ORGANIZING EDUCATION BY DRAWING ON ORGANIZATION STUDIES

By A. Georges L. Romme

September 2002

Discussion paper

Organizing Education by Drawing
on Organization Studies

A. Georges L. Romme
Tilburg University
Faculty of Economics & Business
P.O. Box 90153, 5000 LE Tilburg, Netherlands
Email: a.g.l.romme@uvt.nl
Tel: +31-13-4662047 Fax: +31-13-4662875

Organizing Education by Drawing on Organization Studies[*]

ABSTRACT

This study explores how scholars researching organizations and organizing processes can use and exploit their knowledge not only in terms of course contents, but also in organizing and managing students' learning activity. A design-oriented research approach is used in order to develop grounded design principles for organizing education. By drawing on the literature about organizational design and learning, several preliminary design ideas for organizing undergraduate education are described. Subsequently, two examples of how these design ideas can be applied are discussed. The first example involves the design of an undergraduate course in Organizational Behaviour. The second example is a tool for collaboratively supervising thesis projects. The design principles grounded in these two cases are, in sum: designing education as an authentic organization; exploiting the benefits of peer mentoring and assessment; acting and delegating as a senior manager; and setting vivid standards. Finally, the contribution that organization studies can make to educational theory and practice is explored, and the role of design methodologies is discussed.

Introduction

Scholars in organization studies are well-trained experts in theories and models of organizing and organization. They acquire specialized expertise and scholarship by following a long and arduous path through doctoral programmes, collaborating with and being supervised by senior scholars, and other learning experiences. Contrast this process with the way many (junior) scholars are prepared for organizing and managing their teaching assignments. Armed with only experiences gleaned from teachers they have had in the past, many novice teachers are left to swim or sink (Frost and Fukami 1997). Not surprisingly, most teachers in organizational subjects therefore still tend to rely on traditional instruction methods.

This study explores how scholars researching organizational systems and organizing processes can use and exploit their knowledge not only as course contents (to be taught to students), but also in organizing and managing students' learning activity. The main argument is that management of student learning can be organized on the basis of the received wisdom of theories and concepts in organization studies rather than educational research.

The theory and practice of education has been widely studied by educational researchers. However, this research tends to entirely focus on elements of educational processes, such as the added value of information technology (e.g. Alavi et al. 1997) or the effects of certain assessment methods on student behaviour (e.g. Dochy et al. 1999; Frederiksen 1984; Ramsden and Entwistle 1981). Therefore, education will be approached in this paper from the perspective of organization theory, particularly organizational design and organizational learning. As such, the idea to organize and manage classrooms as organizations is not new, but until now has been developed only in the context of teamwork in the classroom (e.g., Frost and Fukami 1997; Griffith 1999; Lerner 1995). In this study, the same idea will be explored in order to develop grounded design rules for organizing education as an authentic organization.

From a methodological point of view, a design-oriented action research method is used in order to create educational systems that do not yet exist, by means of creative and decision-oriented inquiry into such systems (Argyris et al. 1985; Banathy 1996; Simon 1996). The empirical part of this paper thus involves action experiments that imply an integral involvement of the researcher in the processes he is researching; are directed toward knowledge in the service of action, rather than the other way around; and attempt to test and develop a preliminary instrument, or a coherent set of design principles, by way of interventions that are guided by regular norms of public testing, intersubjective agreement on data and explicit inferences (Argyris et al. 1985; Eden and Huxham 1996). In doing so, knowledge can be developed that is

highly relevant to practitioners as well as grounded in empirical research. This kind of research has been described elsewhere as Mode 2 research, characterized as the production of knowledge from application (Huff 2000; Tranfield and Starkey 1998).

The main focus in this paper is on undergraduate campus-based education, although some ideas and findings may also be relevant for distance education and post-experience (e.g. MBA) programmes. Business education at the undergraduate level is particularly distinctive with regard to the lack of actual work experience most undergraduate students have. Another distinctive characteristic of the undergraduate student population is that most of its members – being 18 to 20 years old – tend to reject supervision, direction and instruction by persons in authority. This rejection does not necessarily involve the legitimacy of the authority, but rather the students' strong need to move from dependency on external authority to autonomy and internal authority (Mouton and Blake 1984). In addition, undergraduate education tends to suffer from larger class sizes and less funding.

From a design point of view, important new educational innovations have been proposed at the programme and, in some cases, university level. Examples are action learning and project-based learning (Smith and Dodds 1997; Kjersdam and Enemark 1994). Apparently, engineering schools and universities, such as Aalborg University in Denmark, have been pioneering in this area. Such systemic innovations at the school or university level are, generally speaking, not feasible (yet) for lecturers teaching organizational subjects in sociology, business or similar undergraduate programmes. Therefore, the empirical part of this study focuses on educational innovations that can be initiated and implemented by individual staff members.

Design-oriented research starts from an explicit vision regarding how new realities might look like (Simon 1996; Banathy 1996). I will therefore first describe the slow but inevitable transformation currently taking place in higher education, and then explore what organization and management theories can contribute to the 'management and organization' of learning, particularly the kind of reflective learning we would like to promote in universities. Subsequently, several relevant notions in the organizational design and learning literature are reviewed. Then, four ideas with regard to the organization of student learning are described. These design ideas are explored in the context of two practical cases: the first case involves the XB design for an undergraduate Organizational Behaviour course and the second case involves the thesis ring design for supervising thesis projects in the area of organization studies. Finally, a set of grounded design principles will be inferred from these cases.

Developments in Higher Education

Higher education in Europe, the USA, Canada, Australia and other countries is gradually transforming from instruction-centred to learning-centred education. Instruction-centred education tends to encourage students to memorize definitions and procedures rather than to develop a deeper understanding of why (organizational) problems and phenomena arise and how they can be solved. Learning-centred education intends to develop the latter, more complex abilities: being able to abstract meaning in a systematic manner as well as being able to interpret and understand something in a different way (Dahlgren 1984; Marton et al. 1993).

In this respect, educational research suggests that deep learning is encouraged by: teaching and assessment methods that foster active and long-term engagement with learning tasks; stimulating and considerate teaching, especially teaching which demonstrates the lecturer's personal commitment to the subject matter and stresses its meaning and relevance to students; clearly stated academic expectations; opportunities to exercise responsible choice in the method and content of study; interest in and background knowledge of the subject matter; previous experience of educational settings that encourage deep learning (Boud 1990; Ramsden 1992; Ramsden and Entwistle 1981; Sambell et al. 1997). By contrast, deep learning is discouraged and surface learning is encouraged by: assessment methods emphasizing recall or the application of trivial procedural knowledge; assessment methods that create anxiety; cynical or conflicting messages about rewards; an excessive amount of material in the curriculum; poor or absent feedback on progress; lack of independence in studying; lack of interest in, and background knowledge of, the subject matter; previous experience of educational settings that encourage surface learning (Boud 1990; Ramsden 1992; Ramsden and Entwistle 1981; Sambell et al. 1997).

