details about Mindpool and the design rationale, see (Stenmark, 2001b).

## **5 EMPIRICAL RESULTS**

The empirical data was collected via two separate rounds of interviews. The first, with 10 interviewees, was conducted prior to the introduction of the EBS prototype, and the second one, with eight respondents, was carried out after three weeks of prototype usage. The results from these two interview rounds are presented separately below.

### **5.1 Initial interview data**

Most respondents stressed the importance of stimuli of some kind to spark creativity, and mentioned the interaction with other people as an important source. Aside from the shared view of "input from people" as being an important stimuli, a diversity of other situations were mentioned during the interviews: facing a challenging task; going to conferences; visiting other companies; looking at different applications; or doing physical workout. These activities sparked creativity by mentally taking the user somewhere else. However, some respondents also got inspired by indulging in their own work, in particular if the task was non-routine:

"I improvise a lot in my work. I get new ideas while doing things [...]. When I'm focused on a thing or on a work process, I get ideas related to that task. I think it's difficult to just sit down and put on the thinking hat [and produce ideas]; ideas pop up while working."

The above quote also illustrates the opinion shared by all respondents that creativity could not be ordered about. "It's more difficult to be creative when you really have to" is an utterance that well depicts the common view of the interviewees; creativity is highly situated and spontaneous.

In regard to the suggestion system, all respondents believed that a suggestion submitted to the PHC had to be both concrete and well thought-through to be considered. This resulted in the threshold for participating becoming too high. One respondent's comment illustrates this opinion:

"It has to be serious stuff, which makes you a bit reluctant to submit. I mean, it has to be something really worthwhile. Much of what I do is part of my daily work and it's not something you would submit – it's part of my ordinary tasks."

The fact that the suggestion system was a black box underpinned these beliefs since the employees could not see the suggestions submitted by others. This also resulted in some users conveying it as meaningless to submit suggestions since they figured somebody else had probably already thought of the same idea and already suggested it.

The tinkering often associated with creativity can sometimes be a source of trouble if not carried out in controlled test environments. Several of the respondents expressed reluctance for trying out new ideas at work. One Network Operator explained:

“Creativity can cause problems, too. In a production environment that has to work... well, if it is working, you’d better leave it alone and not try to fix it up, because then you create problems.”

The old saying “If it ain’t broke, don’t fix it” did certainly apply here. However, even had there been an interest in testing new things and had an environment in which experiments could safely be carried out existed, the organisational members were simply too busy. Several respondents complained about not having time for extraordinary activities, or to do things outside their immediate duties:

“You [...] don’t have time to speculate, or be creative in a general sort of way. We’re too tightly governed by budgets and deadlines”.

Another interviewee pointed out:

“Not only does it require time but it also takes energy to be creative. [...] If you have too much to do you can’t be creative any more”.

Sending ideas to the suggestion system was one such activity that became down-prioritised due to the high workload. Another reason to withhold ideas was the perceived risk of having to implement the idea yourself, thereby further adding to your workload. One interviewee frankly admitted:

“Should I come up with an idea that would help the company but not give me anything tangible in return, I wouldn’t mention it. I mean, should I suggest it to my manager he would probably want me to take care of it. That’s how they thank you for being smart: you get more work!”

It seemed the interviewees were willing to develop their ideas as long as they were in line with their own interests, and provided that they were given adequate time. They therefore advocated the introduction of a separate “creativity forum” alongside the suggestion system, where creative people would be “allowed to spend time” trying to develop ideas they have. To be recognised as a creative person and officially allowed entry to such a group would be like becoming one of the “Knights of the Round Table”, as one respondent put it.

## 5.2 Application evaluation results

Although some user thought of Mindpool as potentially useful, the prototype application was no immediate success and usage was rather low. The respondents commented this in terms of the critical mass problem:

“I think this is good, if only you get going and get it up to speed, sort of. [...] There’s too little content at the moment – you don’t want to be the first one to contribute”.

Another hampering circumstance was the fact that several interviewees saw Mindpool and the traditional suggestion system as competitors:

“If you have a good idea, why post it here [in Mindpool] instead of submitting it to the PHC? There you might get a reward and you know you’ll get a response. In this system [Mindpool] you just post things and you’ll never know whether someone uses it”.

