



**Copenhagen
Business School**
HANDELSHØJSKOLEN

Stories, Tales and Narrative all hint at the same idea...

by

Sudhanshu Rai, Sutirtha Chatterjee and Suprateek Sarker

Department of Informatics

Howitzvej 60

DK - 2000 Frederiksberg

Working Paper No. 04-2010

Stories, Tales, and Narrative all hint at the same Idea..

Working papers

By

Sudhanshu Rai
Sudhanshu Rai, PhD
Post Doc
Copenhagen Business School
Department of Informatics

Sutirtha Chatterjee
Assistant Professor of Management Information Systems
Department of Accounting, Finance and MIS
College of Business
Prairie View A & M University
Prairie View, TX 77446

Suprateek Sarker
Professor, CAICT
Copenhagen Business School

Key words, ICT Innovation, Narratives, ICT in Developing countries, Collaboration, ICT Project Management

Abstract

The paper we present here discusses ICT innovation in India using a narrative framework; we argue that ICT Innovation has not really been a subject matter sufficiently researched in Information systems from the perspective of innovation in developing countries. We use grounded theory inspired approach, we discover three narratives of innovation in India; a) the supply narrative, the b) technology narrative c) the collaborative narrative. We detect the evolution but are aware that the result we have obtained here is far more granulated needing further investigation. What is unique however the emergence of a narrative for collaboration is as we indicate in this paper. We aim to continue further work to understand the factors involved in the emergence and shift of these narratives.

Introduction and Motivation

The nature of innovation in developing economies is a key concern in IS research (Lyytinen et al. 2003b). a core focus of understanding ICT innovation, has especially been to understand the impact and nature of IT innovation in developing countries (Avgerou 2008; Walsham et al. 2007). Past research on ICT innovation in developing countries has, for example, focused on issues related to increased transparency and reduced corruption (Silva et al. 2007), building ICT based knowledge alliances (Puri 2007), issues of standardization in the development of health information systems (Braa et al. 2007).

Nonetheless, ICT innovations in developing economies is relatively scarce (Walsham et al. 2007), though this is slowly changing. A further look at prior works of ICT innovation (especially the MISQ special issue on IS in developing countries) indicate that much of prior research has been context specific. For example, ICT innovation literature in developing countries has focused on issues and challenges related to geographic information systems (Walsham and Sahay 1999) and healthcare supporting systems (Braa et al. 2007; Miscione 2007; Silva et al. 2007). A review of such literature reveals that while the impact of ICT innovation in developing countries and their interplay with social and cultural factors have been studied, the *actual nature and evolution* of ICT innovation in developing countries has mostly escaped investigation.

Our research-in-progress paper aims to address this gap and tries to present the intrinsic nature of ICT innovation as evidenced in a developing country, specifically India. Through an evolutionary perspective which we unearth in this paper, we understand the evolving nature of ICT innovation in India and provide key insights into where ICT

innovation in India is headed in the future. We proceed as follows in this paper. Following this introduction, we provide a literature review of key theoretical perspectives of ICT innovation. After that, we describe our methodology of grounded theory. After that, we discuss the results and implications. Following that, we end with contributions and future directions of this research- in-progress.

Literature Review

The nature of ICT innovations

Literature has often aimed to understand innovation as the creation of artifacts or new ideas that enable change of production, or looking at how new ideas influence industrial or administrative transformation (Christensen 1992a; Dosi 1982; Teece 1986). As noted by Fichman (2004), the majority of IS research on innovation has been done within the dominant paradigm, which often uses economic and rationalistic models and the goal has been to understand “whether, when, and how to innovate with IT” (Swanson and Ramillier 2004, c.f. Fichman 2004, p. 315). As Lyytinen and Rose (2003b) reiterates, “to date, the study of IS innovation deals primarily with factors that explain the volume and extent of improvement in ICT deployment” (p. 303).