In practice, the transformation towards learning-centred education is slow and tedious (Boyatzis et al. 1995; Vaill 1996). In this respect, educational theory focuses on individual students and their learning environment (e.g. resources, instructors, assessment) rather than the broader social and political setting in which education takes place (Boyatzis et al. 1995). Moreover, the more complex and ambiguous nature of deep reflection and learning implies it is more difficult to organize and measure, particularly in comparison to memorizing facts, definitions and procedures (Ramsden 1992). An important institutional barrier to the development and implementation of learning-centred education appears to be its accountability, that is, the extent to which the level of knowledge that students have achieved, in the absence of a schedule of standardized tests taken by each student, can be measured and certified (Miller 1999). Another major problem for undergraduate education is that most undergraduate students do not have any

substantial experience in organization and management, which tends to preclude opportunities for discussing and reflecting on their own experiences.

Notwithstanding these barriers, learning-centred approaches are gradually arising in higher education in response to several imperatives that tend to make instruction-centred education increasingly obsolete. The most obvious imperative arises from the greater expectation held by individual students, their (future) employers and governmental agencies, requiring higher education to develop learning-centred systems. In many cases, competitive pressures from new entrants and actors such as corporate universities and Internet universities reinforce this imperative (Galbraith 1998). A major imperative also arises from new technology providing opportunities for enhanced learning, training and development (Alavi et al. 1997).

Organizational Design and Learning

With regard to the developments taking place in higher education, the question arises whether and how organization studies can contribute to the design and organization of undergraduate education, particularly undergraduate subjects and courses in organization and management. Therefore, several key concepts and ideas in the literature on organizational design and learning are explored and discussed in this section.

Organizational design and structuring has been a key theme in organizational theory since the 1950s (e.g. March and Simon 1958; Hackman and Oldman 1980). Since the 1980s this literature has received new impulses by Hammer and Champy's (1993) re-engineering concept as well as a large number of studies of new organizational designs and managerial approaches (e.g. Hall et al. 1993; Romme 1999; Victor et al. 2000; Wageman 1994; Weisbord 1987). This literature will not be extensively reviewed, but several key themes and concepts in both older and more recent contributions to this literature will be explored.

A first set of concepts arises from so-called *task interdependence.* For example, both Thompson (1967) and Hammer and Champy (1993) discuss different kinds of interdependence between organizational subsystems – individuals, teams or units – and how organizational processes can be structured to respond to this interdependence. A related concept is the *programmability* of work and production, referring to the extent to which work and production processes can be programmed and thus routinized into separate activities (March and Simon 1958; Thompson 1967; Wageman 1994).

A second set of concepts that are widely used to understand coordination and management processes includes: *hierarchy*, *delegation* and related notions such as authority, power, and control (e.g. Hackman and Oldman 1980; Reed 2001; Romme 1999). In some cases, new words have been invented to substitute and revitalize older concepts – for example, 'empowerment' as a substitute for 'delegation' (e.g. Victor et al. 2000). From a social constructivist perspective, hierarchy, delegation, authority and other concepts are social and mental constructs of organizational researchers and, in many cases, (some of) the actors in the organizations being studied (Priem and Rosenstein 2000). This idea has been elaborated more extensively in the literature on organizational learning, also in view of the increasing dynamics and complexity of organizations and the broader economic and social systems they are part of (e.g. Argyris 1990; Kofman and Senge 1993). In this respect, several studies suggest that productive organizational learning requires a learning culture involving (Argyris 1990; Ellis et al. 1998; DiBella et al. 1996; Hedberg 1981; Huber 1991; Shaw and Perkins 1992; Popper and Lipshitz 2000; Sitkin 1992):

- commitment to learning,
- continual testing and validating knowledge claims,
- tolerance of mistakes and failures,
- open communication and transparency in decision-making,
- orientation on specific situations, examples and issues, and
- unambiguous accountability and responsibility for results.

The first and second set of concepts can be positioned in a typology that is based on two dimensions: programmability and means/ends. First, in order to keep the argument as simple as possible, programmed and nonprogrammed work are distinguished. Programmed work can be routinized and optimized through measurement and experimentation. Nonprogrammed work is too ambiguous to be defined in advance (March and Simon 1958). By making an additional distinction between means and ends, a four-cell matrix can be generated (see Figure 1).

In the upper left cell of Figure 1 both the means and ends of work are well defined; this type of work is labelled *standardized production* (March and Simon 1958). The upper right cell involves programmed means and nonprogrammed ends, labelled as *flexible specialization* (Piore and Sabel 1984) and *mass customization* (Victor et al. 2000) in which well-developed routines and technologies are used to respond to individual customer needs.

Work in the lower left cell in Figure 1 is characterized by nonprogrammed means but well-defined programmed output goals. This kind of complex work can be observed in so-called *high reliability* organizations such as, for example, air traffic control towers and nuclear plant

operating units. High reliability organizations that are required to work under the very unusual demand of functioning correctly every time, because failures are unacceptable (Roberts 1993). More broadly, the literature on total quality management has labelled this type of work as *continuous improvement* activities that rely on creative thinking and active information searching: line workers define problems, analyse cause and effect relationships, and propose and test specific approaches for doing the work (Victor et al. 2000).

Finally, the lower right cell involves work for which both means and ends are too ambiguous to be defined in advance. This type of work was labelled by March and Simon (1958) as *innovation work* in which goals and paths are often created as the work proceeds. A more recently developed label for the same cell is *organizational learning* that, as was discussed earlier, requires a certain learning culture.

INSERT FIGURE 1 HERE

The nature of university education can be explored in terms of the types of work outlined in Figure 1. In some segments of undergraduate education, both students and teachers have little discretion in their daily work. As in standardized production, they still are expected to carefully follow means defined by others (as 'best practices' in textbooks, student handbooks and instructor manuals) to produce well-defined outputs (e.g. measured in standardized multiple choice tests). In the preceding section I described imperatives that are pulling university education away from standardized production. The movement towards Internet universities providing flexible delivery of standardized course contents (Galbraith 1998) can be understood in terms of mass customization and flexible specialization (see Figure 1). Elements of flexible delivery are also introduced in campus-based universities, as a result of the adoption of digital learning environments. An example in the lower left cell is the so-called high reliability school project aiming at measurable, long-term improvements in secondary schools in the UK (Stringfield 1995; Stringfield et al. 2001).

Evidently, university education at all levels – undergraduate, graduate and postgraduate – is most appropriately characterized as innovation work and organizational learning (in the lower right cell of Figure 1). Goals of programmes and its subjects are typically defined in rather general and ambiguous terms. In addition, the paths to these goals are only to a small extent programmable, also because both instructors and students need the discretion to create individual meaning as well as to respond to emerging questions and the 'news of the day'. In this respect, an important difference with the high reliability concept arises from how first-time mistakes are dealt with.

