MANAGING INDUSTRIAL KNOWLEDGE

Creation, Transfer and Utilization

edited by

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Introduction

Only in understanding who tends to be creative and what types of influences stimulate or inhibit the creative process can we hope to find ways to 'manage' it. In fact, 'management' may not be the right word as it implies control and possibly manipulation. It also assumes that one has the knowledge and the power to effect thought processes that lead to creative solutions. However, management of the creative process requires something akin to leadership and inspiration; it also requires an appreciation of 'deviance' – especially in the arena of thoughts, opinions and judgements. Also, the creative process may be better fostered in an environment of respect and engagement than in one of harmony and cohesion.

One of the more fascinating aspects of creativity is that it is not the same as good problem solving, which can be taught more easily. Two elements of creativity are commonly accepted:

1 it is 'novel' – that is, in some sense, it has to be new;
2 it has to be appropriate to the problem.

In other words, a creative solution is unique; it has not been found before. However, there are a number of original or unique or new 'solutions' that do not solve a problem. They may even be bizarre or nonsensical, but still 'appropriate to the problem'. Creativity arguably has a third element (Amabile, 1983), namely that it be heuristic rather than algorithmic. Algorithmic tasks have clear, straightforward paths leading to a solution, whereas heuristic tasks require exploration. In other words, for creativity to occur, the process used to arrive at a solution is not known. If it were known, one might describe this as good problem-solving rather than creativity.

Although creativity is not a step-by-step process, it can still be understood and it can also be facilitated or impeded. Thus, there is a sizable literature that attempts to explain creativity. Some studies have concentrated on 'who' tends to be creative and whether these individuals can be

described by typical personality traits. Other studies have concentrated on the mode of thinking that leads to creative outcomes. Still others experimentally manipulate mechanisms to stimulate or impede the process. Yet other studies have tried to understand creativity over the human lifespan. Some of the latter have tracked the accomplishments of 'gifted' children; others have studied highly creative individuals, such as Nobel laureates, in an attempt to understand the process that led to their discoveries.

One of the more intriguing (and consistent) facts about creativity is that it is not the same thing as intelligence (see generally Milgram, 1990). There are both general and specific kinds of intelligence and creativity. General intelligence is characterized by an ability to think abstractly, logically and systematically. Specific intelligences include talent in music or art or mathematics. The general and the specific types of intelligence bear some relationship to each other, but are not highly correlated. The same holds true for creativity. There is general creative thinking that is clever, elegant or surprising (Guilford, 1967, and Mednick, 1962) and leads to imaginative solutions. There is also specific creative ability possessed by people who produce novel and valuable products in the arts, sciences, business or politics, for example. As with intelligence, general and specific creative thought is moderately correlated, but they are not the same thing. Of greater interest is that neither general nor specific intellectual ability appears related to overall creative thinking (Kogan and Pankove, 1972, and Milgram, Moran, Sawyers and Fu, 1987). Further, neither appears related to specific creative talent in a range of arenas (Milgram and Milgram, 1976, and Wing and Wallach, 1971).

Although intelligence, whether general or specific, bears little relationship to general or specific creativity, it is certainly not the case that intelligence plays no part in creative thought or accomplishments. Most studies show a relationship between IQ and creativity up to a moderate baseline; thereafter, there is little or no relationship. What this means is that, up to a slightly better than average IQ, intelligence and creativity are related – the more intelligent one is, the more creative one is likely to be – but additional IQ points above 120 or so do not relate to additional creativity.

Just as creativity requires a certain 'baseline' of intelligence, it also requires 'domain-relevant skills'. It would have been difficult for Charles Townes to develop the maser and laser had he not understood physics and electronics. Domain-relevant skills include a minimum level of factual knowledge and technical proficiency. However, most researchers agree that personality, creative thought processes and motivation also play important roles in creativity and creative accomplishment (Amabile, 1983, and Csikszentmihalyi, 1990). Simonton (1988) also includes the element of persuasion because often creative accomplishment depends on the evaluation and acceptance of 'experts' in a field.

Personality: 'Who' is Creative?

