In ***Systems intelligence: A new lens on human engagement and action***, eds. Raimo P. Hämäläinen and Esa Saarinen: pp. 159–173. Espoo: Helsinki University of Technology, Systems Analysis Laboratory.

CHAPTER **10**

Facilitator's Systems Intelligence in Business Process Simulations

Rita Lavikka and Jukka Luoma

The SimLab[1] business process simulation method is aimed at facilitating holistic thinking about the management of complex networks of business processes. It involves the building of conceptual process models and using these models as common points of reference in a facilitated group discussion during a simulation day. The simulation day is an interactive process in which process models are tools for organizing knowledge. In this chapter, we examine the process of facilitation in SimLab process simulation projects from a systems intelligence[2] perspective. We investigate the actual process of applying the process simulation method using three "systems questions"[3]: (1) What does the system generate? (2) How does the system mould us as human beings? and (3) What kind of human in-between does the system endorse? We describe how the facilitator needs to be holistically oriented and, at the same time, sensitive to unique context-specific features of the facilitation process. We conclude by reflecting on how the systems intelligence perspective might contribute to the self-reflective improvement of actual facilitation practice.

Introduction

OFTEN, BUSINESS PROCESSES constitute complex inter-organizational networks such as demand-supply chains, inter-organizational R&D alliances and networked service provisioning (Smeds et al. 2005, p. 1). This *modus operandi* requires *systemic process management*. Cross-functional and interorganizational processes are comprised of complex networks of interdependent activities and involves a plurality of stakeholders and interests. The challenge is to coordinate the activities of collaborating parties in order to improve the value-creating networks' effectiveness and/or efficiency while accommodating different stakeholder interests.

[1] http://www.simlab.tkk.fi

[2] http://www.systemsintelligence.tkk.fi

[3] These questions were originally presented by Hämäläinen and Saarinen (2007a). The questions are meant to reveal important characteristics of a system from a leadership perspective.

Business process development approaches (Smeds et al. 1994, Hammer 1990, Davenport and Short 1990, Davenport 1993, Hammer and Champy 2001, Chang 2006) provide support for organizations in this challenge. Business process development creates improvement through better coordination as well as through learning and building of common understanding. Starting from acknowledging the pitfalls of sub-optimization and recognizing the need for a holistic approach to process management and development, conceptual process models and process development methodologies are aimed at *facilitating the process of holistic thinking about business process management and development.*

One such approach, the SimLab™ process simulation method (see Smeds 1994, Evokari and Smeds 2003, Smeds et al. 2003, 2006) aims at *creating a space for knowledge sharing and creation* (Smeds and Alvesalo 2003). This is to facilitate the emergence of new ideas, common understanding, improvement of practices and coordination, and/or collaborative thinking (see Jaatinen and Lavikka 2008). The aim is to create such conditions in a simulation day which includes facilitated group discussions and group work sessions. The method embeds business process modelling which is an activity that supports participatory process management.

This chapter explores the actual process of applying the SimLab process simulation method. We describe the key phases of the process. Our emphasis is on *facilitation* which is a cornerstone of the method. Our contention is that a successfully facilitated process simulation project requires that the facilitator is endowed with capabilities that transcend methodological skills that can be acquired by instruction. We use the concept of *systems intelligence* (Saarinen and Hämäläinen 2004) to highlight the 'something more' than 'methodological skills' needed in the facilitation of process simulation projects. For this purpose, we describe how *process simulation projects* can be understood *as systems.* We conclude our chapter with a reflection on how such a systemic perspective might contribute to a facilitator's cultivation of her practice.

Developing Organizations through Improving Business Processes

The SimLab process simulation method can be seen as one example in the wide range of process-oriented approaches to organizational improvement. To set the context for the method, we briefly describe some historical landmarks in the field as well as some recent developments.

In 1960, Levitt underscored business organizations as customer-satisfying processes – in contrast to viewing them as goods-producing or technology-developing systems. Aguilar-Savén (2003) describes Levitt's (1960) customer-orientation manifesto, put forward in his classic article in the Harvard Business Review, as a landmark in the emergence of business process orientation in developing organizations. Aguilar-Savén (ibid.) describes the 1990s as the upswing decade of such process focus. Since then, a number of methodologies and models have been developed to support analyzing business processes, discussing and learning about them as well as making decisions concerning them.