For high reliability organizations, first-time mistakes are extremely risky ('first time right, every time right'). In organizational learning and innovation work, by contrast, first-time mistakes are generally seen as extremely valuable and productive in the context of try-outs and experiments (Shaw and Perkins 1992; Sitkin 1992).

Preliminary Design Ideas

Drawing on the ideas and concepts described in the previous section, several preliminary ideas for organizing undergraduate education in organization and management will be explored in this section. These design ideas can be viewed as the preliminary framework used to design and develop the two educational tools explored in the following section. Four ideas are described and discussed in this section: designing education as an organization; exploiting benefits of peer mentoring and assessment; acting and delegating as a senior manager; and finally, setting vivid standards. These ideas are not intended to describe a potential 'one-best-way' to organize undergraduate education, but merely one particular set of guidelines – recognizing that many other designs can be inferred from (other parts of) organization theory.

Designing Education as an Authentic Organization
The first design precept explored here provides an important bridge between educational practice and organizational theory. It suggests that we design and shape education as an organizational system, similar to any other organization out there. Designing education as an organization implies that students and their instructors experience and create organizational roles, procedures, leadership, group dynamics and performance directly, rather than only studying these phenomena indirectly.

Students, as all other human beings, learn best through firsthand experience, according to Senge (1990: 313): 'We learn to walk, ride a bicycle, drive an automobile, and play the piano by trial and error: we act, observe the consequences of our action and adjust'. Carl Rogers (1979) argued that anything that can be taught to someone else is relatively inconsequential, that is, it will have little significant influence on his ultimate behaviour. According to Rogers, the only kind of learning which significantly influences behaviour is self-discovered or self-appropriated learning.

The lack of (opportunities for) firsthand experience in higher education typically leads to substitutes such as case teaching, games, simulations, and so forth: thus, students explore, study

and 'apply' ideas, concepts, theories and methods on the basis of substitute-experiences. Designing a class of students as an organizational system does not imply simulation, but setting up an organization that deliberately focuses on producing the kind of learning behaviour that leads to the intended learning outcomes or products. Thus, the goal of this 'organization' is to produce learning and the organization is structured, managed and monitored by means of tools, procedures and systems which are designed or chosen in view of the organization's goal.

In the previous section, the concept of task interdependency was described as one of the key notions in the literature on organizational design. An important implication of designing education as an organization is therefore that the task interdependencies between participants have to be substantial. Without task interdependency, the learning process will become largely individual (as in instruction-centred education) rather than social and organizational. With task interdependencies, shared responsibilities can be created that will give rise to 'organizational' processes, behaviour and learning.

Peer Mentoring and Assessment

Peer mentoring in the context of teamwork is another idea that appears to provide a bridge between organizational and educational theory and practice (Griffith 1999; McDougall and Beattie 1997). In this respect, Piaget (1970) emphasized the importance of social interactions among students, as an important resource for teaching and learning. He believed that for intellectual development, cooperation among peers is as important as the student's interaction with teachers. Discussion and cooperation among students can cause awareness of different points of view, and other students at similar cognitive levels can often help the student more than the teacher to move away from deeply ingrained misconceptions and convictions (Piaget 1970; Vygotski 1978).

Thus, reciprocal teaching and peer mentoring produces significant learning benefits, compared to ways of teaching and mentoring by people of a higher hierarchical status (e.g. Bruffee 1993; McDougall and Beattie 1997). For example, students who are continually engaged in peer group discussions about their work in mathematics and science courses have been observed to perform significantly better than students who worked largely isolated from one another outside class hours (Bruffee 1993).

Thus, the second design idea is to reinforce and exploit social interactions between students in the form of peer mentoring and assessment. By having peers teach and assess one another, many opportunities for learning can arise in the area of, for example, observing and understanding organizational behaviour, communication, conflict management, motivation, assessment,

10

feedback and leadership. From the perspective of task interdependency, peer mentoring and assessment are two specific kinds of interdependency between peers that may reinforce other interdependencies, such as shared responsibility for learning and managerial tasks.

Acting and Delegating As a Manager

A third design idea follows from two other concepts discussed in the previous section: hierarchy and delegation. Thus, the teacher can take on the role of senior *manager* of the class as an organization, and *delegate* everything (s)he possibly can. Thus, students are involved in all key activities, including peer assessment. The senior manager typically continues to be held responsible and accountable for educational outcomes by his or her own superior and other stakeholders (e.g. programme director, dean, colleagues), but inside his or her educational 'organization' the senior manager should be able to systematically delegate different tasks and responsibilities to subordinates.

Depending on the size of the 'organization', the hierarchy may involve only two levels of accountability (e.g. senior management and student-work) or a more differentiated hierarchy of accountability levels (e.g. senior management, middle management, team leaders and team members).

The notion of delegation does not imply doing (almost) nothing, because delegation of numerous tasks gives rise to a new task domain: coaching and advising students. Thus, as in many real-world organizations, managers may have to spend large amounts of time with students in relatively informal settings, in order to help them, for instance, formulate learning objectives or research questions, develop research or action plans, or develop effective ways to teach ideas and concepts to others.

Setting Vivid Standards

In an educational setting, delegating without well-defined responsibilities and tools may lead nowhere. Recent work by Dougherty (2001) suggests that standardization is not only an important process in bureaucratically organized systems involving highly programmable activities, but also in organizations relying on innovative capabilities and work. In the latter organizations senior managers can generate specific, vivid standards that represent the practice overall in all local teams and communities of practice, and then oversee their ongoing enactment and re-enactment. These visible and achievable standards 'are there leading the way, so to speak, helping to frame the kinds of actions people might take in their particular situations of practice' (Dougherty 2001: 629).

The purpose of setting standards is to create constructive friction between the competences and skills students have at the outset and those expected (e.g., when completing the course). In the case of too large, destructive friction – that is, a huge gap between the initial competences and skills and what is expected – students tend to feel overcharged and become confused and frustrated.

Examples of Educational Designs Focusing on Deep Learning

In this section two educational practices will be explored that were designed and shaped by drawing on the ideas outlined in the previous section. First, the experience-based XB design for an Organizational Behaviour course is described. Subsequently, the so-called Thesis Ring for supervising thesis projects is discussed. The XB design was first developed at St. Michael's College (USA), and has later been adopted by at least eight other universities and colleges in the U.S., Australia and Europe. In the second case, the first experimental thesis rings were developed at Maastricht University (Netherlands) into a general blueprint, that was later adopted and implemented by five other European universities and colleges. As such, the initial designs of both XB and the thesis ring have been developed into transferable blueprints that can be, and also have been, adopted by others.