Much of the research on creativity has measured individuals on a host of personality tests (Barron, 1955, and MacKinnon, 1962). One of the more extensive studies used a nomination and rating system to categorize people as highly creative or less creative in their professions (Barron, 1955). The study asked the colleagues of architects, creative writers and mathematicians to rate the creativity of their peers. Generally, these individuals came to a university research setting for a three-day weekend during which they were given a battery of personality tests, observed in a variety of situations and interviewed. Among other indicators, the highly creative women mathematicians, for example, were found to be unconventional. They had 'high intellectual ability, vividness or even flamboyance of character, moodiness and preoccupation, courage and self centredness.' Barron suggested that 'creative people have an edge to them.' In general, the 'highly creative' were found to have high ego strength and flexibility and achieved successes by means of independent effort rather than conformance. They think and associate ideas in unusual ways.

Other research is highly consistent with this portrayal (Csikszentmihalyi and Getzels, 1973, Albert and Runco, 1986, and MacKinnon, 1964). Personality traits associated with creativity include independence, openness to experience, a lack of interest in social norms and social acceptance and, interestingly, a high value on the activity itself rather than on status or money. The latter is often termed 'intrinsic motivation' and appears to be consistently characteristic of highly creative people.

Independence and lack of interest in social norms and social acceptance are aspects to which we will return repeatedly. They are important for understanding 'who' is creative, but also for understanding how to manage or, more accurately, not manage, highly creative people (Nemeth, 1997). A number of studies have documented the fact that highly creative people are independent and significantly less conforming in experimental settings than less creative people. Of the hundreds of studies on the phenomenon of conformity, most have used some variant of the paradigm developed by Asch (1951). People are shown a series of slides and asked to name which of three figures is equal in length to a standard line. The correct answer is obvious. Alone, individuals have no difficulty recognizing the correct answer. However, when faced with as few as three people who all agree that a different figure is the correct one, fully 35 per cent of the responses tend to agree with the erroneous majority. People abandon the information provided by their own senses and adopt the majority opinion as the correct one, primarily because they assume that 'truth lies in numbers', but also because they fear being a dissenting voice (Deutsch and Gerard, 1955). Highly creative people are much less likely to do this.

Consistent with this behaviour, highly creative people often report that they have pursued their ideas despite advice to the contrary. They were often told that they were wasting their time or valuable resources and had

difficulty obtaining funds for their work. Some might view such persistence as rebellion, but I believe it is more likely a willingness to defy the crowd and persist in a given course of action based on a belief in its promise. To illustrate, Nobel laureate Charles Townes repeatedly said that he listened carefully to critics, considered their views and then independently chose what he believed was the proper course of action.

Cognitive Processes: a Style of Thinking

Other approaches to the study of creativity have focused on cognitive or thought processes. Most have emphasized the quality of 'divergent thinking', which involves a consideration of varying perspectives (Guilford, 1967). Here, we need to distinguish between fluency and flexibility, between the sheer number of ideas and the variety of those ideas. This is illustrated by a well-known test for creativity known as the 'uses' test, which asks people to name all the uses of a common object such as a brick. One person might list 'building a road', 'building a house' and 'building a school'. Another might say 'building a house', 'using it as a missile to throw through a window' and 'using it as a doorstop'. Both sets of responses include three ideas – that is, they have the same 'fluency'. However, the former includes only ways of 'building' something, whereas the latter provides a greater variety of ideas and better manifests divergent thinking. Similar to this are Torrance's verbal and non-verbal Tests of Creative Thinking (Torrance, 1966). One non-verbal test is the 'circles' test, which asks people to sketch as many different objects as possible using 36 identical blank circles and give each sketch a name. Again, such products can be scored for fluency (number represented) and flexibility (number of different categories represented).

One of the mechanisms for producing divergent thinking is play. Playfulness is also considered a personality trait and tends to be characteristic of highly creative individuals, who are often described as 'childlike but not childish.' Amabile (1996) considers intellectual playfulness a component of the intrinsic motivation so often evident in highly creative people. They have a passion for their enterprise. ·

As an enduring personality trait, playfulness has been used to distinguish between highly and less creative children and adolescents (Getzels and Jackson, 1962, and Wallach and Kogan, 1965). There is even suggestive evidence that literal play may facilitate creative thinking, especially the component of flexibility (Piaget, 1951).

