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# A Structured, Facilitated Team Approach to Innovation

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## Abstract

Johnson & Johnson (Ethicon Endo-Surgery, Inc., division) has used a method of systematic inventive thinking to create new organic growth opportunities and efficiencies. The outcomes of fifty facilitated team workshops using this method reflect successful efforts to solve a range of issues: creating new products, improving products, developing new marketing strategies, building brands, creating customer solutions, and improving organizational process. This paper reviews our experience with this approach over a period of four years beginning in July 2002.

## Introduction

Innovation is a crucial source of both organic growth opportunities and efficiencies for companies. It leads to new products, effective strategies, improved processes, and fresh organizational designs. However, innovation is challenging partly because of behaviors and attitudes toward innovation in relation to one's status in the organization. A facilitated, systematic, team approach to innovation can overcome human behavior challenges and make innovation more predictable.

## Why Innovation is Difficult in Organizations

There are several well-researched reasons why innovation may be stifled within an organization. Take brainstorming, for example. Brainstorming may be the most overused and underperforming tool in business. Introduced in the 1950s, Osborne defined brainstorming as a group process to improve ideation. The premise was that to get good ideas, one must get a lot of ideas (Osborne, 1957). However study after study has shown that groups generating ideas using traditional brainstorming are no more effective than individuals working alone (Isaksen, 1998; Paulus, Larey & Ortega, 1995; Mullen & Salas, 1991).

Even if people knew how to systematically and routinely innovate beyond brainstorming, there are other challenges. They may resist trying for fear of failure (Lee, Edmondson & Worline, 2004). Status-conscious employees often keep their good ideas to themselves, afraid to test them in the workplace, fearing embarrassment and loss of status if their ideas fail.

Another barrier is that even when people generate novel ideas for the good of the organization, their colleagues may see these ideas as tainted. Acknowledging a superior idea from a colleague implies deference to their internal rival and devalues their own status and distinctiveness within the organization (Blau, 1955; Lee, 1997; Menon & Pfeffer, 2003; Sutton & Hargadon, 1996).

Finally, employees may resist sharing their best ideas for fear of colleagues stealing or "free-riding" on that idea (Williams, Harkins & Lattane, 1981; Kerr & Bruun, 1983; Harkins & Petty, 1982). People may harbor ideas waiting for the ideal time to reveal them in a way that limits their colleagues from taking credit.

How do we overcome these conundrums? We believe that a systematic technique to innovation conquers these challenges and increases inventive group thinking across a range of business issues and activities.

## Templates of Innovation

A method used by Johnson & Johnson is called systematic inventive thinking (Goldenberg, Horowitz, Levav & Mazursky, 2003; Goldenberg & Mazursky, 2002). Systematic inventive thinking is a set of tools used in a facilitated team environment to generate predictable, progressive ideas. This innovation process uses templates to help regulate individual thinking and channel the ideation process in a structured way that overcomes the randomness of brainstorming.

The five templates of innovation include: Subtraction, Task Unification, Multiplication, Attribute Dependency,

and Division. They were developed by recognizing the same consistent pattern over many products so that the pattern could be applied in a way to create new innovative products. The templates are recognizable and identifiable for almost any type of product. The method grew out of research by the Russian engineer Genrich Altshuller who spent his professional life working to formalize the creative process (Goldenberg et al., 2003).

Briefly, the method works by taking a product, concept, situation, service, process, or other seed construct, and breaking it into its component parts or attributes. The templates manipulate the components or variables to create new-to-the-world constructs that the innovator must then find a valuable use (Finke, Ward & Smith, 1992). This notion of taking the solution and finding a problem that it can solve is called "Function Follows Form," and it is at the heart of the systematic inventive thinking method.

One example of a template is Subtraction. The pattern of innovation for Subtraction is that something has been removed from a product or service so as to create a new function or benefit for that product or service. Consider a pattern in these four items: contact lenses, an exercise bicycle, powdered soup, and an automatic teller machine (ATM). The contact lens has had the frame of a regular

pair of glasses removed. The exercise bicycle has had the rear wheel removed. A package of powdered soup has had the water removed. And the ATM has had the bank employee removed. In each case, taking something away created a new innovative use or benefit.

### Team Innovation

At Johnson & Johnson (Ethicon Endo-Surgery, Inc., division), we have used all of the templates in facilitated team workshops to create new organic growth opportunities and efficiencies. Workshops range from four hours to five days in length. Typically teams have twelve to fifteen members with diverse backgrounds: by business function, by market/geography, and by gender. The actual makeup of the team depends on the business focus and the purpose of innovating, such as growth, competitiveness, efficiency, organizational design, etc. A sampling of workshop participants innovating new products may include the following: three or four marketers from different global regions; three engineers representing different areas, such as design, mechanical, and manufacturing; three clinicians, such as a nurse, surgeon and doctor of veterinary medicine; an industrial designer; a field sales representative; a customer call center representative; a customer; and possibly external partners, such as an advertising agency or consultant.