A similar comment was:

“If I post [my idea] on this web site, someone might take it and send it to the suggestion system, and if it turns out to be useful and rewarded, I don’t get a thing. You don’t want that to happen.”

The fear of being robbed of a good idea that the above quotes illustrate could be traced back to the reward system in place. The possibility of tangible remuneration that the reward system represented was perceived as a motivating factor and the respondents clearly testified that without such a construct there would be no reason to participate:

“If you come up with something useful from a financial point of view, and you know you can get a part of it, you get motivated by the money. It can often be the triggering factor that gets things out in the open.”

The respondents considered creativity and inventiveness to be outside their ordinary work tasks and Mindpool was therefore an application that received marginal interests. Unless you got some extra benefit it did not pay off to be creative and the employees did not bother to engage in creativity that only the company would benefit from.

“The person who suggests something that gets implemented should obviously have a part of it [the profit/savings], not the least so considering that he or she would otherwise not do anything about it.”

Another reason given for not having tried the Mindpool application was the respondents did not have the time:

“I haven’t got round to it. If you don’t do it right away, you forget about it. We haven’t time to be creative on pure speculation”.

## **6 DISCUSSION – EXPRESSIONS OF INTRINSIC MOTIVATION**

The design of Mindpool, with its distributed and asynchronous nature, enabled company-wide brainstorming by using web technology. Mindpool eliminated the need of large facilities and simultaneous sessions, thereby, in theory, allowing company-wide continuous brainstorming. This novel blurring of boundaries between electronic brainstorming and ordinary work activities should have a positive effect on creativity. In practice, however, this effect was not observed, even though the prototype worked well technically. By including insights from social psychology we embrace a multidisciplinary approach to IS use in organisations. To discuss the possible reasons for this unsuccessful intervention and derive managerial implications, we return to the six social factors identified by Amabile and presented earlier.

### **6.1 Focus on rewards**

It was very obvious from the interviews that the organisational members had financial reward in mind when discussing creativity. The practical experiences with Mindpool confirm the findings derived from the previous work at the same site (cf. Stenmark, 2001b) that organisational members express a concern for not receiving recognition and reward for their contributions. This concern can be attributed to the use of a suggestion system based on extrinsic motivation in combination with the lack of group cohesiveness amongst the prototype users (Stenmark, 2002).

The suggestion system in use remunerates the proposer of a good idea with financial compensation corresponding to half of the company’s first year’s savings. However, not many employees actually contribute to the suggestion system. During 1999, the PHC received suggestions from 226 of the 2,500+ employees, which means that less than 10 percent of the organisational members participated actively. Consistent research findings show that the reliance on extrinsic motivation limits participation to typically 10-15 percent of the employees, as opposed to 70-80 percent when no reward system is used, or when recognition is kept to a symbolic level (Robinson and Stern, 1997).

However, when being truly interested in a task, the opportunity to indulge in and develop a task autonomously was tacitly conceived as a reward. This created an intrinsic motivation that did not affect creativity negatively.

### **6.2 Levels of autonomy**

Autonomous and self-initiated activities are powerful because they are driven primarily by intrinsic motivation. When employees are allowed, and in fact encouraged, to pick and pursue their own projects, they are driven by their personal interests. Research in a corporate setting has shown that professional interest rather than espoused theory is what motivates people (Stenmark, 2001a). As we



saw above, Volvo IT employees were allowed to improvise but it was tacitly assumed that improvisation should be limited to problem-solving or other reactive situations only. Time constraints, lack of funds, and – perhaps most importantly – mental restrictions hindered the employees from being creative *proactively*. The testimonies above suggest that employees were activity driven rather than goal driven (cf. Arbaoui. & Oquendo, 1994).

A management strategy to promote creativity would then be to present and motivate the *direction* for work but leave the individuals to conduct the work as they see fit. One benefit of such an approach would be to go beyond the obvious – planned actions can only take an organisation in directions already anticipated. To reach the unexpected, the company must go beyond what is scheduled, and put its trust in the unplanned actions that often are the result of user initiatives. Every unanticipated activity begins as an unofficial task (Robinson and Stern, 1997), and very often, if not always, these unanticipated and unofficial activities are indeed also user initiated and propelled by the users' intrinsic motivation. The expression “skunk works” was coined during the Second World War by the aircraft manufacturer Lockheed Martins to describe a situation where a small group of technicians were allowed to work outside the established bureaucracy and with minimal management control (Mischi, 1999). It has been shown that creativity and innovation are aided by low formalisation and large degrees of freedom, especially during the initial stages (Kanter, 1988). It is also recognised that creativity often requires extra-ordinary dedication and commitment, and that most employees would willingly do far more than the company could possibly ask of them if only they were allowed to work with things in which they were really interested.