As an illustration of such playfulness in the pursuit of a creative accomplishment, I am reminded of my interviews with Donald Glaser, inventor of the 'bubble chamber' for which he received the Nobel Prize in physics. Professor Glaser's 'childlike' goal was to capture cosmic rays in the universe. His fantasy was a transparent bathtub in orbit that would

capture these rays. His goal was clear, though there was no exact roadmap of how to achieve it. He could not put a bathtub in orbit, but he could track cosmic rays by creating instability in order to turn tiny microscopic influences into macroscopic recordable things. His idea? A superheated liquid in which liquid and vapour become indistinguishable, which could be made unstable by something as minute as a cosmic ray, which would leave a visible track. After considering various options, such as crystals and clouds, he settled on a superheated liquid in which bubbles would be the visible track – an idea stimulated by watching bubbles in his beer.

Learning from the lifespan

Most of the research on personality and cognitive styles is carefully documented by experiments with substantial samples of people. Research on real-life accomplishment, however, shows only a moderate rather than a strong relationship with creativity as defined by experimental 'creativity tasks'. Thus, case studies and in-depth interviews with highly accomplished people provide additional insights, the above description of the bubble chamber being one. Trying to understand a person over a lifespan is a very complicated undertaking, but is clearly important in any attempt to understand when and why creative thought turns into creative accomplishment.

Interviews with creative people, for example, make clear the importance of the creative person's decision about what problems to focus on. That decision involves determining what is important as well as formulating the problem in a way that will permit its solution. Csikszentmihalyi (1990) noted that creative individuals often point out that the 'formulation of a problem was more important than its solution and that real advances in science and in art tend to come when new questions are asked or old problems are viewed from a new angle.' In my own interviews with Nobel laureates, they repeated the same point. Owen Chamberlain, the founder of the antiproton, for example, noted that his real strength was in knowing a good question. He knew what was worth studying and he had knowledge pertinent to the solution.

Knowing the right questions may be one of the benefits of having a highly creative mentor. There is ample evidence that Nobel laureates tend to be have been trained by Nobel laureates (Zuckerman, 1977). More than half of the 92 studied by Zuckerman were students or collaborators of Nobel laureates. Some researchers have suggested that the reason for this link may be resources (such as funds, facilities) or modelling (styles of thinking and working). However, there is reason to believe that creative mentors, being at the cutting edge of a field themselves, know the important questions – the ones whose answers might lead to a Nobel Prize. In fact, Owen Chamberlain mentioned that one of his teachers, Enrico Fermi, told his class that most of them would win a Nobel prize. They

were the best and the brightest and, further, the Nobel Prize is awarded every year. This was the first time, according to Chamberlain, that he took seriously the possibility that he might some day win the prize.

In other interviews, Nobel laureates have commented about the creative process itself. Their insights include recognizing the value of judgement – that is, knowing good ideas from bad ones – and being able to act on the good ones – that is to conduct the experiments. The latter ability is often better recognized by practitioners than researchers. Most entrepreneurs, for example, recognize the importance of knowing a good idea from a bad one and, perhaps even more so, the importance of taking the risk – of acting on the good ideas.

Social Context

Although the preceding discussion has concentrated on individual personality traits and thought processes, it is clear that creativity does not occur in a vacuum. In fact, almost no activity, whether intellectual or social, occurs in a vacuum. One of the more important elements is the impact of the opinions and judgements of others.

The problems with majorities and high status

As mentioned previously, even when an answer is obvious, people are likely to abandon their own position on a question when presented with a majority position that differs from their own, although highly creative people tend to conform less to the judgements of others. Perhaps more important, there is ample evidence that majorities not only cause adoption of their position, right or wrong, but also change the nature of thought processes about the issue. A number of studies have found evidence that majorities induce convergent thinking – that is, consideration of an issue from a single perspective, in this case the perspective posed by the majority. To use one experimental paradigm as an illustration, we (Nemeth and Kwan, 1987) asked individuals in groups of four to name the first three-letter word they saw in a letter string – for example, 'DAMpt'. After short exposure to the string, they all first noticed 'DAM', the word formed by the capital letters from left to right. Then, they were 'informed' that three people in their group had first noticed 'MAD', the three-letter word formed by the backward sequencing of the capital letters. When they were then given a series of ten such letter strings and asked to form all the words they could using the letters in the strings, they tended to find many more words using backward sequencing of letters and fewer words using forward sequencing (such as, 'apt') or mixed sequencing (such as, 'pat'). In other words, in comparison with the responses from a control group that received no information about anyone else's responses, those exposed to a

majority view that differed from their own tended to adopt the perspective of the majority to the exclusion of other perspectives.