Lyytinen and Rose (2003a) express concern that ICT innovations reflect a fundamental discontinuity and that *they need to be theoretically captured* in order to gain an understanding of such innovations. Primed by this observation, and the fact that there has been little prior work on the nature of innovations (Walsham et al 2007), we proceed to understand how innovation in developing countries like India evolves. We use the concept of narratives as theory in order to present our perspective on ICT innovations in developing countries. As has been noted in prior literature, the innovation literature in prior works has been based on the premise that innovation is key to improving the socio-economic conditions in developing countries (Avgerou 2008; Walsham et al. 2007). Given this observation, we set out to understand whether this is indeed the case through our explication of narratives as theory. As evidenced in our results, while innovations start with such a premise, the focus of innovation often shifts, thus lending a new character to the innovation process.

Narratives as Theory

The next section of our literature review deals with the explications of narratives as theory. As Pentland (1999) notes, narratives are “abstract conceptual models used in explanation of observed data” (p. 711). Previous literature has argued that narrative analysis is a useful way to tell the story of a complex set of events (Webb and Mallon 2007), such as ICT innovation in developing economies like India. As Pentland (1999) and Webb and Mallon (2007) note, narratives provide a middle ground which tries to make a tradeoff between maintaining the richness in describing socio-political systems and also the need to provide generalizations at the same time. Based on prior works (e.g. Alvarez and Urla 2002; Truex et al 2000), we can understand the narratives as trying to tell a story interpretively about a certain set of events, leading to rich insights into the phenomenon.

In our context of ICT innovation in developing countries like India, we focus on narratives because they enable collective interpretation of such innovation practices and events, thereby lending a deeper insight into the nature of ICT innovation (Dubey and Robey 1999). In fact, our stance of using the narratives the theory is consistent with prior observations that studies that aim to unfold a complex socio-technical process are done due justice by narratives which provide a story of the unfolding of this complex process.

Narratives are often construed to be the “preferred sense-making currency of human relationships among internal and external stakeholders” (Boje 1991) P. 106). Noting their intrinsic link to sense making, which is synonymous to theory building (Weick 1989), it may easily be argued that narratives are a form of theory where telling a story with rich insights, yet retaining sufficient generalizability is important. Many works, such as one by (Boje 1995), note the power of the narrative as a good theory, a notion that (Pentland 1999) agrees with. In fact the nature of narratives as a theoretical exposition is fundamentally supported by (Gregor 2006) seminal work on the nature of theory in IS. She mentions that theories (specifically what she calls type II theories) can exist for understanding, where the emphasis is on demonstrating a certain view point of the world.

Methodology: A grounded theory inspired approach

The data we report on is part of a four module methodological system that we developed to map the ICT

innovation in India from 2003 to 2007. This paper reports some insights emerging from the first module which we call the historical module. Historical because it took into relevant public records of ICT innovation in India published in media reports, editorials and set pieces regarding ICT Innovation. We acknowledge that due to the scarcity of space and the nature of the research in progress paper, we may not be able to elucidate in a manner as we would have liked to the methodological explanations and steps we undertook. Here we very briefly state what we did and move on to the analysis,

We undertook the analysis using a grounded theory inspired approach as our methodological choice as we wanted to understand and explain how ICT innovation has been understood and reported in India, and use this as our basis we wanted to add fresh insight to ICT innovation literature for developing countries. A grounded theory inspired approach is suitable for such a purpose as it allows the researchers to stay close to the data and enables the theory to emerge from data. Before we embarked on our grounded theory inspired analysis, we ensured theoretical sensitivity by acquainting ourselves with economic development and innovation literature which we use as a lens to equip ourselves for conducting the data analysis (Schumpeter 1934; Simon 1985)

Data collection

The historical module, as its name suggests, aims to go back five years in time from 2003 to 2007 and look at: 1) publically available records, 2) articles written in trade journals, 3) national and regional newspapers and magazines, in English and vernacular languages, with a technology section, 4) research journals, and 5) specialized/trade magazines to capture instances where innovation has been reported. The data collection process was initiated in February of 2008, and lasted for 6 months. During this period 3 people with graduate degrees worked full time on identifying relevant articles where ICT innovation was publically recorded. A database for all recorded material was uploaded to a database. In Table 1 below we show a sample of the news outlets that were used to capture published material on ICT Innovation in India.