Earlier approaches, such as business process re-engineering (Hammer 1990,

Davenport 1993, Hammer and Champy 2001), took organizational improvement as something to be planned-and-implemented through radically restructuring business processes. One could say that, such view of organizational change equates organizations with machines and change management with engineering. This results in ignoring the 'human issues' of process improvement, including the cultural, cognitive and emotional dimensions of organizational change (see, e.g., Davenport 1995, Melão and Pidd 2000). More recent business process development literature acknowledges the inadequacy of the machine metaphor of organizations alone. Complementary ways of understanding business processes include seeing them as dynamic and feedback-intensive systems or as social constructs (ibid.). For instance, when business processes are viewed as social constructs, they are no longer taken as 'things' to be manipulated from the outside. Rather, they are

> made and enacted by people with different values, expectations and (possibly hidden) agendas. ... abstractions, meanings and judgements that people put on the real world. (ibid., p. 120)

As to improving business processes, Melão and Pidd note that

> existence of multiple (and often conflicting) views about what is going on and about how the process is being and should be carried out means that a different view of change is required. It implies that changes should result from a process of negotiation of conflicting interests, difficult though this process may be. (ibid.)[4]

The shift of though, that Melão and Pidd describe, has implications for process improvement practice. To summarize, important implications include the following. Process improvement practice is no longer equated with engineering (as in business process re-engineering), but is rather part of process management practice. As a result, modelling is primarily considered as a means to organize knowledge, not as a means to represent business processes as objectively existing 'things'. It is a tool that *supports* process management practice. Moreover, matters of stakeholder participation and, consequently, group dynamics becomes increasingly important when 'improvement' is considered contingent on interpersonal communicative processes that constitute process management. In this process, the modeller, as part of an organization or as an external consultant, becomes more a facilitator than an expert.

The SimLab business process simulation method supports organizations in participatory planning and learning about business processes. The method has been developed and its application process is studied through an action research approach (see, e.g., Gummesson 2000). It has supported several process development programs of business and non-profit organizations. Business process simulation projects are set up to support these programs. The researchers are responsible for organizing process simulation projects and acting as facilitators during the simulation day.

[4]Similar paradigm shifts have occurred in the fields of systems thinking (see, e.g., Jackson 2003, 2006; Midgley 2000) and operations research (see, e.g., Midgley 2000, ch. 9).

The method takes into consideration that process improvement is part of process management practice rather than as a purely technical endeavor. The method utilizes modelling as a decision-support tool in process management rather than as a means to represent reality objectively. Its evolutionary, participative approach to developing organizations reflects an appreciation of the business-processes-as-social-constructs perspective. One rationale for a participatory development process is that people often resist changes, particularly if they have not been involved from the beginning of the change process (Smeds 1997b). The simulation method helps in overcoming this barrier to change. It increases the likelihood of implementation of the development ideas by promoting participation of employees from all hierarchical levels into the development process.

If business processes are understood to be *made and enacted by people*, then organizational change and, thus, development, realizes only insofar as new procedures are implemented by people. Senge (1990) argues that new ideas fail to get put into practice because they conflict with people's mental models[5]. Senge's argument is at odds with the outlook on SimLab process simulations, or other process improvement methods, as merely an technical enterprise. Process modelling does not yield development ideas that the facilitator can impose on the participants as 'objective necessities'. Rather, models facilitate an interpersonal learning process. In this process, the facilitator raises questions concerning the processes but lets the participants themselves decide what improvements should be made to the processes. The participants are empowered to take responsibility of their challenges and decisions concerning improvement ideas. Thus, the facilitator needs to be equipped, not only with methodological expertise, but, also with leadership capabilities.

Business Process Simulations for Process Development

SimLab process simulation method

The process of applying the SimLab process simulation method (Smeds et al. 2006) includes the following phases (see Figure 10.1 on the facing page):

1. Setting goals for the development project, e.g., which processes to be developed
2. Modeling the selected business processes
3. Interviewing relevant parties that are involved in the process
4. Preparing a process simulation day
5. Organizing a process simulation day
6. Analyzing results
7. Giving feedback to the people that the possible changes affect

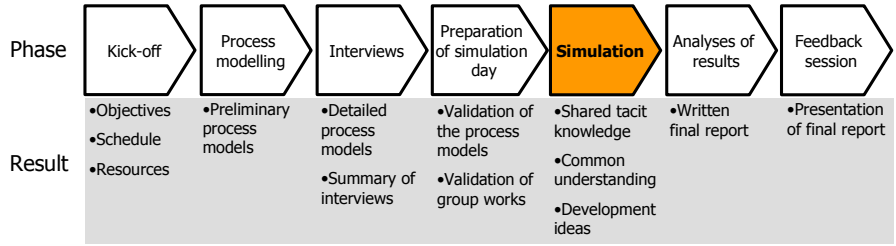

Figure 10.1: The phases of the SimLab process simulation method.

