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Citation

Managing Creativity in Organizations: a Total System Approach

Gilbert Tan

Organizations need creativity to adapt to the fast-changing environment and revitalize itself. In response to this need, managers have invested in various single approaches, such as, creativity training programmes, team-building, and leadership development to improve creativity. This paper argues that managing creativity in organization is a complex problem and thus requires a more integrated approach. In this paper, I have provided a theoretical framework to explain how managers can foster and sustain creativity in their organizations using a total systems approach. In the framework, I depict the organization as having four subsystems, namely, culture, techno-structural subsystems, management and people. Each subsystem will create unique barriers to creativity. The framework identifies three types of interventions (cultural, organization and design, and training development) that can help develop the ingredients of creativity (foundations, competencies, and support).

Introduction

Organizations need creativity to develop new products, improve customer services and to revitalize themselves. A recent article in *Fortune* mentioned that creative workers are the "hottest competitive resource" for the company (Farnham 1994; p. 62). While most managers would agree that creativity plays an important role in contributing to organizational success, there is little consensus, even among management experts, on how organizations can foster, sustain and harness the creative energy of their employees.

Depending on one's theoretical orientations, the approaches taken to manage creativity vary. Proponents of the dispositional theory of creativity – the notion that creativity is dependent on a set of individual traits and characteristics (e.g., Singh 1986), will emphasize on the stringent selection procedures to identify creative candidates for the company. In contrast, those who adopt the process perspective of creativity (e.g., Stein 1974), believe that creativity can be taught, and thus they will rely on formal training programmes to enhance creativity in organizations. It appears that this approach is popular among managers. Programmes like Edward de Bono's (1977) lateral thinking, Tony Buzan's (1995) mind-mapping techniques, and the

Creative Problem Solving Process (CPS) (Isaksen 1989) are examples of the better known programmes adopted by managers. Still another approach to managing creativity is through the cultural track (Raudsepp 1987). Supporters of this approach believe that organizational culture has a powerful impact on creativity. Hence, it is not uncommon to find managers working hard to ensure that their organizations have a nurturing environment to encourage creativity.

Although, there are success stories that testify the effectiveness of these single approaches in making organizations more creative, in reality, managing creativity is a complex problem. As noted by Kilmann (1989), a complex problem cannot rely on single approaches for solutions, but instead, it requires multiple approaches leveraging at different parts of the organization in order to arrive at longer-term solutions. This paper proposes a conceptual framework on how to promote creativity in organizations using a total system approach.

The theoretical roots of this proposed approach can be traced to the works of early systems thinkers, such as Churchman (1968), Katz and Khan (1966), Optner (1968), and Tilles (1963). The systems approach offers a set of powerful tools to study the dynamics of organizations and organizational change. In this approach, organizations are conceived to

be "made up of sets of components that work together for the overall objective of the whole" (Churchman 1968, p. 11). In essence, the systems approach is interested in the interdependency, interconnectedness and interrelatedness of a set of components that constitute the identifiable whole, i.e., the organization.

The applicability of the systems approach in understanding and solving organizational problems has gained acceptance by contemporary management scholars over the years (e.g. Pasmore 1988, Stacey 1996). Recently, Senge (1990) affirms the relevance of the systems approach in his works on learning organizations. According to him, learning organizations need to have five disciplines – personal mastery, mental models, building shared vision, team learning, and systems thinking. He felt that, among the disciplines, systems thinking is the most important one. He emphasized that ". . . Without a systemic orientation, there is no motivation to look at how the disciplines interrelate. By enhancing each of the other disciplines, it continually reminds us that the whole can exceed the sum of its parts" (Senge 1990, p. 12). Thus, the total system approach as proposed in this paper is solidly grounded in the management literature.

Theoretical framework

Figure 1 provides a parsimonious model capturing the essence of an organization. The total system approach as proposed in this paper, analyzes the organization from a system perspective. This means that there is inter-connectedness among the organization's subsystems. It also means that interventions directed at any subsystems of the organization will have effects on the rest. My model depicts an organization as having four subsystems, namely, culture, techno-structural subsystems, management and people. There are specific barriers to creativity associated with each and every one of these subsystems. To improve creativity in organizations, managers have to direct interventions at the subsystems. The interventions should aim at sensitizing the organization to its change dynamics and should suggest ways of working towards more change-oriented practices and structures. If successfully implemented, the intervention will help cultivate the ingredients of creativity – foundations, competencies, and support. These ingredients, in turn, will encourage the development of desired creative outcomes in the organization.