Newspapers	Computer and academic publications	Other sources
The Times of India Business Today The Hindustan times Business India The Hindu Outlook Business Economic Times Dainik Jagaran The Hindu Business Line Dainik Bhaskar Amar Ujala Financial Express	I4D Magazine DQ Channels Express Computer online Living Digital Dataquest India Indian Academy of Science (Current Science Journals) Computer@home Journals of the Indian Institute of Science PC quest Network Magazine India Computer World DQ Week Voice & Data Digit Computronics Convergence Plus published by Comnet Publishers Pvt. Ltd. PC World The Indian Techonomist-Indian computer News Bulletins Communications ZDNet India Informatics- Quarterly news letter from NICNET	Siliconindian.com Merinews.com Academic Open Internet Journal Mobile_innovation.org One world south Asia OAI (ekduniya.net) Top-tech-news.com www.iicd.org Network world.com Inquirer.net Infoworld.com Findarticles.com Techworld.com Research and market.com Dailttech.com Highbeam.com Cnetnews.com Itvidya.com ITnewsonline.com Vccircle.com PCadvisor.com

	Chip	
Table 1. Data Collection Sources on ICT innovation in India		

Initial Results and Discussion- The narratives that emerge

Following our grounded approach, we now discuss the three narratives that emerge in our initial analysis. We took all the newspaper reports and categorized them into groups. Through a series of categorizations, we narrowed it down to three narratives. We term these three narratives as the *supply narrative*, the *technological narrative*, and the *collaborative narrative*. These narratives are discussed below. Our data analysis reveals certain patterns in the evolution of ICT innovation in India. We see that initially there was a predominance of what we call the supply narrative. Following that, there was a predominance of what the technological narrative. In recent times, we see an emergence of a third narrative, which we term the collaborative narrative. We discuss each narrative below, along with examples garnered from our data analysis.

The supply narrative

The first narrative that emerges is that of the supply narrative. In this period, technology is perceived as a lever for improving governance, delivery of public services, and monitoring citizen claims and transfers. Early government policy targeted the development of technology for this purpose. In Table 2 we illustrate some instance of the supply narrative emerging from the code. Technology is seen here as augmenting governance and augmenting social services and improving efficiency in governance. In this narrative, technology being developed is formulated, conceived, designed and developed to target delivery of government services, governance issues aiming to enable efficiency at each juncture of technology intervention.

From Table 2, we notice such a characteristic manifested by two companies listed here. The first Tender Management Software™, is primarily about providing solutions to the government in line with the philosophy and general social obligations associated with activities of the government, meaning a larger public good, improved governance, improved health care etc. We refer to it as supply narrative because the technology merely is aimed at improving a particular aspect of an existing administrative or a public task. In both the cases the firms are supplying technology for specific use.

Information system researchers look at IS innovation as the creation of new application of digital computer and communication technologies (Lyytinen et al. 2003a); here communication technology is perceived as an extension of a particular trajectory within the given platform, meaning improving the stock of current technology for increasing efficiency while staying within the operating platform. Such an argument tends to focus on responding to particular technical constraints. Such innovations fall into the supply constraint narrative because technology is innovated to improve existing products and not necessarily create totally new products on new platforms. Swanson type 1 and 2 (Swanson 1994), definition of innovation talks of administrative innovation; this belongs to the supply narrative because administrative innovation is designed to improve efficiency, like the departmentalization of software maintenance functions, his type 2 definition of innovation focuses on product and process improvement, which according to our conjecturing is part of the supply narrative, because the innovation is aimed at improving performance, efficiency or productivity of an existing platform.

The supply narrative considers innovation as a tool for administrative reform, their main concerned is how to enable innovation within the organization with the help of policy instruments, procedures and organizational frames (Daft 1978; Daft et al. 1978). Here the preoccupation is not in seeking new ways but improvising, or creating incremental changes to an existing administrative platform, targeted on a maximization strategy assuming limited resources. Overall, the key implications of the supply narrative include transparency in governance, strengthening of property rights, and reduction of corruption and reduction of waste.