SYSTEMATIC INVENTIVE THINKING TOOL	OUTCOME IDEAS
Subtraction	<ul style="list-style-type: none"> <li>• Virtual tours of a marquee training facility that allow customers to experience it without having to travel</li> <li>• A medical device that uses suction to hold tissue to the device so that it can function without having to pierce the tissue first</li> </ul>
Task Unification	<ul style="list-style-type: none"> <li>• Operating room equipment that uses backup power from other equipment</li> <li>• A medical device that injects cool air to the tissue to reduce blood loss</li> <li>• An alliance of medical/hospital supply companies that can offer a wider, more competitive product offering</li> </ul>
Multiplication	<ul style="list-style-type: none"> <li>• Needle that dissolves in the body harmlessly and painlessly after use</li> <li>• For training, offer three levels of testing – easy, medium, and hard – and allow trainees to select the level they wish to take; provide higher level incentives based on achievement</li> </ul>
Attribute Dependency	<ul style="list-style-type: none"> <li>• A medical device that adapts to the tissue type it touches</li> <li>• A surgical device that curves once inside the body due to increase in temperature, making it more maneuverable</li> <li>• A surgical procedure that can be adjusted later in life as the body changes</li> <li>• A product branding system that changes or disappears if product tampering occurs</li> </ul>
Division	<ul style="list-style-type: none"> <li>• A complex operating room machine broken into smaller modular components that can be moved from OR to OR and that can communicate with each other</li> </ul>

**Table 1.** Outcomes of systematic inventive thinking

## Outcomes of Systematic Inventive Thinking

Systematic inventive thinking is counterintuitive, elegant, and highly productive based on our experience. Table 1 illustrates some of our results:

### Why Templates Work

To overcome the four challenges of: (1) how to innovate, (2) fear of failure, (3) withholding ideas, and (4) rejecting ideas from colleagues, team innovation workshops are facilitated by an external consultant specializing in the training and use of these templates (Goldenberg et al., 2003). The workshops are tightly structured to address the challenges of human behavior and attitudes towards innovation and their personal organizational status.

Participants are led through a series of exercises using everyday, common products to demonstrate that people can systematically innovate on command. Participants learn how each template is applied to a problem, product, or situation to give many different original ideas in that space. The templates, by their nature, specify a rigorous course of thinking that participants are expected to follow exactly. While the templates are not particularly difficult to learn, the training is demanding so that teams can execute each pattern in a routine way. At the end of the training, people no longer have the excuse that they do not know how to innovate.

In the group workshop setting, people trade in their fear of failure at innovating for a fear of *not* innovating. Skillful facilitation lets each person have the spotlight at regular intervals so that the pressure to perform and please the group is strong but not overbearing. The facilitation creates a level innovating field so that all participants have the same resources, tools, insights, and opportunities to contribute novel ideas. While it may be true that some participants are judgmental of ideas and the people who generated them, this dynamic does not seem strong enough to overcome the productive nature of the templates when properly facilitated. The templates make people innovate in a structured way regardless of their fear of peer judgment.

The facilitated approach uses techniques that would seem to stifle innovation when in fact they accelerate innovation. One such technique is the Principle of Constraints (Goldenberg et al, 2003) as a way to overcome the tendency of people to filter their ideas or other self-serving behavior as they are generating ideas. Participants work in small teams, often in pairs, where they are given specific assignments to generate new ideas in a matter of a few minutes. Each partner has to participate in the assignment which creates a strong collegial pressure to perform.

With these constraints, it appears that people place a premium on getting the idea out of their head and over

to their partner first rather than pre-judge the merits of the idea and the value to their personal status for having thought of it. Working in pairs seems to create a sense of accountability and transparency. Once the idea is out on the table, each partner gives some sense of oversight or verification that the idea has been shared with the larger group. A participant may think afterward that one of his or her ideas is brilliant and thus too good to share with the group, but it is too late. The idea has been captured for the larger group to consider.

The systematic inventive thinking method produces several dozens to several hundreds of ideas depending on the amount of time dedicated to the activity. Skillful facilitation is required again to help overcome the problem of peer acceptance of those ideas.

First, the facilitators create an environment of non-attribution so that no one individual is associated with a specific idea. Because the idea was generated in a small team of two or three, and because the moment of truth was born out of a stepwise contribution of their insights and notions during the mini-exercises, it is often hard to distinguish who actually could be credited with generating one specific idea. Idea anonymity reduces the internal competitive threat among colleagues and makes ideas no longer tainted. Participants come to recognize idea contribution as process output.

Second, the facilitation process emphasizes only newly-created ideas rather than ideas participants had before coming to the workshop. This inhibits the problem of people selling their pet ideas to their peers, which are usually ideas that the peers have already rejected.