In the case of XB, I adopted the blueprint from the pioneer (Roger Putzel) for teaching an undergraduate OB course at my own university. In the case of the thesis ring, I designed and pioneered the first experimental thesis ring in the mid 1990s and have been managing such a thesis ring since then (at different departments and universities). The observations and experiences discussed in this section are based on action research focusing on the design of new systems and tools for organizing students' learning activity (see Introduction). The resources and data used include documents on preliminary ideas developed by the pioneers of both designs, manuals developed for students, interviews with students and staff, data obtained via questionnaires, and so-called learning reports written by students.

The XB Design for an Undergraduate Course in Organizational Behaviour
The XB design has been developed by Roger Putzel at St. Michael's College (USA) for a course in Organizational Behaviour at the undergraduate level. The XB design – XB refers to eXperience Base – focuses on bringing an immediate experience of organizational behaviour to undergraduate students, by treating the classroom as an organization. Putzel's mission in

developing this design was to set up XB as a kind of laboratory, a place for open-ended experimentation: 'Management is not a subject to learn and half forget, like other subjects we study. It is a set of principles, skills, beliefs, attitudes, and values that can enrich our lives and help us accomplish more than we ever dreamed possible, working together in organizations' (Putzel 2001a: 54).

The XB approach enables the lecturer and the students to use real events as learning opportunities. As such, XB is a complex organization whose product is participants' learning of concepts and skills of managerial and organizational behaviour. More specifically, XB as an organization intends to improve the ability to (1) list and define concepts, (2) articulate thoughts, (3) use intellectual tools, (4) recognize social (external) situations, (5) recognize personal (internal) situations, (6) act on your own initiative, using whatever resources you have to achieve your own objectives, and (7) first-time mistakes (Putzel 2001a). The XB manual describes the last product, first time-mistakes as follows: 'People in successful XB divisions (sections) make a lot of them; in less successful divisions they don't dare to make so many' (Putzel 2001a: 4). In short, the argument is: first-time mistakes are okay, but repeated mistakes indicate slow or no learning.

At the beginning of the course, XB as an organization exists only on paper in a manual of 280-pages describing goals, objectives, organizational structure, organizational rules, job descriptions, and so forth (Putzel 2001a). The organizational structure with four departments and twelve groups is reproduced in Figure 2. The departmental structure of Responsibility, Doing, Observing and Understanding is derived from Kolb's learning cycle (Kolb et al. 1984). For each of the groups, the manual provides extensive descriptions of key contributions to the literature as well as detailed responsibilities and intended learning outcomes. As such, the manual describes tasks and responsibilities for each group.

The students are placed into the groups and departments with their distinctive job descriptions and objectives in the first week of the course – later in the course students can try to change to other groups (with help of the staffing group). Up to 36 students can make up an entire XB organization. A larger class is dealt with by forming multiple XB's, each managed by the senior manager as an autonomous division. After placing students, the organization is handed over to the students. That is, the teacher takes on the role of senior manager, delegating every possible function and activity to one of the departments (and its groups). Some senior managers delegate grading, but others do not. The senior manager coaches, often giving advice outside class, trying to stay out of the way and let others manage their parts of the organization (Putzel 2001b).

INSERT FIGURE 2 ABOUT HERE

The manual also helps the participants apply theories and tools to the process of developing and managing the XB organization. Each group reads its own part of the manual and other text assignments on certain topics, so by the third week (in theory) the organization has done all the reading for the semester. XB must then start exploiting its internal resources. Each group's objective is to teach members of other groups specific topics that it has learned. The groups may reach their objectives in any way they choose: making presentations, creating ad-hoc teams, approaching individuals outside class and getting them to do something differently, develop (self-test) questionnaires, etcetera.

Although they can read in the manual what to do, students usually take the first weeks of the semester to get used to not being told what to do, that is, to feeling like managers rather than students. Many participants begin this course with no great sense of responsibility. They struggle to find out how the organization functions, and they learn that they – or no one – will have to make (their part of) XB work.

Following the manual apparently does not make this organization work: some participants sit back and let others work, and then important parts of the organization do not function as they should. Groups may also fail to accomplish anything because they only know their own material: the planners do not motivate, the formal organizers do not communicate, and so forth. This disorder then tends to create opportunities for learning, with theories and concepts in the manual offering diagnostic tools for understanding what is going on and what can be done to make XB more effective. Groups may then start to recognize situations where their skill or theory is needed. As they provide a missing concept or teach others a relevant skill, the organization starts to work. XB's members start to learn about setting and reaching objectives, decision-making, group dynamics, effective delegation, how to recover from failure, listening behaviour, effective feedback, and above all, continual learning from experience.

The grading system is designed to empower the student-members of XB to measure and motivate each other. The grading system has three distinctive features: a large number of measurements, delegation, and rank ordering (Putzel 1992). About 130 different measurements of each person's performance during the semester are collected; this amount of data may reduce measurement errors with regard how well that person is doing. Each person receives ample feedback on the basis of detailed criteria regarding participation, reading, effort, written memo's and conceptual understanding; moreover, no single grade counts more than 2 % in the final

evaluation. As such, the grading system 'like the rest of the organization, is intended to be globally robust, rather than meticulously accurate' (Putzel 1992: 209). Almost all grading is delegated to the participants. That is, XB members take responsibility for learning as well as control (assessment). All grades given formally have the status of an advice to the senior manager. This means, that at the very end of the course, the senior manager assigns the final letter grades (e.g., in a U.S. college) or number grades on the basis of data provided by the Control group. XB members have the authority to change the assessment system, but must first demonstrate that they understand and can apply the assessment approach described in the manual. The grading done by students is in terms of rank ordering only. For example, ranking the weekly memo's of student A, B, C and D will be done by students E, F, G and H; the memo's of the latter will be ranked by I, J and K; etcetera.

Since two years, I have adopted the XB design for organizing and managing an elective course in Organizational Behaviour at Tilburg University (Netherlands). On average, each participant in this course (of 14 weeks) wrote about 18 memo's on either their own learning objectives and to what extent these objectives had been realized or in response to assignments given by managers of other groups. This database (two XB classes, total number of participants = 45) provides interesting observations and reflections. For example, one participant in the 2001 class wrote:

'XB as a learning organization performs best when the manual is given to the students, without initially providing them any help. Only if the first problems and challenges have been dealt with and the first mistakes have been made (and learned from), the senior manager comes into play. In XB this has worked rather well. In the beginning the manager threw us into the deep water, and later he concentrated on coaching and advising us with regard to decision-making and learning from our actions and initiatives.'

Another student in the same course wrote:

'The strength of XB is that many methods and procedures can be changed, and also actually are changed. Several groups have developed attractive methods in order to have other students become familiar with certain theoretical concepts and models.'