Name of company	The innovation
C1 India Private	C1 India’s flagship product, Tender Management Software™ (TMS) is an end-to-end Internet-based electronic

Limited	Tendering solution that automates the complete tender cycle. This product has been designed to suit the needs of any Government organization in India with minimal customization. It meets the prime requirements of the Government in the area of procurement, including demand aggregation, transparency, accountability, fiscal savings and standardization of processes across entities to bring in efficiencies and deliver cost reductions. www.nasscom.in/innovation or www.clindia.com
NIIT	NIIT has launched Litmus, a testing product, targeted at organizations within the BPO sector. It addresses the growing need of ITES companies to scale their operations through a process which makes recruitment faster, more consistent, objective and valid, while increasing their ability to access talent from across the country. www.niit.com
Table 2. Supply narrative examples	

The Technology Narrative

The technology narrative, considers information system innovation as an innovation of technology per se. Innovation occurs as new technology is created leading to new products, processes or services. The focus is purely on technology innovation for enabling technical change. The key feature here is that the activities are focused at technology development per se without the preoccupation of where the technology buyer will apply it.

Name of company	The Innovation
Newgen Software Technologies Limited	Newgen is the first company in the Indian subcontinent to offer a software-based configurable solution that includes image-based clearing of instruments such as demand drafts, interest and dividend warrants in addition to cheques (with and without mediation by the central bank/clearing house), thereby drastically reducing the clearing time. www.newgensoft.com
Lisle Technology Partners Private Limited	Lisle Technology Partners has developed AthenaVerify, which performs an access path analysis for layer 3 network devices to verify security policy compliance. With AthenaVerify, security officers can employ a proactive approach to reduce the risk of a serious security breach that could endanger sensitive data or cause interruption in business operations. www.nasscom.in/innovation
Table 3. Technology narrative examples	

In the technology narrative, bracketed by the nature of innovation view is primarily determinant of radical and breaking out themes, caused by focusing on the creation of new or novel technology establishing a new market (Henderson et al. 1990). A central theme of the technology narrative is focusing on Innovation of technology, where the endeavor is to improve existing sets of technologies, provide better technical solutions as Newgen in table 3 illustrates. Here their sole purpose is simply improving technology. Take for instance, Lisle Technology which has created a competitive advantage in a narrow field of security through focusing on new technologies. Thus the technology narrative represent a group of firms whose sole aim is to develop new technologies for the sake of technical improvement.

In the technology narrative, improvement outcomes propel the firm on a new trajectory of growth, creating new markets for their product and establishing new leadership position for the firm at the same time. This is in line with what Schumpeterian view explains innovation through the idea of “disruptive technologies” for sustaining firm’s competitiveness, meaning an attempt by firms to be ahead of their competition, by constantly adapting and incorporating new technologies and knowledge to existing systems of production. (Schumpeter 1934; Schumpeter 1942). The core of his argument revolves around the ability of technologies to spur change by destroying existing systems, the phenomena referred to as “creative destruction”. According to the technology narrative, firms are constantly on the lookout for changing their stock by innovating. Consequently enabling the firm to break out of an existing architecture in order to adapt to a new one, (Henderson et al. 1990). Linked to the breaking out idea is the radical perspective of technology innovation, (Dess et al. 1984; Dewar et al. 1986).

In this narrative, in-depth knowledge allows actors to think of alternative ways to combine technologies, create new services or application to address new needs or markets. Innovation in the technology narrative is predicated on two key factors, diversity and cohesion. Diversity considers the makeup of the team members while cohesion addresses the working relationship between members, a precondition for sustaining the level of learning, (Leonard 1999;

Leonard et al. 1999; McFadyen et al. 2004; Paulus et al. 2003; Sutton et al. 1996). Primarily, within a technology narrative, the modus operandi shifts from an established procedure to creating new ways to delivering the product, service or application by establishing new mechanisms or platforms for delivery, (Dess et al. 1984; Dewar et al. 1986) creating challenges for others by making it expensive to replicate for competing firms, (Cooper et al. 1976).

