A Tale of Knowledge Creation and Knowledge Destruction

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Abstract

This is a case study of a new product development team in one of the largest companies in Brazil competing in a high-tech market. The first part of this study is about knowedge creation. A team with relevant and complementary backgrounds was formed. Team members were highly motivated by the challenge they faced. They understood the importance of having guiding shared values and very quickly managed to create an open playing-field where information could be shared and knowledge created. The second part is about knowledge destruction. Less than one year after the team was formed, most of its original members had left the company. A great deal of individual and collective tacit knowledge disapeared. The projects slowed significantly, moving bureaucratically and with fewer tangible results.

What went wrong? To answer these questions, three aspects were examined: the relationship between the team and the rest of the organization; the team's leadeship, communication and decision-making problems; physical layout; values of the organization; budgeting practices; etc. This study shows how the challenges involved in the creation of "Knowledge Creating Companies" may be an insurmountable endeavour for most firms. The issue of changing the management practices that led to successes in the past and resulted in the current established power bases needs to be addressed. This case study highlights the fact that most medium and large-size companies created in the "Industrial Era" will have to reinvent themselves in order to survive in the "Knowledge Era".

Key words: Knowledge Management, Teams, Learning Organizations, Organizations

Once upon a time, a group of young, successful, highly skilled, entrepreneurial and hard-working people got together. They came to work in the New Business Department of a very large company. Their mission? To pave the company´s way into the digital world, where convergence is the catchword for everything.

- Mr. Brown[1] came first. He had been a pioneer in the cable-TV business in the country, but got tired of it and fell in love with everything he read about digital media. That´s where he wanted and needed to be. He was very entrepreneurial and "hands-on". He was also known for being quite impatient..
- Ms. Pink was the second to come. All her professional life had been spent in the same company. She was young, very dedicated and anxious to leave her number crunching days behind.

- Ms. Purple liked everything that was cool! Everything had to be cool! She had professional and personal connections in the creative world. Remember the words “brand”, “positioning”, “briefing” and “campaign”? They all made her day.
- Mr. Blue liked to think strategically. He was very self-confident and liked to play the role of “coach”. He was the most experienced of the pack and had occupied leading positions in top level national and international organizations. He was, however, at times too academic.
- Mr. Green added the “life is not so serious after all” spirit to the group. He used to be a trader and therefore ended cooking up business cases for everything, though he and everybody else on the team knew the cases were at most wild guesses.
- Mr. Gray was the engineer: a typical engineer. He once commented that the baby in his wife´s belly had grown 515%. He was everybody´s thesaurus for technical stuff and minded his own business. Everybody liked him.
- Mr. Red used to be the editor-in-chief of a magazine about internet. He got tired of writing about it and decided to help create it. He was known for arriving late every morning. He wouldn´t and couldn´t change his journalistic ways.

This group of people knew that the first challenge in innovating was to create a highly collaborative and effective team: a team where information and knowledge would flow very quickly, where consensus would not mean mediocrity and where the ultimate goals of the corporation would prevail. Together, the team set about trying to understand the kind of work environment and norms they would need to be successful. After lengthy discussions, they established and wrote down their core beliefs:

- **Guiding value:**
  Commitment to quality in every activity: attention to details!
- **Team work:**
  - Results are everyone´s responsibility
  - Knowledge sharing
  - Commitment to agreed deadlines
  - Support for individual creativity and initiative
  - Leadership based on individual competence
- **Human relations:**
  - Respect for individual differences
  - Taking into account of personal objectives and projects
  - Transparency in dealing with personal differences
- **Workplace**
  - Locus for the accomplishment of professional ambitions
  - Fun and personal growth are possible and desirable

The description thus far presents what appears to be an ideal initial scenario. Indeed, the team got off to a great start and made significant initial progress. The team, and they can certainly be called a “team”, worked hard towards their goals. More often than not, both the team´s and the organization´s goals were reached and exceeded. The team members developed strong personal relationships with one another: they enjoyed their work and the projects they developed together. They very often celebrated their successes together.