For example, the Communication group introduced all XB participants into key notions of assertiveness and effective feedback by an exercise with written statements that had to be categorized under aggressive, passive and assertive behaviour (with reference to the relevant theory described in the manual). Subsequently, all participants were assigned to write a memo about two situations – inside or outside XB – in which they actually had responded passively or aggressively; this memo had to include a detailed description of each of these situations, the

actual responses, and suggestions how they could have responded more effectively in an assertive manner.

The grading approach taken in XB tends to evokes huge resistance in the first weeks, even when evidence is provided that this approach has been rather effective in previous classes, or in the same course given elsewhere (Putzel 2001b). Once students start working with the rank ordering system, this resistance tends to disappear quickly. This adjustment process is reinforced and accelerated when students who have taken the course before help out in the first sessions.

The Thesis Ring Design

In 1996 I started experimenting at Maastricht University with new ways of supervising students working on Bachelor and Master thesis projects. These action experiments were set up in order to exploit peer mentoring and co-assessment in a collaborative system managed by the senior supervisor. In this respect, teaching staff at this university – as in many other schools and universities with large numbers of students – spend considerable amounts of time supervising and assessing thesis projects. Sharing the supervision and assessment process with students was therefore seen as promising, in view of the possible learning benefits for students and supervisors as well as the potential for more efficiency.

Key steps in the experiment were the adoption of a set of rules for organizing a so-called thesis ring, and the development of an assessment procedure that would involve academic supervisors as well as co-supervising students. In the first one and half year of the first thesis ring the basic design of the thesis ring was further developed, including procedures and guidelines for decision-making, chairing meetings, giving feedback, and assessing draft as well as final thesis reports. In the area of decision-making, several straightforward rules and procedures were adopted from circular organizing, a relatively new form of organizing and managing participation (Romme 1998; 1999).

On the basis of this design, other professors and lecturers at the same university started adopting this tool for supervising their (master) thesis students. Maastricht University now operates six permanent thesis rings, led by more than 11 academic supervisors, in areas such as information management, organizational behaviour, strategic management and service marketing. In addition, thesis rings in areas such as education, information management, architecture and organization theory, have been set up in five other European universities (including, for example, Technical University Delft, University of Leuven and Tilburg University).

The thesis ring design involves the following formal arrangements:

- The thesis ring is an extension of the formal authority of at least one staff member to

supervise and grade thesis projects. That is, the ring has at least one lecturer or professor as a permanent member.

- The domain of the thesis ring involves the range of topics supervised in the ring (e.g., organizational behavior or information management). The domain is established by the staff member(s). Students can enter the thesis ring at any moment during the academic year. The academic supervisor(s) of the ring has the authority to accept or refuse new members, in view of the capacity and domain of the ring.

- Membership ends with the successful completion of the thesis, unless decided otherwise.

- Each meeting proceeds according to a standard format involving four parts: (1) opening round, (2) determination of the agenda on the basis of a proposal sent out prior to the meeting, (3) discussion and feedback on progress reports regarding thesis projects, and (4) an evaluation round.

- A number of decisions are taken by way of the consent ('no argued objection') principle; that is, a decision is taken when all participating ring members have no argued objection against the proposed decision. Decision issues include, for example: work procedures (e.g., preparation of agenda), election of the chairperson and secretary, and thesis assessment. Other issues, such as the standards and criteria for assessment, are established externally.

- Both the chairperson and secretary of the ring are chosen for a limited period (e.g., three months) by way of a decision based on the consent principle.

- The chair and the secretary are typically chosen from the student membership of the ring. Only in exceptional cases, academic supervisors will act as chair, because the role of senior-advisor and expert cannot be effectively combined with the role of the chairperson.

- The final assessment of each thesis is done in a meeting of the thesis ring, in which at least two staff members, including the permanent academic supervisor and an external academic assessor. The external assessor must not have been involved in the preceding supervision process and can therefore focus entirely on the end product – the final thesis – without being biased by the production process.

- The procedure for assessing the final thesis is based on the following ideas. First, only those (co)supervisors who prepare the assessment adequately – using a standardized assessment form – participate in the assessment. The ring's secretary makes sure they have all information required to do so. Second, the assessment takes place on the basis of

arguments rather than authority. Third, the assessment procedure starts as open as possible, by minimizing the interaction between the initial individual evaluations, in order to acknowledge (any) differences in opinion and judgment. Subsequently, a stepwise process of argumentation and dialogue serves to come to a final grade that is both well argued and broadly accepted.

Detailed procedures and guidelines for decision-making, chairing meetings, giving feedback, and assessing thesis reports have been published in a 60-page manual (Romme and Nijhuis 2000; see also www.personeel.unimaas.nl/j.nijhuis/kringen/index.htm).

The collaborative nature of the thesis ring design implies that each student has two distinct roles: as a thesis writer being supervised and advised, and as a co-supervisor of others who participates in the collaborative process of advising, supervising and assessing. As a result, students switch roles at least once every meeting. An empirical study of six thesis rings (Rompa and Romme 2001) showed that the traditional demarcation between the roles of supervisors and students to a large extent disappears in these rings. The conventional idea of the interaction between supervisor and student can be described as the authorized expert leading the individual student through the research and writing process. In thesis rings this traditional notion of the leader/supervisor is replaced by a senior manager role who shares the primary task of coaching, advising and quality control with (junior)supervisors, while delegating all other tasks to others; the latter involves, for example, chairing and moderating discussions, coordinating information flow between participants, and organizing meetings (Rompa and Romme 2001).

The most important advantage of thesis rings, compared with the usual one-to-one supervision mode, is described as follows by a Business Studies student at Maastricht University:

'In the beginning I was impressed by the extra work I had to do, reading drafts of other students, and so on. Later, however, I began to understand that I was writing only one thesis, but was learning as if I were writing seven of them' (interview data).

The same advantage is elaborated in more detail by the academic supervisor of one of the thesis rings at Maastricht University as follows:

'A student in my thesis ring learns from the mistakes and the successes of fellow students; the overall attitude of students with regard to the quality of their own written work as well as the work of others changes to a much more critical attitude, because of the fact that one also reads and discusses the work of others' (interview data reported in Rompa and Romme 2001).

For the supervisors, the thesis ring design apparently also serves to built awareness of the implications of their actions, particularly regarding the effectiveness of their interventions in the

learning processes of students. Four supervisors comment as follows on their experiences in their own thesis ring:

'When, as a supervisor, you start telling nonsense, or when the thesis writer does not understand what you're saying, the chair or one of the other students will correct and help you.'

'As supervisor, I get a more complete picture of the qualities of the students I'm supervising, because I see them in interaction with others.'

'Even when a student does not submit a written text, he is still involved as a result of his supervision task. The criterion for interaction is thus not the submission of a piece of work, as is usually the case in traditional supervision of thesis students.'

'The quality of a thesis is viewed from multiple viewpoints. As a result, more problems and details are picked up than when only one or two people do the supervision' (interview data described in Rompa and Romme 2001).