The competitive advantage in such a technology narrative is acquired (Cohen et al. 1989) stored and used (Rothaermel et al. 2007) at the locus where new technology is being created and introduced. From the above discussion, overall, the key implications of the technological narrative are technical differentiation and competitive advantage gained through specialization. These are achieved by the firms in India focusing on their co competencies on the bases of the technical know-how and the value they create for their clients. The solution is always a technical one and the innovation is directed at technological improvement. Figure 1 and 3 illustrates the instances of technology narrative identified by blue bubbles.

The collaborative narrative

From the analysis of the empirical data, we detect a recent emerging narrative that predicates its argument on the ability for technology to enable people and firms to collaborate. Here innovation is perceived as a tool targeted at improving collaboration between groups, professionals, technologists and firms. Here, technology is designed to enable networked interactivity. Here solutions create an ecosystem which enables, interaction, communication, networking, increasing the performance of individuals that use technology. In this narrative, the focus changes to collaboration as Indian companies become international and get integrated into the global supply chain. Better integration of Indian companies into the global value chain leads to focus on technologies that aid collaboration.

Name of company	The Innovation
Adiance Technologies Private Limited	Adiance has launched 1videoConference alpha, an Open Source Web2.0 Video Conferencing Software for Asterisk. Organizations using this product have been able to carry out multi-party video conferencing using inexpensive and non-proprietary Video and Voice over IP technology, without leaving any footprint on the user system.
Wipro Technologies	Wipro has innovated the Factory framework that is understood and adopted by all the global business units of an enterprise. The factory model introduces new processes/services such as demand management, re-usable estimation, centralized architecture and engineering services and infrastructure consolidation that are leveraged across all projects. www.wipro.com

Table 4. Collaborative Narrative Examples

Two key features of the collaborative approach dominate the innovation landscape in India. The first targets improving collaboration between software production units. The second collaborative area that appears to be dominating the innovation spectrum is associated with social networks. Firms in this space think of tools, applications and services to convert these networks within firms into productive units.

In our data analysis, we also see a gradual evolution of the increasing importance of the collaborative narrative and we discuss this evolution of the narratives below. We present Table 5 below as a reference to our discussion.

Evolution of the Narratives

	2003	2004	2005	2006	2007	Total
Supply Narrative	15	22	21	33	40	131
Technology narrative	31	22	27	22	41	142
Collaborative Narrative	10	16	28	33	51	122

Table 5. Distribution of instances of narratives
Source: The Euro India historical module database

Table 5 shows a distinct pattern in the evolution of these narratives. Here, the reader can notice that the growth of the supply narrative is high, but not consistent. This can be explained by the sustained government intervention in the market for ICT projects. The technology narrative demonstrates a large dependency of Indian firms to innovate

in this sector. But the real story is neither the supply nor the technology narrative because we expected firms to have a government focus (supply narrative), due to the large project spread of the state, and a technology dominance due to India's lead in value added technical ICT services (technology narrative). The collaborative narrative is an emergent and surprising narrative because we did not expect it to be there and assumed the economy to be dominated by the previous two narratives. The steady growth of the collaborative narrative indicates that innovation has shifted from a market for technical solutions to a market for enabling collaboration. This according to us appears to be the interesting story of Table 5.

We conjecture that the shift will have two sets of impact on ICT innovation in India. First, ICT innovation will no longer be limited to large or medium scale companies situated in the Indian metropolitan cities but innovation will be more contextual and unique. This innovation will continue to fall within the supply narrative. We also expect to see a shift in Indian innovative activity from building technology for services to a product based provisioned on enabling collaboration. This does not automatically imply that all firms will immediately shift gear and move to a collaborative mode. What this implies is that being a developed country there are sectors of the economy which are indicating characteristics that needs better explanation in terms of innovation. *Currently ICT innovation literature dealing with developing countries has not identified this trend nor has it been explained.* The key argument of the collaborative narrative is primarily in its intent. The shape of the market and the innovation to come seems to have stimulated firms into developing products either focusing on low cost video communication, or providing a new framework to develop low cost software globally as Wipro is trying to do.