Subsystems of organization and the barriers they create

Culture Every organization has a culture that influences how its employees think, feel and act. It provides meaning, direction, and mobilizes employees into action. Experiences from companies have shown that organizational culture is linked to creativity. For example, IDEO, a contract R&D firm, consciously foster creativity through its strong corporate culture. IDEO keeps its staff creative by removing bureaucracy, encouraging cross-fertilisation of ideas, and allowing its employees "to fail in a culture of try it, fix it, try it again, and learn from the experience" (Perry 1995, p. 16). Recent research by scholars has also provided evidence on the culture→creativity relationship (Turnipseed 1994).

The organizational culture can create barriers to creativity in the following ways. First, when individuals are bound by a strong corporate culture, there is a danger that they may adopt fixed mind-sets to solve problems. Second, culture involves assumptions, beliefs and values that can be deep-rooted within the members of organizations. These things cannot be changed easily, especially, when the company has been doing well. As noted by Pascale, "nothing fails like success" (Brown 1991, p. 13). Once a company is locked into a culture that has proven itself to be successful in the past, it will be difficult to convince its members to adopt alternative ways of doing things in the organization.

Techno-structural subsystems The techno-structural subsystems of an organization include tasks, procedures, programmes, technology, rewards systems, control systems and communications systems, etc. Many companies have installed specific programmes to promote creativity. For example, Unocal's Science & Technology Division organizes the Creativity Week to enable its staff to exchange ideas about their projects and discuss issues that affect the division, and honour the outstanding creative efforts of its researchers (Anderson 1991).

Recently, a relatively new set of computer-based tools, known as Creativity Support Systems (CSS) have been invented to help organizations augment their creativity (Abraham and Boone 1994). In essence, these computer softwares are designed to facilitate assumption-testing and boundary-breaking during problem-solving. For example, some CSSs are programmed to ask open-ended question-and-answer options for generating ideas; others are programmed to provide
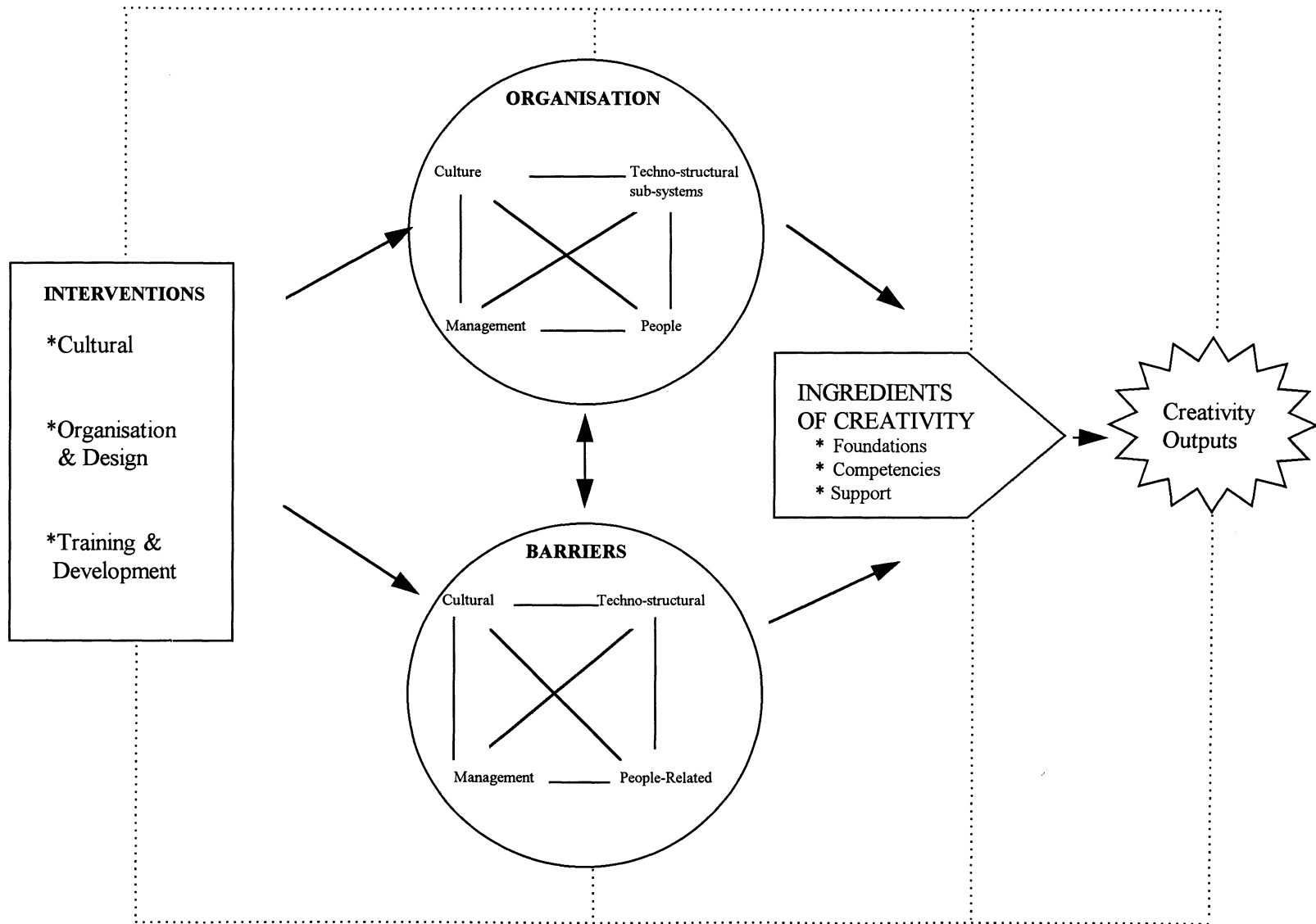
Figure 1. A total system framework on managing creativity in organizations.