Discussion

Towards Grounded Design Principles

The XB and thesis ring designs were described and explored in the previous section in order to develop and ground the preliminary design ideas in practice: designing education as an authentic organization with real task interdependencies; exploiting the benefits of peer mentoring and assessment; acting and delegating as a senior manager; and, finally,

setting vivid standards. In both the XB and thesis ring these ideas were applied in a straightforward manner, although in different ways. In the XB design, an organization is created and developed by defining multiple interdependencies in learning tasks as well as managerial tasks. A large number of organizational concepts, models and tools are applied to a variety of experiences of the participants themselves. Feedback and assessment by peers is one of the primary processes in XB, and several measurements are used to document and assess a large number of different aspects of the participants' individual contributions and learning outcomes. All grades given by peers have the formal status of an advice to the senior manager. The senior manager delegates everything that can be delegated (e.g. lecturing, moderating, grading, giving feedback), giving advice outside class hours to participants in order to help them find creative and productive solutions to their learning and managerial assignments. The manual that serves to start up XB at the beginning of the semester describes a large number of standards that help to create transparency about what is expected of the participants; these standards are reinforced when students who completed XB in a previous year help start up a new XB.

The thesis ring design for collaboratively supervising students writing their thesis involves a more permanently organized system than XB. The thesis ring is more permanent in the sense that

it involves several permanent components – including the senior supervisors and the learning culture and work procedures developed over time – in addition to students continually entering and leaving the organization. The latter element gives peer mentoring and assessment in thesis rings a special flavour, with ample opportunities for transferring knowledge between students at different stages of their thesis project. The senior manager in a thesis ring acts as a role model, sharing the primary tasks – supervising, advising, quality control and assessment – with students as their co-supervisors. Procedures and guidelines described in a manual, together with the actual experience of the first meetings the newcomer participates in, serve as vivid standards that help to reduce the anxiety level of new students.

Thus, the following grounded design imperatives arise from this study:

- design education as an authentic organization by creating real (e.g. learning and managerial) task interdependencies between participants;
- exploit the benefits of peer mentoring and assessment as two specific types of task interdependency that reinforce the other task interdependencies.
- act and delegate as a senior manager, and focus on coaching and advising students;
- set vivid standards in order to create constructive rather than destructive friction for newcomers, by means of written manuals as well as students enacting, modelling or explaining these standards.

A Resource-Based View

Both the XB and thesis ring design involve peer mentoring and co-assessment by students. The benefits of peer mentoring and co-assessment can be understood in terms of resource-based models of organizations. The resource-based view implies that successful systems select actions that best capitalize on their unique endowments of resources (Combs and Ketchen 1999; Dierickx and Cool 1989; Wernerfelt 1984). In this respect, resources are those assets and other factors that the organization either owns, or has reasonable reliable access to (Dierickx and Cool 1989). This suggests that students are a widely neglected, but actually almost infinite resource in universities and other educational organizations, particularly if they are viewed as active participants and co-producers rather than as client-consumers.

The educational designs discussed in the previous section suggest that students can be acknowledged and 'exploited' as potential supervisors, team leaders, co-teachers, co-assessors, and so forth. Compared to other disciplines, scholars and lecturers in organizational studies may have a unique advantage here, in the form of theoretical (and possibly also practical) knowledge and skills in organizing and managing complex systems. Resource-based theory suggests that

key resources must be complementary, that is, they must work together effectively (Combs and Ketchen 1999; Wernerfelt 1984). A preliminary list of several complementary key resources for university education in management and organization may include:

- *students as producers* of their own learning process, as *advisers* to and *assessors* of their peers, and as *role models* enacting the organization's standards;
- *staff as senior managers* who design and lead the learning system as an organization; and
- the *knowledge base of organization and management studies*: these include established as well as more recently proposed models, concepts and ideas about organizing and managing learning and other processes.

This set of complementary resources implies that a substantial amount of resources must be invested in developing initial standards and procedures. In this respect, the first written prototypes of the XB and thesis ring designs were developed, tested and adapted over a longer period of time. The initial investment that is necessary may discourage many scholars. However, the experiences described in the preceding section suggest that a set of vivid standards reduces the risk of students feeling overwhelmed and confused when lecturers assign tasks and roles that are completely new to them. Moreover, if a tested coherent design is explicitly described in manuals or on websites, it is more likely to be adopted by others – who can then build on the investments made by the pioneers.

Setting Vivid Standards

The design notion of setting vivid standards may seem at odds with both the anti-bureaucratism that is quite popular in management (cf. Senge 1990) and open learning theories in the educational literature (e.g. Rogers 1979; Paine 1988). However, the educational designs discussed in the previous section imply that setting certain standards and enacting these standards in practice are necessary conditions that enable collaboration and participation in organized settings (cf. Adler and Borys 1996).

On a more fundamental level the change from instructing to managing and coaching, particularly in organized settings such as XB and the thesis ring, tends to require more openness and vulnerability in working with students. That is, being open to students requires teaching staff to reveal more of their personalities. A similar process is taking place in many business organizations, where according to Hirschhorn (1997: 21) 'one cannot hide behind the role of leader; instead, one must bring more of one's passions, fears and values into it'. In this respect, the image of integrating and managing work by setting standards and overseeing their ongoing enactment, according to Dougherty (2001), is very different than the image of integration by

standardizing action. Dougherty argues that enacting standards in practice provides fluidity yet constancy, whereas matching activities to standards makes little sense of the continually emerging customer needs, technologies, and other changes. Dougherty's findings suggest that people in innovative organizations 'know what their jobs are, who they report to, and how they should do their work because they can imagine what to do and how to do it, and because they can adequately imagine what others will do' (Dougherty 2001: 629).

Other Theoretical Perspectives

The main thesis in this paper is that education (in management and organization) can be approached as any other organization 'out there'. This implies scholars in organization and management studies can research their own educational practice, and that of others, by drawing on organization theories and research methodologies. In addition to resource-based theory, many other theoretical perspectives can be applied. For example, how students and academic staff draw on, interpret and (re)construct organizational structures can be studied by means of Giddens' theory of structuration (Giddens 1984; Brocklehurst 2001). Critical theories can be used to explore to what extent learning is deeply reflective and liberating in nature, and to what extent it is affected by manipulation and control (Vince 2001). What are the similarities and differences between managers of organized learning systems – such as XB – and those of other knowledge-intensive organizations (e.g. professional service firms)? These questions, among many others, should be researched in order to enable scholars to make their teaching more productive and worthwhile for students.

Concluding Remarks

Historically and traditionally, Herbert Simon (1996) wrote, the sciences teach about natural things: how they are and how they work. The engineering disciplines have been researching and teaching about artificial things: how to make artefacts that have desired properties and how to design. The social sciences – and the organizational and educational sciences in particular – have long viewed the natural sciences to be their main reference point. Following Simon (1996), engineers are not the only professional designers because

'everyone designs who devises courses of action aimed at changing existing situations into preferred ones. The intellectual activity that produces material artefacts is no different fundamentally from the one that prescribes

remedies for a sick patient or the one that devises a new sales plan for a company or a social welfare policy for a state' (Simon 1996: 111).