The fact that teams form the basis of any modern organizational strucutre is no novelty. It is interesting, however, to highlight that the team members became good friends. The importance of deeper, personal relationships was not, until recently, fully recognized as a predominant feature of new, emerging forms of organization.

More and more, in our opinion, management literature questions one of the traditional pillars of the bureaucratic organization: the impersonal relationships among employees. Various authors are strong advocates of the importance of building deeper and more meaningful relationships among employees[2]. Zarifian[3], on the other hand, distinguishes between two levels of cooperation: fragile and strong. The latter is becoming increasingly necessary for companies competing in more complex and uncertain markets. Stronger cooperation is characterized by the ability of team members to reach a higher level of joint creativity based on more profound relationships.

The literature also shows that learning and creativity depend mostly on intrinsically motivated people, eager to learn through social interactions, open to discussion and willing to change their mental frameworks[4]. Moreover, it has been extensively argued and shown that innovation is increasingly dependent on the combination of different skills and fields of knowledge[5]. These conclusions have led a number of respected authors and management gurus[6] to enthusiastically embrace and argue for the search for diversity in staffing. They view diversity in staffing as a key means by which companies can break away with traditional, linear ways of thinking.

Current theory also points to the importance of top management setting ambitious goals for their organizations. Goals create emotional tensions and prompt people to seek solutions regardless of their job description[7]. Interestingly, the people in our story did not have formal job descriptions, only a widely defined goal. Their goal, "to pave the company's way into the digital world", seemed, in itself, enough to keep them motivated and alert. This is in line with what has been learned from managerial practices in Japan. There people are not hired for a specific position, but, simply to help their companies in whatever way their skills allow[8]. The combination of big challenges and a high degree of autonomy is one of the key components of "Knowledge Creating Companies", as described in the breakthrough book by Nonaka & Takeuchi[9]. It is also a highly important practice for companies searching for ways to increase creativity. Procter & Gambles' Corporate New Venture unit is an interesting and succesful example[10]. Its stated goal is to "invent radical new products that would build the company's future".

The first part of this tale, then, was really about Knowedge Creation. A team with relevant and complementary backgrounds was formed. Team members were highly motivated by the challenge they faced. They understood the importance of having guiding shared values and very quickly managed to create an open playing-field where information could be shared and knowledge created. Their efforts were geared towards meeting several critical deadlines and producing tangible products. They managed to introduce a highly innovative product into the country.

Less than one year after the team was formed, five of its original members had left the company. One of them was fired after a series of discussions with their boss (yes! they had a boss)[11]. The others quit one after another within a period of four months. The creative juices stopped flowing. A great deal of individual and collective tacit knowledge evaporated from the organization. The development of the team's projects slowed significantly, moving bureaucratically and with fewer tangible results.

What went wrong? How was this fountain of knowledge destroyed?

To answer these questions, three aspects must be examined: the organization, the leadership ("boss") and the team.

The organization

The team developed a highly innovative work arrangement. None of the team members had their own office. There were no subordinates despite great differences in seniority. The relationships between members could be compared to that of mentors and apprentices. Leadership within the team depended more on the nature of the challenge than on any sort of acquired or formal authority. This work structure radically differed from the very hierachical, bureaucratic and "power-playing" traditions of the company. The contrast in working environments between the team and the very large organization of which they were part, can be illustrated by the problems that developed in three areas: 1. Communication and decision-making; 2. Physical layout; 3 Budgeting

1. Communication and decision-making difficulties:

The organization's other managers and directors did not really understand what the team was working on. As a result, the team had a hard time setting up meetings with other departments. They also encountered great difficulty trying to test their projects using operational resources not under their direct control. The team´s highly strategic activities were seen as low-priority in the face of urgent operational problems. The fact that communication within the organization was usually expected to follow the traditional chain of command, aggravated the situation. Team members were perceived as dreamers, disconnected from reality and leading "the good life", while everyone else in the company worried about day-to-day issues.