Typically, a process simulation project of this type lasts about three months. During the project, researchers create models of selected business processes in collaboration with the case companies. The culmination of the method is a simulation day on which the key people of the selected processes, already existing or under development, are gathered together to discuss process development opportunities. The simulation day includes a facilitated group discussion in a facility where process models are projected onto a large canvas. The expression 'simulation' refers to the interactive group discussion during which participants together develop ideas concerning processes under inquiry. The simulation does not involve any numerical computations. For such process simulation approaches, see, e.g., Harrison et al. (2007) and Davis et al. (2007). The simulation day also involves group work sessions for further development of the improvement proposals.

The simulation day provides an interactive learning environment that provides a platform for building common understanding among the participants. In knowledge management terms (Nonaka et al. 2000), the interactive simulation facilitates sharing and combining tacit knowledge as well as combining explicit knowledge. This is achieved through joint discussions where participants of the simulation day share their experiences and best practices as well as discuss improvement opportunities (Feller et al. 2005).

A process model as a boundary object

Process modelling produces common points of reference *for the discussions* of the the simulation day. In other words, the process model acts as a "boundary object" (Star 1989, Smeds et al. 2006). Process models facilitate combining and sharing tacit knowledge through using process models as vehicles of translation. This provides means to create and share understanding of business processes and their development needs. Moreover, participants can use process models to discuss better ways of coordinating interdependent activities. Obviously, participants interests may conflict, especially in inter-organizational process development projects. The use of process models helps dealing with conflicting interests because the participants can use them to build *mutual understanding about where*

[5]Mental models are defined by Senge (1990, p. 174) as deeply held internal images of how the world works. They are images that usually limit people to familiar ways of thinking and acting.

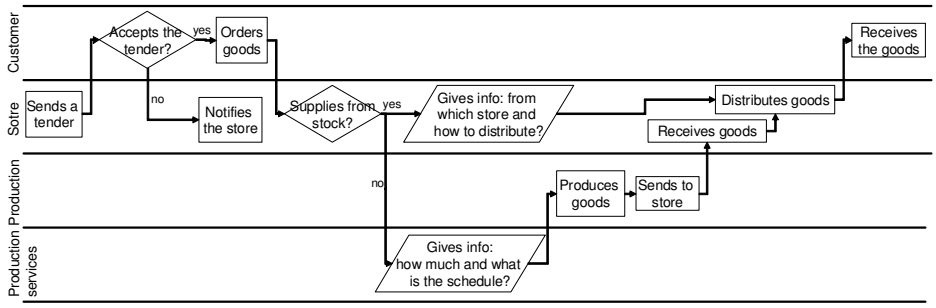

Figure 10.2: An example of a process model that could be generated by business process modelling method (modified from Checkland's (1999, p. 172) conceptual system model).

and to which degree their viewpoints and interests conflict. In this way, they can more effectively deal with the plurality of perspectives. One could say that the emphasis is not on modelling for the sake of optimizing but, rather, in order to facilitate discussions and learning (cf. Checkland 1985).

Figure 10.2 depicts a simple model[6] of an order-processing system that could be used on a simulation day. Hypothetically, the participants could, e.g., point out and discuss potential bottle-necks in the order-delivery process as well as identify new ways to organize the process. Participants could share their experiences and ideas by referring to the process model projected on a wall. This makes it easier for the participants understand as well as to comment on each others' ideas and experiences.

Viewing process models as boundary object is consistent with the position that problem solving support should focus on interpersonal communicative processes (see, e.g., Schein 1987). Process models, as a common points of reference, ease communicative processes between participants, so that they can focus more effectively on sharing and jointly constructing knowledge through their engagement in the discussions during the simulation day. Process models are tools to direct the focus of the simulation day towards a common development object.