In summing up we would like to conjecture that innovations focused at enabling the adoption of collaborative frameworks will be a feature of the Indian ICT industry in the days ahead while the supply and the technology narratives will continue to play an important role. In general, the collaborative narrative implies better integration of technology and value perceptions and reduction in decision making time and increased productivity and shorter lead times from factory floor to shop floor.

Contribution and Future Directions of this Research

We see our paper here as contributing on two fronts. One, it provides a deeper insight into the phenomenon of complex technological innovation in India. It reveals three distinct narratives of such innovation. While ICT innovation in developing countries has been discussed in prior research, the true nature of the evolutions of such a complex socio-technical process has often escaped close scrutiny. The reason is that most ICT innovation has focused on the factors and impact of ICT innovations (Fichman 2004), without delving into the true nature of what the innovations are. Our paper provides this insight, by showing how there are three distinct narratives of the ICT innovation in India.

The second important contribution of this paper is to highlight the evolution of this process over time. In our data analysis, we find that the narratives are evolving from one stage to another. For example, in early years we find a dominance of the supply narrative and the technological narrative, and more recently we see a distinct emergence of the collaborative narrative, *which we feel is an important story that has not been unearthed in prior innovation literature, especially for developing countries.* Thus, not only do we discover the nature of the narratives, but we also find the shift in the nature of ICT innovations in a developing country such as India.

Since our paper is a research-in-progress, our future directions of research include the following: 1) an investigation of the social, economic, and technological factors that govern each narrative and how they interplay with each other in order to develop this narrative, 2) and, to investigate the key drivers of change from one narrative to another. For example why did India move from a supply to a technology to a collaborative narrative? Answers to such questions will lead us to a better understanding of what ICT innovation means in a developing country like India and how it evolves over time, thus leading to better prescriptions on how to possibly stimulate and manage such innovations in the future.

In addition, our next research focus along this line of inquiry is in using the same methodological reasoning to conduct this study in China. This would enable us to get a better picture how two of the largest Asian countries in terms of population are likely to develop and use technology in the future. Also, our aim is to compare the evolutions of the ICT innovations in these two countries. This would give us greater insight into this complex

process of ICT innovation that includes social, economic, administrative, and technological factors. This has implications for IS research and the IT industry at large.

References

- Avgerou, C. "Information Systems in Developing Countries: A Critical Research Review," *J Inf technol* (23:3) 2008, pp 133-146.
- Boje, D.M. "The Storytelling Organization: A Study of Story Performance in an Office- Supply Firm," *Administrative Science Quarterly* (36:1) 1991, pp 06-126.
- Boje, D.M. "Stories of the Storytelling Organization: A Postmodern Analysis of Disney As "Tamara-Land"," *The Academy of Management Journal* (38:4) 1995, pp 997-1035.
- Braa, J., Hanseth, O., Heywood, A., Mohammed, W., and Shaw, V. "Developing Health Information Systems in Developing Countries: The Flexible Standards Strategy," *MIS Quarterly* (31:2) 2007, pp 381-402.
- Christensen, C. "Exploring the Limits of the Technology S-Curve. Part I: Component Technologies," *Production and Operations Management* (1:4) 1992a, pp 334-357.
- Cohen, W.M., and Levinthal, D.A. "Innovation and Learning: The Two Faces of R & D," *The Economic Journal Volume , Issue (Sep.,)*, (99:397) 1989, pp 569-596.
- Cooper, A.C., and Schendel, D., . "Strategic response to techno-logical threats," *Business Horizons*, (19) 1976, pp 61-69.
- Daft, R. "Dual Core Model of Organizational Inno-vation," *Academy of Management Journal* (21:2) 1978, pp 193-210.
- Daft, R., and Becker, S. *Innovation in Organization* Elsezier New York 1978.
- Dess, G.G., and Donald, B., . "Dimensions of organizational task environments," *Administrative Science Quarterly*. (29) 1984, pp 52-73.
- Dewar, R.D., and Dutton, J.E. "The Adoption of Radical and Incremental Innovations: An Emprical Analysis " *Management Science* (32:11) 1986.
- Dosi, G. "Technological paradigms and technological trajector-ies: A suggested interpretation of the determinants and directions of technical change," *Research Policy* (11) 1982, pp 147-162.
- Fichman, R.G. "Going Beyond the Dominant Paradigm for Information Technology Innovation Research: Emerging Concepts and Methods," *Journal of the Association for Information Systems* (5:8) 2004, pp 314-355.
- Gregor, S. "The Nature of Theory in Information Systems," *MIS Quarterly* (30:3) 2006, pp 611-642.