People react similarly to knowing the positions of persons with high status. There is substantial research showing the power of status to induce movement to its position, right or wrong. As an illustration, Navy bomber crews consisting of a captain, navigator and gunner were asked to solve the following problem:

> A man buys a horse for £60, sells it for £70, buys it back for £80 and sells it again for £90. How much profit did he make?

While the problem may appear on the surface to be relatively easy, more than half of bright undergraduates and adults do not solve it correctly. Their answers tend to be £0, £10 or £20. The correct answer is £20.

One might assume that if one person in the group knew the correct answer, the group would adopt that correct answer. However, it turns out that it depends on who has the correct answer.

There is a linear relationship between status and acceptance of an opinion. Thus, the 'captain' was more effective than the 'navigator', who in turn was more effective than the gunner in gaining acceptance of their solutions. Ironically, the navigator was most likely to come up with the correct answer.

It is problematic that people tend to accept the viewpoint of the majority or those with high status and power, whether that viewpoint is right or wrong. Worse, they tend to think about the issue from the perspective posed by the majority or high-status people to the exclusion of other considerations. One should then not be surprised by Professor Warren Bennis of the University of Southern California's estimate that at least seven out of ten people in American business keep their own opinions to themselves when they differ from those of their superiors. Even when subordinates know better, they allow their bosses to make mistakes (Summerfield, 1990).

The usefulness of diversity of viewpoints and dissent

As the above illustrates, there are strong tendencies to agree with a majority or with a person of higher status. Further, people have a tendency to seek concurrence. This tendency has led to American foreign policy 'fiascoes', such as the decision in 1961 by President Kennedy and his advisers to involve the United States in the invasion of the Bay of Pigs (Janis, 1982). Although the President's decision-making group consisted of highly intelligent and accomplished people, they made some very poor decisions. Janis concluded that the culprit was a combination of cohesion, directive leadership, insulation and time pressure. A tight-knit group whose leader has a preferred course of action, which is insulated from other

viewpoints and even dissent, especially when under stress and time pressure, is inclined to seek consensus quickly. The resulting decision-making process tends to fall short, considering too few alternatives and less than the full range of information, objectives and contingency plans. As a consequence, the decisions are faulty, sometimes fatal.

Although careful research on these antecedent causes differs (for example, not all cohesive groups show this tendency towards groupthink), the combination of antecedent conditions largely agrees with what we know about creativity. Amabile (1996) has suggested that time pressures can reduce 'intrinsic motivation' and creativity. Further, elements that create cohesive bonds between individuals in a group can often enhance their tendency to agree and confine thinking to the perspective of the majority of members. The element of insulation from others' viewpoints and dissent is the focus of many attempts to improve decision making and creativity.

Techniques for improving creativity

Giving instructions   Most techniques aimed at increasing creativity have in common an attempt to thwart the confining elements of groups. Brainstorming, for example, asks people to generate as many ideas as possible and specifically instructs people to refrain from evaluating or criticizing any viewpoint, including their own (Osborn, 1957). It also encourages them to elaborate on others' views. The literature measuring the efficacy of this technique is somewhat mixed (Taylor, Berry and Block, 1958, and Stroebe and Diehl, 1994), but it is clear that instructions to offer differing views do not ensure that people will do so. In spite of the instructions, they fear criticism, whether it is spoken or not.

Other techniques remove the group from the creative process by having individuals do their creative thinking alone and then come together to select and adopt a preferred solution. Thus, to some extent there is a recognition that the group must agree for any solution to be effectively adopted and implemented. However, the assumption is that the finding of the solution – the creative process itself – is better left to individuals. In summarizing the available literature on this topic, McGrath (1984) argues that 'individuals working separately generate many more, and more creative (as rated by judges) ideas than do groups . . . The difference is large, robust, and general.'

The picture that emerges from the foregoing is that groups tend to be confining and that attempts to increase the diversity of viewpoints often fail. As a result, the best we can do is make groups operate at the level of the sum of their individual creativity, which generally means letting them do their creative thinking apart from others. Work on the value of dissenting viewpoints, however, offers a more optimistic view of the value of conflicting viewpoints and even the value of group decision-making for creative thought.

Devil's advocate/dialectical enquiry: mechanisms for dissent? A favoured technique for introducing dissent has been to invoke the devil's advocate. Janis (1982), for example, suggested this as a vehicle for reducing the concurrence-seeking (groupthink) of Cabinet-level foreign policy decision-makers, in order to avoid 'fiascoes'. The idea is to have someone vigorously criticize plans under consideration by a group in the hope that this will foster discussion as well as a consideration of more options and careful scrutiny of those options. A variant on this is dialectical enquiry, in which a counterplan is offered rather than merely criticism of the preferred plan.