more structured approaches for exploring ideas (Dayton 1991, Young 1989).

There are many potential barriers to creativity that can be traced to the techno-structural subsystems. For instance, once the company has installed certain systems, there will be inertia to change. People are not willing to change simply because the systems already exist. Rules, regulations, and procedures can be another set of obstacles hindering creativity in organizations. When these rules, regulations and procedures become ends by themselves, employees will just rigidly apply them in every situation, even in those that are not appropriate. The reward systems can stifle creativity when it is not properly designed. When the reward systems are too punitive on failures, they will discourage employees from taking risks. In other words, reward systems that punish failure clearly support the risk-averse systemic forces. Sometimes, reward systems that over-emphasize individual creativity may discourage group creativity. Thus, managers must be more aware of these systematic points when they design reward systems to improve creativity at the workplace.

Management The top management provides the vision and mission of the organization. When the management is strong, there is leadership and sense of purpose. Although there may be constraints exerted by the external environment of the organization, generally, the top management can have an impact on the organization's culture and the other subsystems. For example, top management can make choices on technology, organizational designs, and the kind of people that they want to hire. Indirectly, these choices will have an impact on the organization's culture. Top management would be more systemically enabling if it creates shared visions that arise from their understanding of the dynamics of the systems in the organizations. Another point that management should note is that leadership behaviour can stifle or enhance creativity depending on how they lead the organization. When management leads in a style that kills ideas prematurely, discourages risk-taking and experimentation, and inhibits feedback from the ground, creativity is hindered.

People Organization achieves its objectives through people – individuals and groups. Managers need to understand the human side of the organization in order to spark creativity. Some companies such as Microsoft and IDEO believe creativity starts with hiring the right people. Microsoft "look for a certain level of intelligence" and technical competence in its employees (Field 1988). IDEO wants individuals with "high levels of intellectual curiosity – people who are always interested in doing something new" (Perry 1995).

People-related barriers to creativity include resistance to change, conflicts, and incompetence. Creativity means changes and resistance to change is a natural dynamic phenomenon. To promote creativity in organizations we must be more aware of the unhelpful reactions to change, such as, rejections of ideas and status-dominated evaluations. Often the root of most of these unhealthy reactions to changes can be traced to insecurity. People find security in status quo. Things are more predictable with status quo. When employees are in constant conflicts with one another, they refuse to cooperate, share information, and refuse to see each other's perspective. Conflicts make people defensive of their stand, reinforcing the status quo. Sometimes, organizations are not creative simply because employees do not know how to be creative, and/or managers do not how to lead and motivate employees to contribute creatively towards the organizational goals and objectives.