### 6.3 Time to play

In modern society, play and work are tacitly assumed to be mutually exclusive – it is being perceived as “unprofessional” to play. From a creative perspective, however, this separation is unfortunate since many important discoveries have been made whilst playing. Hence, more room should be allocated for experimenting. Although it is not desirable to reinvent the wheel from scratch, thereby repeating all the error previously made, it is often necessary to allow every one to build their own wheel. This is due to the strong relationship between knowledge and action. Learning-by-doing is the only way to acquire certain knowledge, and this suggests that enough redundancy should be allocated to allow for the experimenting that leads to this experience. The desire to be taken up amongst the “Knights of the Round Table” that one respondent expressed can be seen as an illustration of the need for time to elaborate on one's own ideas.

However, activity oriented organisations do seldom allow for much spontaneous self-initiated activities, as testified by the quoted respondent earlier. Tight budgets and deadlines are denying the employees the ability to follow-up on the hunches they get, or to be “creative on speculation” as one respondent put it. In a goal oriented setting, members have more freedom to take whatever approaches to reach the goal. The fact that today's lean organisations do not allow the redundancy that is so vital to knowledge creation has also been recognised by the literature (Nonaka and Takeuchi, 1995). To set free the desire to initiate creative acts that already exists within most people, the company must take appropriate actions. For example, Toshiba and 3M allow their employees to devote 15 percent of their time to self-initiated activities (Robinson and Stern, 1997). At Volvo IT, no such time is allocated.

### 6.4 Organisational climate

Although not many contributed to the suggestion system, the employees saw it as a useful tool and claimed that the idea of a reward stimulated creativity. This may be the result of a preoccupation with traditional ways of thinking. The fact that face-to-face brainstorming has been used for many years without causing conflicts indicates that it is not the creative process *per se* that is the problem. A plausible reason may be found in the observation that group work, such as brainstorming, often is carried out locally, with participants from the same department or organisational unit. It can be

assumed that people who know and trust one another have higher levels of reciprocity and therefore are more willing to share ideas and information. Under such conditions, *i.e.*, when users are likely to meet one another repeatedly, favours are eventually returned. Mindpool, in contrast, begged users to share their insights with anonymous strangers, without guarantee for reciprocity, which is a plausible explanation for its failure.

However, it is a known fact that the sharing of advice amongst perfect strangers occurs rather regularly on the Internet. Why would these people take the effort to help unknown and distant others solve their problems? Regardless of why, these interactions, although they occur virtually with no physical contact and without the true identity of the other participants necessarily being revealed, have been shown to give rise to group identity and create a sense of community (Constant *et al.*, 1996). It is clear that Mindpool did not have built-in mechanisms to develop a group identity explicitly but why did not the participants develop a sense of group belonging that way the users in Constant *et al.*'s study did? A plausible explanation is the presence of tangible rewards. It has been suggested that in competitive environments where rewards are made salient, (virtual) group without strong group identity falls apart in favour of the individual members (Stenmark, 2002). Further, Mindpool was designed to be a vehicle for idea generation in general, but when ideas were not linked to one's own field, they were considered outside the prescribed activities and the users therefore expected to be compensated accordingly. In a goal oriented organisation, where member are allowed to follow their interests, to engage in intrinsically motivated activities would be a reward in itself.

## 6.5 Work settings

The work setting offered by Mindpool was based on anonymity to ensure that evaluation apprehension was avoided. However, the participants reacted negatively to this arrangement as they felt their contributions were neither recognised nor rewarded. It is possible that the physical layout of the office space contributed somewhat to this discontent. The participants were all used to open office landscapes with only a minimum of sound-insulating screen separating the desks. These acoustic walls were low enough for employees to talk to their neighbours and overlook the entire building floor, and collaboration – both formal and informal – occurred regularly. In such an environment, anonymity is not the attribute one would first think of. Instead, the organisational members are well aware of each others merits and competencies. Although there were no formal hinders for creative acts, such initiatives were not actively encouraged by management. Instead, the organisation was clearly activity oriented and a social pressure not to tinker with functioning – albeit not optimal – systems had been established.