Third, the facilitators lead the larger team to develop a specific set of objective, weighted criteria to judge each of the new ideas generated in the workshop. Diverse groups bring the value of diverse thinking but also the added cost of having to converge on a set of guiding principles.

With these criteria in place in the form of a linear weighted model, ideas are allowed to rise to the top without the stigma of who generated them or who judged them. Internal competition among peer rivals is minimized allowing for a more objective evaluation of ideas. Thoughtful facilitation seems to bring about this alignment much more efficiently than what internal groups can do left on their own.

## Conclusion

Team Innovation is working successfully at Johnson & Johnson (Ethicon Endo-Surgery, Inc., division). The facilitated, systematic team approach to using templates helps people (1) innovate on command, (2) overcome their fear of innovation failure, (3) share their ideas with a diverse group of colleagues, and (4) be more accepting

of ideas from internal colleagues. This technique also enhances innovation outcomes, yielding a predictable stream of organically derived innovation across a business.

## References

- Blau, P. M. (1955). *The Dynamics of Bureaucracy*. Chicago: University of Chicago Press.
- Finke, R.A., Ward, T. B., & Smith, S. M. (1992). *Creative Cognition: Theory, Research, and Application*. The MIT Press.
- Goldenberg, J., Horowitz, R., Levav, A., & Mazursky, D. (2003). Finding Your Innovation Sweet Spot. *Harvard Business Review*, 10, 120-129.
- Goldenberg, J., & Mazursky, D. (2002). *Creativity in Product Innovation*. Cambridge University Press.
- Harkins, S. G., & Petty, R. E. (1982). Effects of task difficulty and task uniqueness on social loafing. *Journal of Personality and Applied Psychology*, 43, 1214-1229.
- Isaksen, S.G. (1998). A review of brainstorming research: Six critical issues for inquiry. Creativity Research Unit - Monograph #302. Creative Problem Solving Group - Buffalo.
- Kerr, N. L. & Bruun, S. E. (1983). Dispensability of member effort and group motivation losses: Free-rider effects. *Journal of Personality and Applied Psychology*, 44, 78-94.
- Lee, F. (1997). When the going gets tough, do the tough ask for help? Help seeking and power motivation in organizations. *Organizational Behavior and Human Decision Processes*, 72, 336-363.
- Lee, F., Edmondson, A. C., & Worline, M. (2004). The mixed effects of inconsistency on experimentation in organizations. *Organization Science*, 15, 310-326.
- Menon, T. & Pfeffer, J. (2003). Valuing internal versus external knowledge: Explaining the preference for outsiders. *Management Science*, 49, 497-513.
- Mullen, B., Johnson, C., & Salas, E. (1991). Productivity loss in brainstorming groups: A meta-analytical integration. *Basic and Applied Psychology*, 12, 3-23.
- Osborne, A. F. (1957). *Applied Imagination*, Rev. Ed. Scribner
- Paulus, P. B., Larey, T. S., & Ortega, A. H. (1995). Performance and perceptions on brainstormers in an organizational setting. *Basic and Applied Social Psychology*, 17, 249- 265.
- Sutton, R. I. & Hargadon, A. (1996). Brainstorming groups in context: Effectiveness in a product design firm. *Administrative Science Quarterly*, 41, 685-718.

Williams, K., Harkins, S., & Lattane, B. (1981). Identifiability as a deterrent to social loafing: Two cheering experiments. *Journal of Personality and Applied Psychology*, 40, 303-311.

## Author's Reflection

My function is to increase marketing competency and fluency throughout the organization. I report to the Vice President of Marketing. This reporting relationship gives me line of sight to issues our associates face in creating and implementing innovative marketing strategy.

With a systematic approach to innovation, my greatest challenge was convincing people that innovation could be trained and routinized. A second challenge was to get people to realize innovation is not limited to the engineering team. Each individual has a need to generate new ideas continuously.

To overcome these challenges, I proposed a pilot innovation session and sought support from more than one senior-level sponsor. Multiple sponsors spread the financial risk associated with the pilot so that no one sponsor would bear the full loss if it failed. If the pilot was successful, the approach would gain more acceptance and alignment.

The pilot was a success. It gave me the reference point needed to spread systematic innovation to other parts of the organization. Word of mouth and personal selling made people realize that they needed to try the innovation method or risk falling behind other franchises.

In a culture dominated by portfolio thinking, teams compete for investment resources not just on the merits of their current business prospects but also on future prospects. This approach shows teams that systematic innovation enables them to create an exciting pipeline of new product ideas and therefore to compete more effectively for internal resources.

## Author's Bio

Drew Boyd, Director, Marketing Mastery, Ethicon Endo-Surgery, Inc., a Johnson & Johnson company, leads the marketing training program. His focus on raising competencies in strategic marketing, market management, and new product innovation helps employees learn how to systematically invent medical products and integrate innovations into long-range strategic plans.

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