Outcomes of process simulation projects

The process simulation day creates a space for knowledge sharing and creation (Smeds and Alvesalo 2003). More specifically, what ultimately amounts to an 'improvement' may involve trust-building, building of an open and a collaborative atmosphere, development of new and re-organization of existing processes, building of common and more comprehensive understanding of relevant business processes. Thus, it is not always that clear what will eventually constitute the improvement. The simulation day provides a platform where the participants, with the help

[6]This process model applies the notation of flow chart technique. The boxes represent activities, diamonds represent decisions and arrows represent the direction of flow of information. Process models can also be modelled using some other notation which is usually decided based on the needs of the customer.

of the facilitators, can share and jointly construct knowledge. It is up to the participants to generate – again, with the help of the facilitators – the outcomes that the client (e.g., the organizations with stakes invested in the process) regards as improvement. Although the nature of improvement may not be entirely known beforehand, it is still something that process simulation projects apparently *can potentially generate*. Next, we introduce the concept of systems intelligence that can shed light onto SimLab process simulation projects as improvement-generating processes.

Systems Intelligence Perspective on Process Simulation Projects

Clearly, there is always 'something more' than 'appropriate methodology' combined with 'methodological expertise' involved in *actual process simulation projects*. In Checkland's (1999, pp. A33–34) words,

> Never imagine that any methodology can itself lead to 'improvement'. It may, though, help *you* to achieve better 'improvement' than you would without its guidelines.

Our attempt here is to use the concept of systems intelligence to frame the practitioners' or facilitators' competence manifested in the *actual process of applying* process development methodologies, using the process of applying SimLab process simulation method as an illustratory example.

According to Saarinen and Hämäläinen (2007, p. 51), systems intelligence is "intelligent behaviour in the context of complex systems involving interaction and feedback". Systems intelligence emphasizes the human potential and tries to shift the focus on human action (Hämäläinen and Saarinen 2007a, p. 4). Hämäläinen and Saarinen (2008) describe systems intelligence as a key competence of a facilitator in *decision and negotiation support*. See also related discussion on systems intelligence in the context of *systems practice* (Luoma et al. 2008).

Process simulation as a system

Consider *the process of undertaking SimLab process simulations as a system*. It is composed of parts such as a facilitator, process models, and participants involved. The system is set up to generate learning, shared understanding, and change proposals. In this way, the system addresses and relates to some problematic situation. To illustrate this idea, Figure 10.3 on the following page portrays the simulation day as a system (step 5 in the method, see Figure 10.1 on page 163). Figure 10.3 depicts some elements in the system that contribute to the dynamics and outcomes of the simulation day.

Three systems questions for process simulation facilitators

Hämäläinen and Saarinen (2007a) present three systems questions that serve to reveal important characteristics of a system that a leader needs to be *intelligent*

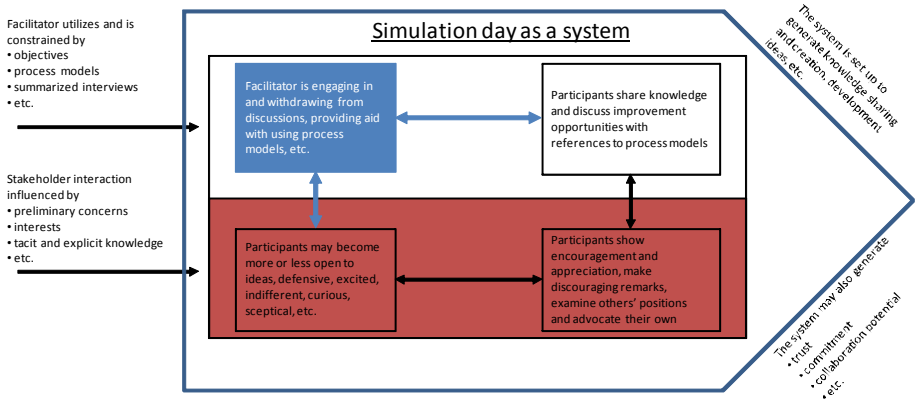

Figure 10.3: The simulation day as a system.

with. We examine the same set of questions as potentially revealing important characteristics of the system that the facilitator of the process simulation project needs to be intelligent with.

(1) What does the system generate – and to what extent is this what we want?

The facilitator needs to be holistically oriented and, at the same time, sensitive to unique context-specific features of the facilitation process.

Obviously, the process of applying the SimLab process simulation method, or the system, generates objectives for the development project (step 1, see Figure 10.1 on page 163), facilitator-led interviews (step 3), models of selected business process (steps 2 and 4), a set of interrelated activities called the simulation day (step 5), analyses and communication of simulation results (steps 6 and 7). A proportion of what the system generates is predictable in that they result from the facilitator working within the guidelines of the method. However, this is but a fraction of what the system generates.