Both techniques have been found to be useful (Mason, 1969, and Cosier, 1978), but the findings are mixed with regard to their relative superiority (Katzenstein, 1996). The value of such techniques appears to lie in getting people to 'consider the opposite' or at least a plausible alternative (Hirt and Markman, 1995). However, more recent evidence suggests that the devil's advocate method is less effective than authentic dissent (Nemeth, Connell, Rogers and Brown, 1999). The fact that a person argues for the sake of diversity of viewpoints rather than to express an authentically differing view renders the dissent less effective in stimulating divergent thinking. Perhaps more important, the evidence suggests that there are unintended negative consequences of assigning a devil's advocate. In this study, those exposed to a devil's advocate showed bias in the direction of supporting their initial views. They did not easily abandon or willingly question the correctness of their own positions. Instead, they may have been deluded into believing that they had considered options and alternatives when, in fact, they had focused on supporting their initial position.

The positive role of dissent

Though giving instructions and role-playing dissent have some efficacy, there is considerable evidence that exposure to authentic dissent aids both decision making and creativity. Among the positive contributions made by dissenting viewpoints, two are of particular interest. One is dissent as a liberator; the second is dissent as a stimulator.

Dissent as liberator As outlined above, unanimity mixed with numbers is a powerful combination for inducing agreement and even encouraging thinking from the perspective of the proposed position. People become confused about things as basic as the length of lines or the colour they see when faced with a majority that agrees on a differing view. Many times, they agree with an erroneous judgement simply because it is held by the majority. Most research, however, has documented the importance of unanimity. When the majority view is broken, conformity is dramatically reduced (Allen and Levine, 1969, and Asch, 1951). Of interest, and somewhat contrary to intuition, the 'break' in the majority view can take the form of an ally or an even more extreme dissenter. Most people would

predict that having an ally – that is, someone who agrees with you – helps to reduce conformity to an erroneous majority. What is not so obvious is that having someone who disagrees with both you and the majority can also be of great benefit – conformity is significantly reduced.

Another way in which dissenters can be liberators is as a result of observation and modelling. Simple exposure to a dissenting individual – even one who was wrong – liberated individuals to be more independent in a subsequent conformity experiment. In one study, Nemeth and Chiles (1988) asked individuals to identify the colour of some blue slides. One individual repeatedly called the slides 'green'. As predicted, he was disliked, considered unintelligent and believed to have poor colour vision. Subsequently, these individuals were faced with a majority of three other people, all of whom called red slides 'orange'. Among those who had not previously been exposed to the dissenter, conformity was nearly 70 per cent. Among those who had previously been exposed to the dissenter conformity was only around 15 per cent.

Dissent as stimulator   Of perhaps greater practical consequence, dissent has repeatedly been found to stimulate thinking that is more divergent and creative. One illustration comes from the previously described study using the letter string (Nemeth and Kwan, 1987). People shown a series of letter strings, such as 'DAMpt', and asked to name the first three-letter word they notice, will say 'DAM', the word formed by capital letters from left to right. When told that all three of the other individuals in their group had first noticed 'MAD', the word formed by backward sequencing of the letters, they will then tend to look more closely at backward sequencing. Thus, when given a new set of letters and asked to name all the words they can form, they tend to find more words formed by backward sequencing of letters than words formed by forward or mixed sequencing.

Consider one, seemingly slight, change to this information. Suppose you give individuals information that one person in the group first noticed 'MAD' (the word formed by backward sequencing) while the other two, first noticed 'DAM'. Presented with subsequent letter strings, these individuals tend to find more words and find them using all forms of sequencing. They find more words because they detect them using a forward, backward and mixed sequencing of letters. In other words, they manifest divergent thinking and, in the process, find more solutions.

Such results have been documented by dozens of other studies as well. Exposure to minority dissent has been found to stimulate more and better information processing than other forms of dissent discussed (Nemeth and Rogers, 1996). People search for more information on all sides of an issue after exposure to a dissenting minority viewpoint. There is also evidence that people recall information better (Nemeth, Mayseless, Sherman and Brown, 1990). They also detect solutions that otherwise would have gone undetected. They apparently search the visual display more carefully and, in the process, find solutions that they tend not to find without such exposure

(Nemeth and Wachtler, 1974). Finally, there is evidence that people think more creatively after being exposed to a dissenting minority viewpoint: their word associations become more original, unique and statistically infrequent. One's usual word association with 'blue' might be 'green' or 'sky'. After exposure to dissent, it is likely it would be more original – such as 'jeans' or 'jazz' (Nemeth and Kwan, 1985, and Nemeth, 1995).