Interventions

Cultural interventions These are interventions aimed at the organizational culture. There are many ways to intervene at the cultural level. For example, managers may influence the cultural subsystems through redesigning jobs and reward systems, team-building, leadership training, selection, etc. An integrated approach is offered by Kilmann (1989), in his book *Managing Beyond the Quick Fix*. In the book, he devoted one whole chapter to how to change the culture of the organization. His five-step approach involves influencing culture at the norms level – a) identifying the actual norms of the organization; b) defining desired norms; c) measuring the gap between actual and desired norms; d) closing the "culture-gap" through group sanctions; and, e) sustaining the cultural change effort.

Organization and design Another set of interventions which managers can apply to improve creativity in organizations is through organization and design. These interventions are directed at the techno-structural subsystems. Common organization and design interventions include activities, such as, designing autonomous jobs, installing systems to improve communications, aligning reward and appraisal systems to recognize creative

efforts of employees, investing in technology, such as CSSs, and organizing specific programmes to stimulate creativity. To cite a few examples of these interventions in practice – employees in Broderbund enjoy tremendous autonomy in their jobs (Verespej 1995); Microsoft uses electronic mail as a communicative tool to brainstorm ideas (Field 1988); 3M, well-known for its product innovations, has reward systems that allow employees to advance down the technical track (Fry 1987); and General Electric has its "Work-Out" programme to encourage employees to interact and exchange ideas with one another (Braham 1992).

Training and development   These interventions are directed at the people and management of the organization. Intuitively, organizations recognize the importance of training employees in creativity skills, such as lateral thinking, mind-mapping techniques, and creative problem solving (CPS), to enhance creativity in organizations. In practice, besides those mentioned above, there are other creativity training programmes. For example, Chaparral Steel, a leader in the US steel industry, invests in creative writing programmes conducted by instructors from the local university to stimulate employees' creativity (Luthans 1991).

While creativity skills are important, managers should not neglect the role of technical/operational skills (or what Amabile (1988) refer to as domain-relevant skills) in the creative process. Creativity cannot exist in a vacuum void of context. Creativity skills alone without the necessary technical competence will not help individuals or groups to arrive at creative solutions to job-related problems. In contrast to creativity training programmes that are usually conducted in class-room context by external trainers, technical training programmes can be conducted in-house or on-the-job by supervisors.

There is also a behavioural dimension to stimulating creativity in organizations. Creative members can be threatening to others because they upset the status quo. To improve creativity in an organization, there is a need for human relations training. For example, employees should be trained on basic communications skills such as active listening, giving and receiving feedback, etc. Moreover, since people will inevitably have to work in groups, team building programmes will also be helpful.

Leadership practices can strongly influence how subordinates behave in organizations. Hence, it is important that managers and supervisors lead in a style that is supportive of creativity. Any effort by organizations to manage creativity among its employees should also include leadership training. While the details of these programmes depend on the needs of the organization, it is important that these programmes make managers and supervisors more aware of how they could have hindered creativity and what they could do positively to enhance creativity in their organizations. In addition, managers and supervisors should also be trained to be good coaches so that they can effectively impart technical or domain-relevant skills to their subordinates (Amabile 1988).

Ingredients of creativity   When properly implemented, the above-mentioned interventions will lead to the development of three important ingredients of creativity – foundations, competencies, and support. Consistent with the systems approach, any interventions on any subsystems of the organizations will have indirect effects on the others. This makes it difficult to trace exactly how the various interventions affect each ingredient of creativity. In practice, we expect the interventions to mutually reinforce each other to produce the desired effects.

Foundations   At the individual level, the foundation for creativity is the belief systems. Both employees and managers must have positive belief systems. Employees must think positively of themselves and believe that they can be creative. Self-esteem is a precursor to individual creativity (Korman 1971). When the employee has positive self-esteem, he/she will be more willing to take risks and experiment with new ways of doing things. However, when he/she has a low self-esteem, he/she will not dare to rock the boat but resort to just complying with existing rules and procedures. Similarly, to support creativity, managers and supervisors must have positive beliefs regarding their subordinates. They must believe that their subordinates are able and want to contribute creatively to the organization. If not, they will not give their subordinates the freedom to exercise initiatives and take risks.

At the organizational level, culture forms the foundation for nurturing creativity. There must be trust, respect for individual differences and open communication to support creativity. When trust is lacking, people will not dare to take risk. Respect for individual differences enable individuals to share different perspectives and explore alternative ways of doing things. These are behaviours that may lead to creative outcomes. Open communication is important because ideas and

information are the life-blood of creativity. When communication is blocked, there will be no exchange of ideas or information within the organization, thus stifling creativity.