Take for example the simulation day (step 5, see Figure 10.1 on page 163) on which the involved stakeholders get together to discuss with and about the process models developed earlier (through steps 1 to 4). The system also generates new ideas, shared understanding, conflicting viewpoints, frustration, excitement, disapproval, mutual encouragement, openness and withdrawal. The facilitator is *part of this system* responding to what is happening around and to her. In doing so, she is contributing to what the system generates.

Clearly, the facilitator's actions have a pivotal role in shaping what the simulation day as a whole comes to generate. These actions include her managing and organizing efforts, the expert knowledge regarding the process simulations

that she provides. She also chooses, more or less, her communicative actions on a moment-to-moment basis. The method can help her to an extent. However, the emphasis is placed on the idea that, in addition, she has to operate intelligently *with* the system, e.g., on the simulation day, without the luxury of drawing upon a ready-to-use method or tool. Yet, she has to act, and, indeed, she is able to do so, facilitating the discussions so that the system comes to generate mutual understanding about the interconnections between people's tasks and ideas about how they could improve their existing processes.

A key point to be made from a systems intelligence perspective is that, to a significant extent, the facilitator is figuring out her actions on the fly, she is thinking on her feet in order to somehow – to use a phrase from Stacey et al. (2000) – "get things done". She is endowed with capabilities to act that are not limited to the "explicit, knowledge-like ... propositional, symbol-intensive and analytic" (Hämäläinen and Saarinen 2007b, p. 298). She complements these with relational, situational, implicit, empathising capabilities in order to cultivate the system so that it brings about betterment.

(2) How does the system mould us as human beings?

The SimLab process simulation method guides the facilitator to draw people's attention to the interdependences of activities and the coordination of people's tasks. Following the steps of the method moulds people in that the process of using the method confines discussion to particular themes. As a result, participants enter the scene as advocates of an organization or a part thereof, or as decision makers who control the necessary resources to make particular changes, to name but a few roles. Moreover, people may perceive themselves as active participants whose input is considered valuable but may also experience the role of a bystander who is just there to make the process *seem* participatory. These examples reflect ways in which the system, i.e., the simulation day, might *mould people*. The facilitator has a key role here.

Yet, again, this is not merely a concern of choosing a proper method and using it properly. The facilitator needs to be mindful of the fact that her actions will pay a crucial role in how the system moulds people. She is acting prior to, e.g., the simulation day, but also during it. When the system is being whatever it is, becoming whatever it becomes, the system is affecting whether people are open to ideas, defensive, excited, indifferent, curious, sceptical, encouraging; whether they are in a cooperative or competitive mode. Further to this, if we take the facilitator's embeddedness in the system seriously, she is also being moulded by the system.

The way in which the system moulds the participants as human beings, in turn, is partly observable as part of what the system generates. Therefore, if what the system generates is to be taken seriously, it is to be kept in mind that the first system's question is intimately intertwined with the second one. The way in which people act is co-determined by the subjects themselves, and their systemic environment. To the extent that the facilitator has a say in 'setting up' the systemic environment of, for example, a simulation day, she is affecting

how the system moulds people and, thereby, contributing to what the system generates.

(3) What kind of in-between does the system endorse?

Systems' questions one and two view the system from the perspectives of what *people generate* (as a system) and how this system *moulds people*. A third way of describing the system is to focus on what is emerging in the context of applying the process simulation method as something that emerges "in-between" people. Stacey et al. (2000) highlight the fact that social interaction is more than mere exchange of material resources and flows of information. More fundamentally, interaction is the human way of *being*. From a facilitator's point of view, this means, e.g., that she is inseparably a part of, or immersed in, the system. What the system generates does not result from the facilitator engineering the system in a mechanistic manner, but from her being immersed in the participatory process. She is taking part and standing back from discussions, summarising discussions and providing her own viewpoints. In doing so, she is evoking actions in others. She may not be able to objectively grasp how her actions will unfold and, yet, she needs to act *knowing* her actions *will most likely have an impact*.

From the point of view of the above three systems questions, *the process of applying SimLab process simulation method* has features that are "too transient, idiosyncratic and forward-coming to allow us the luxury of them becoming neatly conceptualized and perceived as objects (Hämäläinen and Saarinen 2007b, p. 297). The concept of systems intelligence draws focus on the fact that, even so, the facilitator – together with method(s) employed and participants involved – is able to act in order to help an organization to improve its processes and enhance learning among the participants. She is using her intelligence that manifests itself not only through her prior-to-action, or in-between-actions, reflection, but as part of her actions.