Thus, according to Simon (1996) the process of design is what distinguishes disciplines such as education, organization and management from the natural sciences (see also Argyris et al. 1985). Similarly, others have argued that a design-oriented 'mode 2 research' approach is needed (e.g. Tranfield and Starkey 1998; Huff 2000). The debate about design versus science based research methods falls outside the scope of this paper.

In this respect, researching and facilitating the transformation towards learning-centred systems is better not left completely to educational researchers. Scholars in organization studies can make valuable improvements and contributions to their own teaching practices as well as those of others by drawing on the stock of knowledge developed in their own scholarly discipline. The two educational innovations described in this study illustrate this point.

Both designs involve intensive feedback and assessment processes in which peers actively participate, whereas those who are formally in charge focus on managing the organization, delegating tasks, and coaching students. Thus, both peers and the senior manager can give feedback on progress frequently. As such, these learning-centred designs are potentially very productive, but also provide sufficient opportunities for quality control and assurance in order to sustain external accountability.

Evidently, educational innovation in practice has to face institutional barriers, resistance and restrictions. For example, assessment standards and requirements may be determined at other levels than that of the individual instructor. In addition, not all students may appreciate the more active participation required when their instructors redesign their teaching and supervision work on the basis of design imperatives such as suggested in this study. Setting vivid standards may reduce the anxiety level, but will not raise the satisfaction level of those students that feel rather comfortable in a passive role.

Given the enormous variety of organizational designs, structures and tools described in the literature, educational theory and practice may benefit from new ideas and imperatives from organization studies. The two educational designs explored in this paper are different in many respects, but also suggest several common design principles for the 'organization' of undergraduate education. These principles have been grounded in design-oriented action experiments that have led to viable educational practices. Other studies will have to explore whether these design principles can be used to produce effective systems in other educational contexts. Moreover, whereas this study has looked at educational innovations that can be

implemented by individual scholars and lecturers, future research should also explore whether these or similar design principles work for developing more complex educational organizations, such as a complete undergraduate programme.

References

Adler, Paul S., and Bryan Borys
1996   'Two types of bureaucracy: enabling and coercive'. *Administrative Science Quarterly* 41: 61-89.
Alavi, Maryam, Youngjin Yoo, and Douglas R. Vogel
1997   'Using information technology to add value to management education'. *Academy of Management Journal*. 40: 1310-1333.
Argyris, Chris, Robert Putnam, and Diana McLain Smith
1985   *Action science: Concepts, methods, and skills for research and intervention*. San Francisco: Jossey-Bass.
Argyris, Chris
1990   *Overcoming organizational defenses*. Needham: Allyn-Bacon.
Banathy, Bela H.
1996   *Designing social systems in a changing world*. New York/London: Plenum.
Boud, David
1990   'Assessment and the promotion of academic values'. *Studies in Higher Education* 15: 101-111.
Boyatzis, Richard E., Scott S. Cowen, David A. Kolb, and associates
1995   *Innovation in professional education: Steps on a journey from teaching to learning*. San Francisco: Jossey-Bass.
Brocklehurst, Michael
2001   'Power, identity and new technology homework: Implications for 'new forms' of organizing'. *Organization Studies* 22: 445-466.
Bruffee, Kenneth A.
1993   *Collaborative learning*. Baltimore/London: John Hopkins University Press.
Combs, James G., and David J. Ketchen, jr.
1999   'Explaining interfirm cooperation and performance: toward a reconciliation of predictions from the resource-based view and organizational economics'. *Strategic Management Journal* 20: 867-888.
Dahlgren, L.O.
1984   'Outcomes of learning' in *The experience of learning implications for teaching and studying in higher education*. F. Marton, D. Hounsell and N.J. Entwistle (eds.), 19-35. Edinburgh: Scottish Academic Press.
DiBella, A., E.C. Nevis, and J.M. Gould
1996   'Understanding organizational learning capability'. *Journal of Management Studies* 33: 361-379.
Dierickx, I., and K. Cool
1989   'Asset stock accumulation and sustainability of competitive advantage'. *Management Science* 35: 1504-1511.
Dochy, F., M. Segers, and D. Sluijsmans
1999   'The use of self-, peer and co-assessment in higher education: a review'. *Studies in Higher Education* 24: 331-350.
Dougherty, Deborah
2001   'Reimagining the differentation and integration of work for sustained product innovation'. *Organization Science* 12: 612-631.
Eden, Colin, and Chris Huxham
1996   'Action research for the study of organizations' in *Handbook of Organization Studies*. Stewart R. Clegg, Cynthia Hardy and Walter R. Nord (eds.), 526-542. London: Sage.
Ellis, S., O. Caridi, R. Lipshitz, and M. Popper

1998   *Error criticality and organizational learning: An empirical investigation.* Tel Aviv: Recanati Graduate School of Business Administration, Tel Aviv University.

Frederiksen, Norman
1984   'The real test bias: influences of testing on teaching and learning'. *American Psychologist* 39: 193-202.

Frost, Peter J., and Cynthia V. Fukami
1997   'Teaching effectiveness in the organizational sciences: Recognizing and enhancing the scholarship of teaching'. *Academy of Management Journal* 40: 1271-1281.

Galbraith, P.L.
1998   'System dynamics and university management'. *System Dynamics Review* 14: 69-84.

Giddens, Anthony
1984   *The constitution of society.* Oxford: Polity Press.

Griffith, William
1999   'The reflecting team as an alternative case teaching model'. *Management Learning* 30: 343-362.

Hackman, R.J., and G.R. Oldham
1980   *Work redesign.* Reading: Addison-Wesley.

Hall, G., J. Rosenthal, and J. Wade
1993   'How to make reengineering really work'. *Harvard Business Review* 73 (November-December): 119-131.

Hammer, M., and J. Champy
1993   *Reengineering the corporation: A manifesto for business revolution.* New York: HarperBusiness.

Hedberg, Bo
1981   'How organizations learn and unlearn' in *Handbook of organizational design*, volume 1. Paul C. Nystrom and William H. Starbuck (eds.), 3-27. Oxford: Oxford University Press.

Hirschhorn, Larry
1997   *Reworking authority: Leading and following in the post-modern organization.* Cambridge, Mass.: M.I.T. Press.

Huber, G.P.
1991   'Organizational learning: The contributing processes and the literature'. *Organization Science* 2: 88-115.

Huff, Anne Sigismund
2000   'Changes in organizational knowledge production'. *Academy of Management Review* 25: 288-293.

Kjersdam, F., and S. Enemark
1994   *The Aalborg experiment: Project innovation in university education*, Aalborg: Aalborg University Press.