Competencies Individuals need to be competent in order to be creative. As mentioned earlier, employees need to have a mix of creativity, technical and human relations skills in order to exercise creativity effectively in organizations. As noted by Bill Gates, founder of Microsoft, leaders should be role models to their employees (Field 1988). This means that managers and supervisors should also have the necessary creative, technical, and human relations skills. In addition, they should also know how to foster a creative climate for the development of creative ideas in the organization and know how to be good coaches.

Support Besides competencies, employees need support – resources, authority, time and information, from the organization to be creative. The avenues for providing support are many. For example, 3M is well known for supporting the creative efforts of their employees by allowing them to devote up to 15% of their time to any pet projects. The company also stages many celebrations to reward and give moral support to their creative employees (Leob 1996). Likewise, Broderbund, an innovative software company in California, supports creativity by allowing its workers to work on ideas even if they might fail (Verespej 1995).

Creative outcomes Foundations, competencies, and support are necessary ingredients to produce creative outcomes. At the individual level, the outcomes of creativity will manifest themselves in the form of new ideas at the workplace. These ideas may be suggestions of new products and services, or improvement in work procedures and practices. When these suggestions are translated into action plans that get implemented, they become creative outcomes for the organizations. The tangible forms of organizational creative outcomes include product innovations, continuous improvement, and improved services. These are all organizationally desirable outcomes that will eventually lead to better business results and revitalisation.

Feedback The dotted lines in figure 1 show the feedback loops of the system. Feedback in our model implies dynamic ''homeostatic'' systems. There are various feedback loops. Both the ingredients of creativity and creativity outputs can be sources of feedback to the organization and barriers caused by the various subsystems as shown by the dotted lines connecting these elements in the diagram. For example, cultivating the ingredients of creativity, such as fostering a positive belief systems towards the employees, developing technical, creativity and human-relations skills that promote creativity, and providing conducive support for creativity will positively affect culture, management, people and techno-structural subsystems of the organization and make them more supportive of creativity. Likewise, the ingredients of creativity will also affect the barriers created by the various components of the organization. For example, enhancing the competencies of employees can directly help to reduce people-related barriers, such as lacking in creativity skills.

Another set of feedback loops are those connecting the ingredients of creativity and creativity outputs to the interventions. In other words, the effectiveness of the various interventions can be gauged by their impact on ingredients of creativity and creativity outputs. This is important because managers can then use this feedback information to monitor the progress of their interventions.

Discussion

The framework as proposed in this paper calls for a total system approach. There is no quick fix in managing creativity in organizations. Single approaches, such as creativity training programmes, team-building, or even leadership development will not be able to sustain the drive for higher creativity in the organization in the long-run. This is because the impact of single approaches tends to be localized at the subsystems level. However, organizations are more complex. Interventions at any subsystems need to be reinforced by changes at the other subsystems. For instance, it will be pointless to train employees to be creative when the organizational culture is hostile towards creative people. For creative individuals to contribute effectively to their organizations, there is the need for conducive work environment, supportive leadership, and organic structure and systems.

The total system approach to managing creativity implies that it must be well-planned. It calls for proper diagnosis of the organization. The proposed framework can serve as a diagnostic tool for managers to analyse the needs of their organizations. Managers should diagnose the strengths and limitations of each subsystem of the organ-

ization and also examine the nature of the barriers to creativity caused by it before deciding what to do next. For example, an organization may have inherited an outdated organization structure with many rigid rules and regulations even though it has good managers and employees that are ready for and desire creativity. Unfortunately, too often managers tend to take a copy-cat approach to solving organizational problem. Just because a particular creativity programme is successful in one company, it does not necessarily mean that it can be transferable to another organization. For example, Organization X may have its creativity blocked by rigid procedures and regulations, and Organization Y may have employees who lack creativity skills. Obviously, these two organizations need different strategies to spark creativity in their workplace.

A proper diagnosis will not only enable the manager to decide what interventions to adopt but it will also give him/her suggestions on how to sequent these interventions. For example, when the company is ready for creativity, i.e., when management and employees see the need for creativity, but they lack the skill to do so, the company will get the most leverage by implementing creativity training first. Other interventions can then follow later to reinforce the training interventions. In contrast, when the company's culture is not ready for creativity, perhaps the first thing that it needs are cultural interventions.