Conclusions

Procedures, methods and models can, to an extent, help organizations in the challenge of holistic process management. From a systems intelligence perspective, it is, ultimately, the dynamic process of communicative interaction between individuals, which gives rise to 'improvement'. It emphasizes process development guidelines and methods as parts of this improvement-seeking process. From the systems intelligence perspective, the system that the facilitator has to be intelligent with appears much wider than a narrow focus on choosing the right means and ensuring a proper use of chosen means. She engages herself with the situation which unfolds itself as the interconnections and interactive processes between the participants. As a result, the facilitator will most likely be dealing with situations for which no ready-to-apply solution is available.

In process simulation projects, the facilitator has an interest in cultivating the simulation day *as a whole*. After all, her success or failure is determined by what *the simulation day as a system generates*. The systems intelligence perspective emphasizes that all she can do is act, on her own behalf, in her own

local environment. However the optimal impact would be that, through her reciprocal influence with the system, her actions may accumulate to changes that make a difference to the whole. To an extent, she can "plan and implement" these actions. Yet, the system will give rise to properties and phenomena that cannot be dealt with in a plan-and-implement fashion. As a result, the facilitator needs to be holistically oriented and, at the same time, sensitive to unique context-specific features of the facilitation process.

On the one hand, the systems intelligence perspective pinpoints the humanly rich character of process simulation projects. Appreciation of the myriad interconnected elements involved in process simulation projects, may make them appear as increasingly complex, as increasingly more difficult to manage. On the other hand, the systems intelligence perspective maintains that humans are already endowed with capabilities for coping with such fabulous complexity. Moreover, if the facilitator has an influence on the whole through her own participation, anyway, there will probably be some sort of hidden potential in the system as actions that she could take.

The concept of systems intelligence highlights the facilitator as being capable of acting productively *with respect to complex and humanly rich wholes*, such as the simulation day. She is able to act – *as part of the whole* – in ways that have a positive impact on the whole, despite the vast complexity of the current or desired status of the system in propositional terms. Her *intelligence with the system*, i.e., her systems intelligence manifests itself as part of her actions. Moreover, systems intelligence is an empowering concept that invites facilitators to make more and better use of their intelligence-as-part-of-their-actions in order to improve their practice of facilitation. This complements other approaches that are aimed at increasing the facilitator's competence through a better understanding and mastering of facilitation procedures and guidelines.

How can one improve one's competence in being holistically oriented and, at the same time, sensitive to context-relevant parameters of the whole, so as to bring about betterment through one's actions? Becoming more competent in this respect is not exclusively about adopting explicit prescriptions for action. After all, explicit prescriptions are generic in nature and thus they omit contextual parameters. The systems intelligence perspective highlights some foci of attention that perhaps contribute to portraying a wider understanding of the facilitator's competence. For practicing facilitators, the systems intelligence framework might highlight new opportunities for self-reflective improvement of their own practice.

References

Aguilar-Savén, Ruth. (2003). Business process modelling: Review and framework. ***International Journal of Production Economics***, *vol. 90* (no. 2): pp. 129–149.

Avison, David, Francis Lau, Michael Myers, and Peter Axel Nielsen. (1999). Action research. ***Communications of the ACM***, *vol. 42* (no. 1): pp. 94–97.

Bessant, John, and Sarah Caffyn. (1997). High-involvement innovation

through continuous improvement. ***International Journal of Technology Management***, *vol. 14* (no. 1): pp. 7–28.

Chang, James. (2006). ***Business process management systems – Strategy and implementation.*** New York: Auerbach Publications.

Checkland, Peter. (1985). From optimizing to learning: A development of systems thinking for the 1990s. ***The Journal of the Operational Research Society***, *vol. 36* (no. 9): pp. 757–767.

Checkland, Peter. (1999). ***Systems thinking, systems practice – Includes a 30-year retrospective.*** West Sussex, England: John Wiley & Sons.

Chisholm, Rupert. (2001). Action research to develop an interorganizational network. In ***Handbook of action research***, eds. Peter Reason and Hilary Bradbury. London: Sage publications.

Davenport, Thomas, and J. E. Short. (1990). The new industrial engineering: Information technology and business process redesign. ***Sloan Management Review***, *vol. 31* (no. 4): pp. 11–27.

Davenport, Thomas H. (1993). ***Process innovation: Reengineering work through information technology.*** Boston, MA: Harvard Business School Press.