The reward-based suggestion system had been in place for decades but was, as we have seen, not much used. Instead, it appears that when people are primarily motivated by their interest in the work and the enjoyment of that activity, they are more creative than they are when primarily driven by some goal imposed on them by others. The use of extrinsic motivation such as rewards or bonuses tend to cause a focus on the reward rather than on the task at hand, and winning the reward becomes more important than finding the most creative solution. Overwhelming empirical findings in line with these are reported from the field of social psychology of creativity and are referred to in the literature as the intrinsic motivation principle (Amabile *et al.*, 1996). To be allowed to work with one's own ideas is a reward in it self and could therefore be used to replace extrinsic motivation in form of money. Volvo IT's suggestion system is, as we have seen, not necessarily driven by interest but by money. When suggestions are not rooted in a personal commitment, ordering the proposer to implement the solution is a punishment and not a reward.

## 6.6 Individual differences

Differences in preferences between individuals are obvious and inescapable. This means that there is no magic formula that can be applied to all situations. Many different managerial approaches should

be applied simultaneously to cater for the differences amongst the co-workers. Appreciation of creative work requires a delicate balancing between intrinsic and extrinsic motivation, and must be done skilfully. Whatever reward is chosen, it should be used to recognise the expertise or ability of the group or individual, and the reward should be used to motivate further work and not act as a bribe. Encouraging work-focused feedback (as opposed to person-focused feedback) and discouraging excessive initial critique of new ideas foster a positive attitude towards creativity. By demonstrating that innovations and creativity are valued by communicating the potential of the work and accomplishments that have been made, intrinsically motivated employee initiatives could be further propelled.

## **7 CONCLUSIONS**

We shall now use the above discussion concerning the experiments at Volvo IT to draw a number of general conclusions. Paying particular attention to motivation and reward, five implications for managing creative work crystallises, as summarised below.

1. Reconsider extrinsic motivation in form of (large) financial compensation. When large sums of money are at stake, employees are discouraged from sharing thoughts and ideas with their peers. Instead, individuals are keeping their tentative thoughts to themselves, trying to work out something really rewarding. This situation causes a focus on the reward rather than on being innovative. Further, the obvious risk is that the employee may never arrive at the groundbreaking conclusion on her own, without interaction and dialogue with other humans.
2. Officially recognise creative initiatives and achievements. Creativity requires an organisational culture that fosters openness, sharing, and interaction. To establish and maintain such a culture, top management must “walk the talk” and encourage such behaviour. Management should further show that risk-taking and (occasional) failure is okay. They must understand “the distinction between intelligent failure and stupid mistakes” (Leonard and Sensiper, 1998, p.126). The reward mechanism must be such that *all* ideas are recognised, since they all contain something potentially good. Whilst we do not want to reward mistakes, we should still acknowledge and encourage the imagination that underpins them (March, 1999).
3. Encourage entrepreneurship by allowing and supporting user-initiated activities. Most people are prepared to do far more than any manager can possibly ask for if only they are intrinsically motivated by genuine interest in the work. Frontline-employees are confronted with new customer requirements and notice new business opportunities much earlier than does management (Nonaka and Takeuchi, 1995). By the time an emerging trend has reached top executive level, been converted to official corporate strategy, and communicated back to the employees, it may be too late. Instead, seize the opportunity by empowering the frontline-employees to act autonomously.
4. Allow redundancy in form of allocated slack time for the employees to be creative. When deadlines and budgets are cut so tight that the employees barely manage to do what is expected, they have very small chances of practice the playfulness that is a pre-requirement for creativity. Creativity requires people to do unexpected things and go beyond existing plans.
5. Ensure that user initiated activities are in line with their interests. All employees have areas of interest in which they invest time and energy. Make sure that the organisation benefits from this commitment by encouraging employees to pursuit their interests instead of requiring them to come up with ideas and suggest activities merely to fill some quota.