Consider this situation in light of the way Sharp deals with innovation teams in Japan:

The Urgent Project System gives its members, who could be recruited from any section or department within the company, the same "gold-badge" authority as corporate directors during the project period. The gold badge, which is a gold-colored nameplate, was called "kin-badge" ("kin" means gold) in Japanese. "Kin" has the same sound as the first syllable of the world "urgent", which is "kin-kyu" in Japanese. Wearing the gold badge carries special significance not only for project members but for other employees at Sharp as well. Urgent Project members develop a priority product or technology within a year or two. But since it is managed directly under the president, the project budget is unlimited. People with the gold badge and their project are given top priority in using company facilities or equipment and in procuring

materials...In addition, members of the Urgent Project can be taken from anywhere in the company at any time. A department may be deprived of its best people for over a year. *(Nonaka & Takeuchi, p.184, 1995)*[12]

2. Physical layout: search for a creative environment

The team was unable to successfully defend their need for an exclusive meeting room despite the fact that team members decided to give up their private offices. They were accused by other departments of being selfish and overly greedy for resources. Gossip and bad feeling flourished. In the rest of the company, managers and directors had their own offices and shared meeting rooms: it was felt that the team should do the same.

Let's examine the team's demand with what leading and widely recognized innovative companies are doing in terms of their office layouts. Some companies have created "skunk works" which have been recognized as an effective way to replicate the creative environment of small and start-up companies[13]. Others are even creating special "creative spaces" within their offices, such as fitness centers in the case of Du Pont, basketball courts at Lotus, and game, humour and meditation rooms at Kodak and Canon[14]. Descriptions of office spaces at Kao in Japan and Alcoa in the USA, greatly emphasize how these spaces represent a clear departure from traditional office layouts. They also highlight the importance that the leaders of these companies place on facilitating communications through open spaces. This is seen as critical for stimulating the exchange of tacit knowledge.

In the "open floor allocation" system, the divisions and functional groups within Kao are all configured around a large open space. Half of the executive floor space, for example, is occupied with an open space called the "decision-making room." In fact, executives rarely stay in their own offices. Divisional heads hold meetings at the round table located in one of the large spaces. In the laboratories, researchers do not have their own desks, but share big tables...Information sharing and employee interaction are also accelerated through "open meetings". Any meeting at Kao is open to any employee, and top management meetings are no exception. (Nonaka & Takeuchi, p.172-173, 1995)[15]

As you rise, you pass cubicle after cubicle but no doors. Not a single door, except on the conference rooms and "privacy suites." Finally you arrive at the top. Near the window, you find the office of the 63-year-old chairman of Alcoa, Paul H. O´Neill. His cubicle, like every other one in this building, measures 9 feet by 9 feet. There is nothing to distinguish the man who made $5 million last year in stock options, bonus and salary from an executive assistant who probably will not make much in a lifetime. (p. 82)
In his new building, he wanted light, and so he decreed that no desk should be more than 45 feet from a window, with each window rising more than 11 feet. He wanted openness, so he decided that there would be no private offices. He wanted kitchens, because food draws people together. He wanted flexibility, so he asked for configurations that could be changed in a day. He wanted parking spaces for everyone. And he wanted inclusion, so he insisted on conference rooms of glass, so people could see what was happening and not feel threatened by a closed door. And he wanted escalators, because he believes they force people to interact, encouraging conversations that lead to new ideas. Although the new building has elevators for freight and for people who can´t take escalators, they are hard to find. (p. 84)

(Trish Hall, The New York Times Magazine, 13/12/98)

3. Budgeting: conflicting needs

To prepare its budget, the team was forced to deal with accountants ill prepared to engage in any kind of discussion about the budgeting and funding of highly innovative projects. It had to follow the same guidelines as every other department, as clearly stated in the company´s official budget directives. Thus it was asked to:

- "Be very accurate about the kind of resources (money and project) that your projects will need."
- "Use last year budget as a starting point."
- "Fill out pre-determined investment and expenses items."

Obviously it is not wrong to have a business plan or to try forecast capital expenditures and needed resources. However, the execution of these must be put in the right context. It was wrong not to first undertake a higher level of discussion about the nature of the projects, markets and technologies. The uncertainties related to innovation and the different options available in terms of budgeting philosophies/strategies should have been better understood by all parties involved. This initial high level discussion would, certainly, have led to a much more consistent "number crunching" exercise. It would also have resulted in a more meaningful and strategic budget.