Davenport, Thomas H. (1995). The fad that forgot people. ***Fast Company***, *vol. 1* (no. 1): p. 70.

Davis, Jason P., Eisenhardt Kathleen M., and Bingham Christopher B. (2007). Developing theory through simulation methods. ***Academy of Management Review***, *vol. 32* (no. 2): pp. 480–499.

Dogson, Mark. (1993). Organizational learning: a review of some literature. ***Organizational Studies***, *vol. 14* (no. 3): pp. 21–34.

Evokari, Juha, and Riitta Smeds. (2003). Transferring action research findings in process development: The SimLab workshop. ***Proceedings of the International Workshop of the IFIP*** WG 5.7: Experimental Interactive Learning in Industrial Management, 22–24 May 2003 in Aalborg, Denmark, pp. 13–22.

Feller, Jan, Antero Hirvensalo, and Riitta Smeds. (2005). Inter-partner process learning in collaborative R&D: A case study from the telecommunications industry. ***Production Planning & Control***, *vol. 16* (no. 4): pp. 388–395.

Forssén, Minna-Kaarina, and Päivi Haho. (2003). Facilitation in organizational change process: Case studies on business process development using a simulation game method. ***Proceedings of the International Workshop of the IFIP*** WG 5.7: Experimental Interactive Learning in Industrial Management 22–24 May 2003 in Aalborg, Denmark, pp. 23–35.

Gummesson, Evert. (2000). ***Qualitative methods in management research*** (2nd ed.). California: Sage Publications.

Hammer, Michael. (1990). Reengineering work: Don't automate, obliterate. ***Harvard Business Review***, *vol. 68* (no. 4): pp. 99–103.

Hammer, Michael. (2001). ***The agenda: What every business must do to dominate the decade.*** New York: Crown Business. Chapters 1-4 available from http://www.hammerandco.com/ publications-agenda.asp

Hammer, Michael, and James Champy. (2001). ***Reengineering the corporation: A manifesto for business revolution.*** London: Brealey.

Harrison, J. Richard, Lin Zhiang, Carroll Glenn R., and Carley Kathleen M. (2007). Simulation modeling in organizational and management research. ***Academy of Management Review***, *vol. 32* (no. 4): pp. 1229–1245.

Hämäläinen, Raimo P., and Esa Saarinen. (2008). Systems intelligence in decision and negotiation support. ***19th International Conference on Multiple Criteria Decision Making*** – MCDM for Sustainable Energy and Transportation Systems, The University of Auckland 7–12 January 2008, Auckland, New Zealand.

Hämäläinen, Raimo P., and Esa Saarinen. (2007a). Systems intelligent leadership. In ***Systems intelligence in leadership and everyday life***, eds. Raimo P. Hämäläinen and Esa Saarinen: pp. 3–38. Espoo: Helsinki University of Technology, Systems Analysis Laboratory.

Hämäläinen, Raimo P., and Esa Saarinen. (2007b). The way forward with systems intelligence. In ***Systems intelligence in leadership and everyday life***, eds. Raimo P. Hämäläinen and Esa Saarinen: pp. 295–305. Espoo: Helsinki University of Technology, Systems Analysis Laboratory.

Jaatinen, Miia, and Rita Lavikka. (2008). Common understanding as a basis for coordination. ***Journal of Corporate Communications***, *vol. 13* (no. 2): pp. 147–167.

Jackson, Michael C. (2003). ***Systems thinking: Creative holism for managers.*** John Wiley & Sons.

Jackson, Michael C. (2006). Creative holism: A critical systems approach to complex problem situations. ***Systems Research and Behavioral Science***, *vol. 23*: pp. 647–657.

Lavikka, Rita, Riitta Smeds, Miia Jaatinen, and Emmi Valkeapää. (2007). Coordinating the service process of two business units towards a joint customer. In ***The Proceedings of IFIP International Federation for Information Processing***, *vol. 246* (Advances in Production Management Systems), eds. J. Olhager and F. Persson: pp. 111–119. Boston: Springer.

Levitt, Theodore. (1960). Marketing myopia. ***Harvard Business Review***, *vol. 38* (no. 4): pp. 45–56.

Luoma, Jukka, Raimo P. Hämäläinen, and Esa Saarinen. (2008). ***Acting with systems thinking: complex responsive processes and systems intelligence***. Article manuscript 14 August 2008.