In addition to the proper sequencing of interventions, there is also the need to closely monitor the implementation process and make necessary refinements accordingly. It is impossible to foresee to every detail during the planning stage. Thus, the manager needs to be flexible while implementing the interventions. For example, if during training, certain problems surface regarding rigid procedures and policies that have not been identified previously, the management should then quickly address these concerns. Likewise, while implementing the technostructural interventions, such as, redesigning jobs, the employees may identify certain training needs that have not been foreseen by the management. In other words, the implementation process should be organic. Constant feedback is important to ensure successful implementation of the interventions designed to enhance creativity.

What has been described so far is similar to the process of action research as documented in the Organization Development literature. One way to see action research is "the application of the scientific method of fact-finding and experimentation to practical problems requiring action solutions and involving the collaboration and cooperation of scientists, practitioners, and laypersons" (French and Bell 1995, p. 140). Action research involves a cyclical process of diagnosis, data collection, feedback to client-group, joint action-planning, and implementation of action plans.

Action research assumes that the kind of interventions required by the organizations will be unique to their situations and contexts, based on the diagnosis, and derived from information obtained during the data-collection. After the diagnosis and data-collection, the next step involves discussing and working between the consultants (either internal or external) and the management to develop a coherent action plan for implementation. It is through joint action-planning that interventions are coordinated and implementation details finalized. Even then, the action research approach dictates that implementation of action plans be closely monitored and refinement be made to the action plans if necessary. A necessary factor for success in action research is the close collaboration between the consultants and the management. Another point to note is that action research rejects the idea of "one right answer" and this is consistent with the notion of "equifinality" in systems thinking.

As can be seen from the above discussion, to operationalize the total system approach to managing creativity in organizations requires tremendous commitment from top management. More importantly, top management must develop its own systemic openness to promote creativity in organizations. The total system framework prescribes an approach to examine the organization holistically. This usually leads to organization-wide changes which require active participation from the top management. It will be dangerous to rely solely on external consultants even though they may be more objective. Under normal circumstances, qualified consultants are able to bring in the needed know-how to change the organization. Still, they need to work closely with the client-organization to do their jobs properly – from gathering data to interpreting results, and from planning interventions to implementing and evaluating the programmes.

Although, every manager wants to enjoy the fruits of creativity, not all are willing to bear the full costs. What then is the full cost? It is the commitment of time and resources. Top management has to invest time and give full attention to the change programmes. It is not a one-shot affair. Implementing large-scale, organization-wide

changes as suggested by the total system framework is an on-going process. Top management must be willing to take the lead role. It cannot be fully delegated to the external consultant or even to the Human Resource Department.

Besides spending time and attention on the project, management must also be willing to commit resources. A large-scale, comprehensive programme as suggested by the framework can be costly in terms of finance and human resources. Experience shows that innovative companies have to invest tremendous resources before they can harvest the fruits of creativity. For example, 3M increased spending on R&D and committed themselves to various programmes including giving lifetime careers even when times were tough. This testifies the level of commitment that 3M was willing to take in order to foster creative thinking and innovative behaviours (Leob 1995).

Perhaps one reason why single approach, quick fixes appeal to managers is because these approaches promise immediate results. No doubt employees having attended creativity courses will acquire some new skills to improve their creativity. And, if the training is well designed and delivered, there may even be a transfer of learning from the training classroom to real-life working situations (Basadur et al. 1986). However, these desired effects will be short-lived if the training intervention is not supported by culture, leadership styles, and organizational design.

Given the complexity of the challenge, managers need to have realistic expectations. They cannot expect their organization to change overnight. Large-scale, organizational-wide changes take time. The outcomes of certain interventions, such as those of techno-structural interventions (e.g., changes in job design, new work procedures, etc.) may be more apparent. In contrast, culture changes may be less apparent and take a longer time to realize full benefits. Thus, managers looking at short-term benefits will be disappointed.

In sum, managing creativity in organizations calls for a total system approach. Since organizations are complex and consist of various inter-dependent subsystems, single approaches such as creativity training, team-building, etc., will not be able to offer holistic solutions to the problem. Single approaches are usually directed at just one particular subsystem, thus their impacts would tend to be localized at the subsystems level. Unless these impacts are reinforced by other interventions leveraged at the other subsystems of the organization, their effective-

ness would be limited. The total system approach addresses the challenge of managing creativity holistically. It ensures that all the subsystems of the organization mutually support one another and work towards the goal of creativity.

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