Compare the conflicting needs of the accounting department and the new products development team in this tale, with how venture capitalists go about funding innovative projects. What kind of importance do they place on financial spreadsheet exercises? Such exercises are often the last thing venture capitalists are interested in. Far greater importance is given to the "game plan", team skills, technological risks and the market potential of the venture[16].

<u>The Leadership ("boss")</u>

The team shared the same boss, but the boss was not a member of the team. Oops! The boss was a veteran from the IT industry and more senior than everyone else. He was responsible for personally building some of the first PCs in the country. Despite having an entirely technical background, the boss boasted of his understanding of and commitment to the latest management fads, such as "learning" and "network organizations". He believed strongly in his own leadership abilities.

His courses of action, however, lead one to believe otherwise:

- He openly stated that he disbelieved in micro-management, yet demonstrated dramatic swings between total absence and a need to know the smallest of details about team activities. The result? A high degree of insecurity among team members.
- Contrary to the style of team members, he did not share information and did not involve the team in making several important decisions. This included decisions regarding the establishment of partnerships and the selection of critical vendors and consulting partners. The result? Open distrust between the boss and the team.

- Although technologically savvy, the boss clearly lacked experience and competence in other areas, such as content production, marketing and finance. He was unwilling to recognize his weaknesses, even when team members were more qualified than he to deal with specific issues. The result? His credibility and interaction with team members was severely undermined.
- The boss demonstrated a lack of confidence and a fear of upsetting other functional directors. He was not willing to support his subordinates in any dispute with another department. The result? Great conflict between the organization and the team, and the team and its boss. More importantly, the projects which depended on other corporate resources stalled.

Paul Woolner, from the Alliance for Converging Technologies, a think-tank in North America concerned with the changes that have been brought by the new knowledge paradigm, would certainly agree that "the boss" in this tale did not have the appropriate leadership style. For him, the new leaders "*must be able to recognize if and when the requirements of the business outstrip the leader's own competencies and management abilities. To act on this self-awareness and bring in new leaders demands a high degree of personal courage and integrity*"[17].

The literature on leadership is, nonetheless, very extensive. There is, therefore, no need to elaborate a great deal here about its role in the success of any venture. Some of the leadership problems mentioned above may be explained (though not justified!) by considering the amazing pace of knowledge creation that occurs in high performing teams working in challenging environments. The boss was definitely not part of the free flow of information and knowledge taking place at the "shop". He remained an outsider to this type of interaction, and consequently an outsider to the team. This may have contributed and led to the feeling that the team's activities were out of control.

Regardless of the real root of the relationship problems in this particular case; it is clear that the role of the leader is changing. The need to create knowledge on a continuous basis has profound implications for leaders: they must focus on co-establishing visions; relinquish the need to know everything; and let teams work with few, but relevant, points of control[18]. This is no easy task. It demands more art and wisdom than in the "old days" of Fayol's plan, organize, coordinate and control.

<u>The team.</u>

Despite the creation of an excellent internal learning environment and the successful delivery of important tangible products, the team also had its share of difficulties. For the most part, the team was so enthusiastic about its own work that it didn´t pay enough attention to "selling" its projects within the organization. The projects became the team´s and not the organization´s. The team failed, despite some formal communication attempts, to turn much of its tacit knowledge into explicit knowledge. The many parts of the organization that did not have direct contact with team members, never learned anything about their activities. Over time, the team found itself with increasingly limited leverage of company resources and a growing sense of isolation. Learning and delivering potential was significantly reduced.

The team was also naive: it sought to pursue the creation of a culture radically different from the existing corporate culture without the "blessing" and strong tangible support of top

management. Although a highly innovative loose structure gave team members the energy of a start-up company, it greatly impaired their ability to build a foundation capable of withstanding the pressures of the corporate juggernaut. With hindsight, some team members now feel that their attempts to create a new kind of culture and organizational structure within a larger organization was doomed to fail from the beginning.