Lessons for Management

The above portrayal of who tends to be creative and how creativity is increased in general suggests several lessons. We contrast these lessons with the corporate cultures often touted as exemplary or visionary. Collins and Porras (1994) list several elements that are considered part of the corporate culture of companies that endure and show profit over long periods of time. In their terms, these are generally cult-like atmospheres in which the powerful forces of unanimity, numbers, status, reward and social interaction foster uniformity of views and action. Some of the practices of those successful companies include the following.

1   Care in recruitment They especially look for people who 'fit' the corporate culture. It should be apparent that people who start out with the same values, habits and viewpoints are likely to be highly cohesive, get along and be willing to adhere to company goals and guidelines. They should also be easier to teach, indoctrinate and shape.
2   Socialization into the company's 'culture' This happens, for example, in universities, organizations that conduct intense training and, especially, provide numerous occasions for socializing with model citizens of the company. Socialization is aided by a powerful phenomenon that occurs when like-minded people discuss an issue. Literally hundreds of studies have documented the fact that, if individuals are basically in agreement, discussion polarizes their viewpoints – they become more confident of those viewpoints (Moscovici, 1969).
3   Use of mottoes, slogans, language Many companies have company songs, such as at IBM and Wal-Mart, and some even attempt to use a special language. Disney, for example, uses theatrical terms – a job is a 'part,' and being on duty is 'on stage'. These mechanisms help employees identify with the company, develop a sense of cohesion and underscore the importance of uniformity.
4   Dissent is 'ejected like a virus' Collins and Porras (1994) suggest that the visionary companies are especially intolerant of dissent. There are many ways to stifle dissent – prescription, rewards and punishment and the opinions of others.

All of the mechanisms mentioned above are powerful tools for achieving high morale and cohesion and promoting effort on behalf of the company.

It is well documented that these mechanisms help promote uniformity and with it, harmony and even productivity. However, these mechanisms are unlikely to foster independence, divergent thinking and creativity. Atmospheres of uniformity do not enhance creative thought or the likelihood of finding novel or original solutions. They are also likely to be repugnant to highly creative people who are independent, unconventional, inclined to seek out challenge and even 'on the edge'.

A number of companies have recognized that there are advantages to being different and independent. They use the rhetoric of 'self-renewal' (Motorola) and 'being a pioneer' (Sony). T.J. Watson, the former CEO of IBM, often illustrated the point by recounting the story of the 'wild ducks'. As the story goes, a man on the coast of New Zealand liked to watch the ducks fly south each fall. With good intentions, he began to feed them but found that, over time, they stopped flying south. They fed on what he provided and, after several years, grew so fat and lazy they hardly flew at all. The message? You can make wild ducks tame, but you can never make tame ducks wild again (Watson, 1963). Thus, companies such as General Electric encourage workers to voice their gripes. Pfizer under Edward Steer sent its research and development centre overseas to separate its employees from the executives. Motorola and 3M regularly use teams from different disciplines to encourage a variety of perspectives and improve the quality of thought.

Highly creative people, as we have seen, tend to be independent. They even break rules. In fact, they may need to break rules in order to think creatively. Charles Townes, for example, had to consider the possibility that the second law of thermodynamics did not work. Without breaking axioms, the maser and laser might not have been invented. Children, too, break rules. They continually ask 'Why?' and 'Why not?' I am reminded of the story of Edwin Land's daughter, Candy Land, who wanted to see the results of photographs as soon as they were taken. Luckily her father listened instead of telling her to be more realistic. He found a way to make it happen and became very wealthy in the process (Glazer, 1998). His talent may have been his ability to recognize a good idea when he heard one rather than generating it in the first place. Thus, companies that want to encourage creative thought might well heed the advice to embrace playfulness, the visions of children and, most important, diversity – whether in personality, style or ideas. Without such tolerance or being valued, highly creative people may seek employment elsewhere. Worse, they may respond to the views of others, the dictates of their superiors, the reward structure – and become 'tame'.

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