Kofman, F., and P.M. Senge
1993   'Communities of commitment: The heart of learning organizations'. *Organizational Dynamics* 22 (Autumn): 4-23.

Kolb, D.A., I.M. Rubin, and J.M. McIntyre
1984   *Organizational psychology*, fourth edition. Englewood Cliffs: Prentice-Hall.

Lerner, L.
1995   'Making student groups work'. *Journal of Management Education* 19: 123-125.

March, J.G., and H.A. Simon
1980   *Organizations.* New York: Wiley.

Marton, F., G. Dall'Alba, and E. Beaty
1993   'Conceptions of learning'. *International Journal of Educational Research* 19: 277-300.

McDougall, Marilyn and Rona S. Beattie

1997 'Peer mentoring at work: The nature and outcomes of non-hierarchical developmental relationships'. *Management Learning* 28: 423-438.

Miller, Michael S.
1999 'Classroom assessment and university accountability'. *Journal of Education for Business* 75: 94-98.

Mouton, Jane S., and Robert R. Blake
1984 *Synergogy: A new strategy for education, training and development.* San Francisco: Jossey-Bass.

Paine, Nigel (ed.)
1988 *Open learning in transition: An agenda for action.* London: National Extension College Trust.

Piaget, J.
1970 *Science of education and the psychology of the child.* New York: Viking Press.

Piore, Michael J., and Charles F. Sabel
1984 *The second industrial divide.* New York: Basic Books.

Popper, Micha, and Raanan Lipshitz
2000 'Organizational learning: Mechanisms, culture, and feasibility'. *Management Learning* 31: 181-196.

Priem, R.L., and Rosenstein, J.
2000 'Is organization theory obvious to practitioners? A test of one established theory'. *Organization Science* 11: 509-524.

Putzel, Roger
1992 'Experience Base learning: A classroom-as-organization using delegated, rank-order grading'. *Journal of Management Education* 16: 204-219.

Putzel, Roger
2001a *XB: Manual for a learning organization.* Colchester: St. Michael's College.

Putzel, Roger
2001b *Maximum use of process: XB, the experience-based learning organization.* Unpublished paper. Colchester: St. Michael's College.

Ramsden, P.
1992 *Learning to teach in higher education.* London: Routledge.

Ramsden, P., and N.J. Entwistle
1981 'Effects of academic departments on students' approaches to studying'. *British Journal of Educational Psychology* 51: 368-383.

Reed, M.I.
2001 'Organization, trust and control: A realist analysis'. *Organization Studies* 22: 201-228.

Roberts, K.
1993 *New challenges to understanding organizations.* New York: MacMillan.

Rogers, Carl R.
1979 *Freedom to learn.* Columbus (Ohio): Merrill.

Romme, A.Georges L.
1998 'Toward the learning organization: The case of circular re-engineering'. *Knowledge and Process Management* 5/3: 158-164.

Romme, A.Georges L.
1999 'Domination, self-determination and circular organizing'. *Organization Studies* 20: 801-832.

Romme, A.Georges L., and J. Nijhuis
2000 *Samenwerkend leren in afstudeerkringen.* Groningen: Wolters-Noordhoff.

Rompa, R.M.G. and A.G.L. Romme

2001   'Samenwerking en leerprestaties in afstudeerkringen'. *Pedagogische Studien* 78: 298-312.

Sambell, Kay, Liz McDowell, and Sally Brown

1997   ''But is it fair?': An exploratory study of student perceptions of the consequential validity of assessment'. *Studies in Educational Evaluation* 23: 349-371.

Senge, Peter M.

1990   *The fifth discipline: The art and practice of the learning organization*. New York: Doubleday.

Shaw, R.B., and D.N.T. Perkins

1992   'Teaching organizations to learn: The power of productive failures' in *Organizational architecture*. D.A. Nadler, M.S. Gerstein and R.B. Shaw (eds.), 175-191. San Francisco: Jossey-Bass.

Simon, Herbert A.

1996   *The sciences of the artificial*, third edition. Cambridge: MIT Press.

Sitkin, S.B.

1992   'Learning through failure: The strategy of small losses'. *Research in Organizational Behavior* 14: 231-266.

Smith, B., and R. Dodds

1997   *Developing managers through project-based learning*, Aldershot/Vermont: Gower.

Stringfield, Sam

1995   'Attempts to enhance students' learning: A search for valid programs and highly reliable implementation techniques'. *School Effectiveness and School Improvement* 6 (1): 67-96.

Stringfield, Sam, David Reynolds, and Eugene C. Schaffer

2001   The high reliability schools project: some preliminary results and analyses. *Paper presented* at the 14th Annual Meeting of the International Congress on School Effectiveness and Improvement, Toronto, January 7th 2001.

Thompson, J.D.

1967   *Organizations in action.* New York: McGraw-Hill.

Tranfield, David, and Ken Starkey

1998   'The nature, social organization and promotion of management research: Towards policy'. *British Journal of Management* 9: 341-353.

Vaill, Peter B.

1996   *Learning as a Way of Being*, San Francisco: Jossey-Bass.

Victor, B., A. Boynton, and T. Stephens-Jahng

2000   'The effective design of work under Total Quality Management'. *Organization Science* 11: 102-117.

Vince, Russ

2001   'Power and emotion in organizational learning', *Human Relations* 54: 1325-1351.

Vygotski, L.S.

1978   *Mind in society: The development of higher psychological processes*. Cambridge: Harvard University Press.

Wageman, D.A.

1994   'The contributions of total quality management to a theory of work performance'. *Academy of Management Review* 19: 510-536.

Weisbord, M.R.

1987   *Productive workplaces: Organizing and managing for dignity, meaning, and community*. San Francisco: Jossey-Bass.

Wernerfelt, B.

1984   'A resource-based view of the firm'. *Strategic Management Journal* 5: 171-180.

About the author:

Georges Romme is professor of Management at Tilburg University, the Netherlands. Romme received his Ph.D. in economics from Maastricht University in 1992. His current research focuses on new concepts and organizational forms in the area of management, learning, control and education. Romme's writings have appeared in *Organization Studies*, *Management Learning*, *Strategic Management Journal*, *Omega* and other journals. Romme is also developing and managing a new programme in Business Studies at Tilburg University, and received several European prizes for his educational work. *Mailing address:* Tilburg University, Faculty of Economics and Business, PO Box 90153, 5000 LE Tilburg. *E-mail:* a.g.l.romme@uvt.nl

Figure 1   Typology of work (adapted from: March and Simon 1958; Victor et al. 2000)

<div align="center">

E N D S

		Programmed	Nonprogrammed
M E A N S	**Programmed**	Standardized production	Mass customization Flexible specialization
	Nonprogrammed	High reliability organizing Continuous improvement	Innovation work Organizational learning

</div>

Figure 2 XB's Organization Chart (source: Putzel 2001)