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This tale is not a tale.

It is the truthful account of recent happenings in one of the most prestigious companies in Brazil. It serves to corroborate the following widely accepted idea:

In order for knowledge to be systematically created, either the whole company must develop an innovative culture, or, at the very least, top management must recognize that teams in charge of innovation must be inspired, protected, nurtured and provided with a great deal of autonomy and resources (time, people and money).

This tale did not end with the end of the team. Although team members stopped working together as a team, they did not sever their personal relationships with one another. They became what some authors[19] are calling a "Community of Practice": a group of people – not necessarily from the same organization - who are bounded by an identity and defined and driven by learning values and opportunities. As such, these individuals still share information, ideas and knowledge about the industry with one another. How do they do it? The internet keeps them in touch with one another almost daily, even though they don't all continue to live in the same country. From time to time, they also meet at social and professional events. What is the fate of this Community of Practice? Will it continue indefinitely, die away, change to include and exclude other individuals? These are open questions with no easy answers. Very recently, a whole team from the Silicon Valley, unhappy with the direction of its company, put itself up for auction on the internet (www.ebay.com): initial bids were in excess of US$ 3 million!

Literature on the new form of organizations is abundant. It is mostly based, however, on a few exceptions: high profile innovative companies – Microsoft, 3M, Intel, Honda, Sony, McKinsey - that are recurrently cited by the mainstream authors and gurus. This "inside story" has tried to illustrate what we believe to be the most common scenario. It has demonstrated how the challenges involved in the creation of "Learning Organizations" or "Knowledge Creating Companies" may be an insurmountable endeavour for most firms. The issue of changing the management practices that led to successes in the past and resulted in the current established power bases needs to be addressed. In fact, "change management" may well become one of the hottest issues in organizational theory at the beginning of the next Millenium. Most medium and large-size companies created in the "Industrial Era" will have to reinvent themselves in order to survive in the "Knowledge Era". As we know, however, old habits die hard...

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END NOTES

[1] Any resemblance between these characters and those of Quentin Tarantino's film "Reservoir Dog" is not pure coincidence.

[2] Pinchot, E. & Pinchot, G., *The End of Bureaucracy & the Rise of the Intelligent Organization*, in: Knowledge Management and Organizational Design, Myers, P. S. (ed.) Butterworth-Heinemann, 1996

[3] Zarifian, P., *Travail et Communication: Essai sociologique sur le travail dans la grande entreprise industrielle.* Paris, PUF, 1996

[4] Interesting discussions on learning and creativity related to the way people interact can be found in the following pieces of work:

- Amabile, T. M. How to Kill Creativity, Harvard Business Review, Sep-Oct, 1998, p. 77-87
- Argyris, C., *Double loop learning in organizations*, Harvard Business Review, Sep.-Oct., 1977, p. 115-125
- Leonard-Barton, D. Wellsprings of knowledge: builiding and sustaining the sources of innovation. Boston: Harvard Business School Press, 1995
- Schein, E.H., On dialogue, Culture, and Organizational Learning. Organizational Dynamics, p. 40-51, Autumn, 1993
- Senge, P. M. The fifth Discipline: The Art & Practice of the Learning Organization. Currency Doubleday, 1990

[5] The idea that innovation is increasingly dependent on the combination of different skills and fields of knowledge is support by the work of the following authors:

- Hamel, G.; Doz, Y; Prahalad, C. Collaborate with Your Competitors - and Win. Harvard Business Review, Jan-Feb, 1989, p. 133-139
- _____ & Prahalad,C.K. Competing for the Future, Harvard Business School Press, 1994
- Hope, J. & Hope, T. Competing in the third wave: the ten key management issues of the information age. Harvard Business School Press, Boston, 1997.
- Fleury, A.C. & Fleury, M.T.L. Aprendizagem e Inovação Organizacional - as experiências de Japão, Coréia e Brasil. São Paulo: Atlas, 1995
- Kanter, R.M. et alii Innovation: Breakthrough Thinking at 3M, Du Pont, GE, Pfizer, and Rubbermaid, Harper Business, New York, 1997
- Leonard-Barton, D., op.cit.
- McGill, M.E. & Slocum Jr., J. W. Unlearning the organization. Organizational Dynamics, v.22, n.2, p. 67-79, 1993
- Stewart, T. A. Capital Intelectual: A Nova Vantagem Competitiva das Empresas. tradução de Ana Beatriz Rodrigues, Priscila Martins Celeste - Rio de Janeiro: Campus, 1998