Nonaka, Ikujiro, Ryoko Toyama, and Noboru Konno. (2000). SECI, Ba and leadership: a unified model of dynamic knowledge creation. ***Long Range Planning***, *vol. 33* (no. 1): pp. 5–34.

Melão, Nuno, and Michael Pidd. (2000). A conceptual framework for understanding business processes and business process modeling. ***Information Systems Journal***, *vol. 10* (no. 2): pp. 105–129.

Midgley, Gerald. (2000). ***Systemic intervention.*** New York: Kluwer Academic Foundation / Plenum Publishers.

Saarinen, Esa, and Raimo P. Hämäläinen Raimo. (2004). Systems intelligence: Connecting engineering thinking with human sensitivity. Also in ***Systems intelligence in leadership and everyday life***, eds. Raimo P.

Hämäläinen and Esa Saarinen, 2007: pp. 51–77. Espoo: Helsinki University of Technology, Systems Analysis Laboratory.

Schein, Edgar. (1987). ***Process consultation. Volume 2: Lessons for managers and consultants.*** Boston, MA: Addison Wesley.

Senge, Peter. (1990). ***The fifth discipline: The art & practice of the learning organization.*** New York: Doubleday Currency.

Smeds, Riitta. (1994). Managing change towards lean enterprises. ***International Journal of Operations & Production Management***, *vol. 14* (no. 3): pp. 66–82.

Smeds, Riitta. (1996). ***Management of enterprise evolution. Evolution management principles and methods for learning organizations***. Doctoral Dissertation. Acta Polytechnica Scandinavica, Mathematics, Computing and Management in Engineering Series No. 80, The Finnish Academy of Technology, Helsinki. 160 s.

Smeds, Riitta. (1997a). Organizational learning and innovation through tailored simulation games: Two process re-engineering case studies. ***Knowledge and Process Management***, *vol. 4* (no. 1): pp. 22–33.

Smeds, Riitta. (1997b). Radical change through incremental innovations: Generic principles and cultural differences in evolution management. ***International Journal of Technology Management***, *vol. 26* (no. 8): pp. 887–902.

Smeds, Riitta, and Jukka Alvesalo. (2003). Global business process development in a virtual community of practice. ***Production Planning and Control***, *vol. 14* (no. 4): pp. 361–371.

Smeds, Riitta, Päivi Haho, and Juha Alvesalo. (2003). Bottom-up or Top-down? Evolutionary change management in NPD processes. ***International Journal of Technology Management***, *vol. 26* (no. 8): pp. 887–902.

Smeds, Riitta, Miia Jaatinen, Antero Hirvensalo, and Anna Kilpiö. (2006). SimLab process simulation method as a boundary object for inter-organizational innovation. ***10th International Workshop on Experimental Interactive Learning in Industrial Management.*** Trondheim, Norway, June 11–13 2006.

Stacey, Ralph D., Douglas Griffin, and Patricia Shaw. (2000). ***Complexity and management: Fad or radical challenge to systems thinking?*** London: Routledge.

Sterman, John. 2002. All models are wrong: Reflections on becoming a systems scientist. ***System Dynamics Review***, *vol. 18* (no. 4): pp. 501–531.

Tsoukas, Haridimos, and Robert Chia. (2002). On organizational becoming: Rethinking organizational change. ***Organization Science***, *vol. 13* (no. 5): pp. 567–582.

Wenger, Etienne. (1998). ***Communities of practice.*** Cambridge University Press.

Wenger, Etienne. (2003). Communities of practice and social learning systems. In ***Knowing in organizations: A practice-based approach***, eds. D. Nicolini, S. Gherardi, D. Yanow, and M. E. Sharpe. Armonk, NY.

Internet References

Smeds Riitta, Katja Koskelainen, Marika Vänttinen, Päivi Iivonen and Miia Jaatinen. 2005. Process simulation for the development of customer relationship management in networked construction projects http://www.dmem.strath.ac.uk/smesme/proceedings/653_84_Smeds.pdf. [2008-03-14]

Authors

Rita Lavikka graduated from TKK in 2005 from Information Networks Study Program. Since, she has acted as an action researcher in SimLab, TKK for three years and is now finalizing her licentiate thesis. Her research interest lies in understanding how information system providers and customers can co-coordinate the business requirements elicitation phase of an information system development project.

Jukka Luoma works at the Systems Analysis Laboratory, Helsinki University of Technology. He is also a member of the Systems Intelligence Research Group at Helsinki University of Technology.