## **8 ACKNOWLEDGEMENT**

This work was made possible through support from the West-Swedish Economic Foundation and from Volvo Information Technology. The author would also like to thank the anonymous reviewers for their useful comments.

## References

- Amabile, T. M. (1983). *The Social Psychology of Creativity*. Springer-Verlag, New York.
- Amabile, T. M., Collins, M. A., Conti, R., Phillips, M., Picariello, M., Ruscio, J., and Whitney, D. (1996). *Creativity in Context: Update to The Psychology of Creativity*. Westview Press, Boulder.
- Arbaoui, S. & Oquendo, F. (1994). Goal Oriented vs. Activity Oriented Process Modelling and Enactment: Issues and Perspectives, in Warboys (ed.) *Software Process Technology, Third European Workshop, EWSPT'94 Proceedings*, pp. 171-176.
- Braa, K. and Vidgen, R. (1999). Interpretation, Intervention, and Reduction in the Organizational Laboratory: A Framework for In-context Information System Research. *Accounting, Management, and Information Technologies*, 9, 25-47.
- Carr, C. (1994). *The Competitive Power of Constant Creativity*. American Management Association, New York.
- Constant, D., Kiesler, S. & Sproull, L. (1996). The Kindness of Strangers: On the Usefulness of Weak Ties for Technical advice. *Organizational Science*, 7, 119-135.
- Diehl, M. and Stroebe, W. (1987). Productivity Loss in Brainstorming Groups: Towards the Solution of a Riddle. *Journal of Personality and Social Psychology*, 53, 497-509.
- Drucker, P. (1993). *Post-Capitalist Society*. Harper Collins, New York.
- Kanter, R. M. (1988). When a Thousand Flowers Bloom: Structural, Collective and Social Conditions for Innovation in Organizations. *Research in Organizational Behavior*, 10, 169-211.
- Leonard, D. and Sensiper, S. (1998). The Role of Tacit Knowledge in Group Innovation. *California Management Review*, 40, 3, 112-132.
- March, J. G. (1999). Wild Ideas: The Catechism of Heresy, In *The Pursuit of Organizational Intelligence*, March (ed.), 225-228, Blackwell, Massachusetts.
- Mischi, V. (1999). Skunk Works: 'speciation' strategies for creativity, *Proceedings of Creativity and Cognition '99*, Loughborough, UK, 101-107.
- Nonaka, I. (1994). A Dynamic Theory of Organizational Knowledge Creation. *Organization Science*, 5, 1, 14-37.
- Nonaka, I. and Takeuchi, H. (1995). *The Knowledge-Creating Company*. Oxford University Press, London.
- Nunamaker, Jr., J. F., Dennis, A. R., Valacich, J. S., & Vogel, D. R. (1991). Information Technology for Negotiating Groups: Generating Options for Mutual Gain. *Management Science*, 37, 10, 1325-1346.
- Orlikowski, W. J. (1992). Learning from Notes: Organizational Issues in Groupware Implementation. *Proceedings of CSCW '92*, ACM Press, 362-369.
- Osborn, A. F. (1953). *Applied Imagination*. Scribner's, New York.
- Reich, R. B. (1991). *The Work of Nations*. Alfred A. Knopf, New York.
- Reich, R. B. (2002). *The Future of Success. Working and Living in the New Economy*. Vintage Books, New York, revised edition.
- Robinson, A. G. & Stern, S. (1997). *Corporate Creativity: How Innovation and Improvement Actually Happen*. Berrett-Koehler, San Francisco.
- di Sessa, A. (1988). What will it mean to be 'educated' in 2020? In *Technology in Education: Looking Toward 2020*, Nickerson & Zoghbiates (eds.), Erlbaum, Hillsdale, 43-66.
- Stenmark, D. (2001a). Leveraging Tacit Organizational Knowledge. *Journal of Management Information Systems*, 17, 3, 9-24.
- Stenmark, D. (2001b). The Mindpool Hybrid: Theorising a New Angle on EBS and Suggestion Systems. *Proceedings of HICSS-34*, IEEE Press, Maui.
- Stenmark, D. (2002). Group Cohesiveness in Face-to-Face and Electronic Brainstorming: Lessons from an Action Case Study. *Proceedings of HICSS-35*, IEEE Press, Hawaii.