[6] Among leading authors supporting the search for diversity are:

- Hamel & Prahalad, op.cit.
- Leonard-Barton, op.cit.
- Thomas, D. A. & Ely, R.J., *Making differences matter: A new paradigm for managing diversity*. Harvard Business Review, Sep.-Oct., 1996, p. 79-90

[7] Among leading authors that have discussed the relationship between innovation and top management role in setting ambitious goals are

- Collins, J. C. & Porras, J.I., *Built to Last: Succesful Habits of Visionary Companies*, Harper Business, 1994
- Davenport, T & Pusak, L. Working knowledge: how organizations manage what they know, HBS Press, Boston, 1998
- Nonaka, I. & Takeuchi,H. The Knowledge-creating company: how Japanese companies create the dynamics of innovation, Oxford University Press, New York, 1995
- Quinn et alii Innovation explosion: using intellect and software to revolutionize growth strategies, The Free Press, New York, NY, 1997
- Senge, P.M., op. cit.

[8] Ohno, T. Toyota production system: beyond large scale production. Cambridge, Productivity Press, 1988.

[9] Nonaka, I & Takeuchi, L., op.cit.

[10] Amabile, op.cit.

[11] *Companies that create the future are rebels. They're subversives. They break the rules. They're filled with people who take the other side of an issue just to spark a debate. In fact, they're probably filled with folks who didn't mind being sent to the principal's office once in a while (Hamel & Prahalad, 1994, p. 107). On the other hand, rebels in the company portraiyed in this tale either quit or were fired.*

[12] Nonaka, I. & Takeuchi, L, op.cit.

[13] Quinn, J. B. Managing innovation: controlled chaos. The McKinsey Quarterly, Spring 1986, p. 2-21

[14] Kao, J. Jamming: the Art and Discipline of Business Creativity, Harper Business, New York, 1996

[15] Nonaka, I. & Takeuchi, T., op. cit.

[16] Quinn, J.B., op. cit.

[17] Woolner, P., *Designing the New Digital Enterprise*, in: Blueprint to the digital economy, edited by Don Tapscot, Alex Lowy and David Ticoll, McGraw-Hill, New York, NY, 1998, p. 108

[18] Some of the authors with similar insitgths on how to control innovation projects are:

- Davenport, T. & Prusak, L., op. cit.
- Nonaka, I. & Takeuchi, T., op.cit.
- Quinn, J.B., op. cit.
- Pinchot, E. & Pinchot, G., op. cit.

[19] Wenger, E., *Communities of Practice: The Social Nature of Learning*, Healthcare Forum: Jul-Aug 1996

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CAREER HIGHLIGHTS

- Five years spent working with the key players in the Brazilian media industry
- Played leading role in the introduction of the first internet over cable services in Brazil. Currently employed with a leading Sillicon Valley corporation.
- Top management consulting with McKinsey & Company
- Working experience in Brazil, Canada and USA
- One of youngest professors ever hired at the University of São Paulo
- Various articles published in the field of general and innovation management in Brazil

EDUCATION

- Doctor in Production Engineering, University of São Paulo (1999)
  - Dissertation on "Knowledge Management"
- Master of Science in Business Administration, University of São Paulo (1992)
  Master's thesis awarded first-class honors
  - Thesis chosen as second best in its field in Latin America by CYTED (a special committee organized and funded by the Spanish government to celebrate the 500th anniversary of the discovery of America)
  - Awarded the Sasakawa Young Leaders Scholarship (Japanese fellowship fund)
- Bachelor of Arts in Economics, University of São Paulo (1988)
- Professional Engineer in Production Engineering, University of São Paulo (1987)