- Henderson, R.M., . , and Clarkk, K.B. "Architectural Innovation: The Reconfiguration of Existing Product Technologies and the Failure of Established Firms," *Administrative Science Quarterly* (35) 1990, pp 9-30.
- Leonard, D., and W. Swap *When Sparks Fly: Igniting Creativity in Groupss*. Harvard Business School Pres, Boston 1999.
- Leonard, D., and Swap, W. *When Sparks Fly: Igniting Creativity in Groups* Harvard Business School Press, Boston, 1999.
- Lyytinen, K., and Rose, G.M. "The disruptive nature of information technology innovation: The case of internet computing in systems Development organization " *MIS Quarterly* (27:4) 2003a.
- Lyytinen, K., and Rose, G.M. "Disruptive Information System Innovation: The Case of Internet Computing," *Information Systems Journal* (13:4) 2003b, pp 301-330.
- McFadyen, M., and Cannellad, A. "Social capital and knowledge creation: Diminishing returns of the number and strength of exchange relationships," *Academy of Management Journal* 1996: 1) 2004, p 47.
- Miscione, G. "Telemedicine in the Upper Amazon: Interplay with Local Health Care Practices," *MIS Quarterly* (31:2) 2007, pp 403-425.
- Paulus, P., and Nijstad, B. (eds.) *Group creativity: An introduction*. Oxford University Press, 2003.
- Pentland, B.T. "Building Process Theory with Narrative: From Description to Explanation," *The Academy of Management Review* (24:4) 1999, pp 711-724.
- Puri, S.K. "Integrating Scientific with Indigenous Knowledge: Constructing Knowledge Alliances for Land Management in India," *MIS Quarterly* (31:2) 2007, pp 355-379.
- Rothaermel, F.T., and Hess, A.M. "Building Dynamic Capabilities: Innovation Driven by Individual-, Firm-, and Network-Level Effects," *Organization Science* (18:6) 2007, pp 898-921.
- Schumpeter, J.A. *Theory of Economic Development*. Harvard University Press, . Cambridge, MA, 1934.
- Schumpeter, J.A. *Capitalism, Socialism, and Democracy* Harper, New York., 1942.
- Silva, L., and Hirschheim, R. "Fighting against Windmills: Strategic Information Systems and Organizational Deep Structures," *MIS Quarterly* (31:2) 2007, pp 327-354.
- Simon, H.A. "What we know about the creative process," in: *Frontiers in Creative and Innovative Manage-ment* R.L. Kuhn (ed.), Ballinger, Cambridge, MA, 1985, pp. 3-20.
- Sutton, R., and Hargadon, A. "Brainstorming groups in context: Effectiveness in a product design firm," *Administrative Science Quarterly* (41) 1996, pp 685-718.
- Swanson, E.B. "Information Systems Innovation Among Organizations," *Management Science* (40:8) 1994.
- Teece, D.J. "Profiting from Technological Innovation: Implications for Integration, Collaboration, Licensing and Public Policy," *Research Policy* (15:6) 1986, pp 285-305.
- Walsham, G., Robey, D., and Sahay, S. "Foreword: Special Issue on Information Systems in Developing Countries," *MIS Quarterly* (31:2) 2007, pp 317-326.
- Weick, K.E. "Theory Construction as Disciplined Imagination,," *The Academy of Management Review* (14:4) 1989, pp 516-531.