

**ORGANISATIONS AS PRACTICE SYSTEMS
- INTEGRATING KNOWLEDGE, SIGNS, ARTEFACTS AND ACTION**

By Göran Goldkuhl^{1,2}, Annie Röstlinger¹, Ewa Braf²

¹CMTO, Linköping university, S-581 83 Linköping, Sweden; phone +4613281000;
fax +4613284435 {e-mail ggo@ida.liu.se; aro@ida.liu.se}

²Jönköping International Business School, P.O. 1026, S-551 11 Jönköping, Sweden,
phone: +4636156178, fax: +4636121832 {e-mail ewa.braf@ihh.hj.se}

Abstract

There is a well recognised need for a broad organisational perspective on information systems and the development of such systems. This paper elaborates on a perspective on organisations as practice systems. A generic model of organisational practice is presented. The model is theoretically grounded in a discussion on different organisational phenomena such as knowledge, artefacts, signs, business processes and coordination. The model is a contextualised description of an organisational practice emphasising actors, actions, relationships and action objects (prerequisites/results). It recognizes different dimensions of organisational actions as vertical and horizontal coordination and horizontal transformation. One key concept in the model is organisational ability. Such an ability is said to consist of individual and intersubjective knowledge, artefacts and organisational descriptions (signs) as actable assets. Organisational learning through assimilating experiences from action is also recognized. The generic model can be used as a basis for making business definitions, which is considered to be of great importance in IS planning and IS development. An illustration of the use of a business definition is made from a case study on business and IS development in a municipal home care unit for elder people.

Keywords: Knowledge, sign, organisational action, business process, information system

1 INTRODUCTION

Like many other areas of study, management and business development are subject to "fashion" changes. Different management trends go through phases of "rise, peak and fall". The great interest in Business Process Reengineering (BPR) has partially been substituted by a great interest in Knowledge Management (KM) and Organisational Learning (OL). Knowledge has been conceived as a key factor for business success and competitive advantage.

For both BPR and KM, information technology (IT) is seen as an enabling technology. Within these two trends there is, thus, a great interest in IT. But it is not an isolated interest. In BPR, IT is conceived as one enabling factor and human resources are conceived as another enabler (Davenport, 1993). The same goes for Knowledge Management. It is not meaningful to discuss knowledge without incorporating human issues. This means that both BPR and KM approaches include the treatment of IT issues and human/social issues. Relationships and interplay between these factors must be managed to ensure success. How this mix of enabling factors should be combined and organisationally designed is a key issue which is by no means new. This is for example treated as a main organisational design issue within the socio-technical tradition. Mumford (1994) has described similarities and differences between the socio-technical tradition

and BPR; confer also Davenport & Stoddard (1994) about a discussion on what is new and what is old in BPR. Some of the principal issues concerning the technological vs human dimensions are also valid for Knowledge Management. To this, one can add that KM also includes many classical epistemological issues. What counts as knowledge? How can we trust knowledge? How should knowledge be utilised? How can knowledge be transferred? This is just to mention some important epistemological issues which can be raised.

If we look at BPR and KM together we can see that these approaches contribute with a claim for an integrated development of information technology, business processes and humans, and their knowledge and competences. How this integration should be done in practical development and change has seldom been thoroughly described. We think this is due to an insufficient theoretical integration of these different aspects. It is our concern in this paper to contribute to such an integrated theoretical understanding.

We think that one key to the lack of a such theoretical integration in BPR and in KM literature is the lack of semiotic and linguistic awareness. There does not yet seem to be any linguistic turn in management fads as BPR and KM. Keen (1997) has explicitly criticized business process approaches as being transformation oriented and not taking into account the role of language for different coordination purposes. This kind of critique can also be found among scholars within the Language Action Perspective (LAP); e.g. Denning & Medina-Mora (1995) and Dietz (1999).

Earlier, a model has been presented - the model of generic practice (Goldkuhl & Röstlinger, 1998; 1999) - which aims explicitly at theoretically integrating different organisational phenomena like knowledge, technology, business processes and human action. This model relies on a language action perspective, but it is not dependent on the restrictions of such an approach. LAP is one background theory, but there are also other theoretical sources which are integrated within a general pragmatic perspective. In this model *organisations are viewed as practice systems*¹. The model is sometimes called the ToP model; ToP stands for theory of practice.

In Goldkuhl & Röstlinger (1999) the ToP model has been compared to other LAP models like Action Workflow (Denning & Medina-Mora, 1995), DEMO (Dietz, 1999) and BAT (Goldkuhl, 1998). The model was also compared to some other approaches outside LAP: Activity Theory (Engeström, 1987) and Soft Systems Methodology (Checkland, 1981). There is a need for further theoretical and empirical grounding of this model. The purpose of this paper is to pursue steps towards such a grounding. We will elaborate, from our pragmatic standpoint, on important theoretical concepts behind the model, on knowledge, artefacts, signs, business processes and organisational action (section 2). After presenting the model (section 3) we will give an empirical illustration (section 4). This illustration is made through an example of a business definition based on a case study. The case study is a business and IT development endeavour in a municipal home care unit for elder people. One governing idea behind this business development was the improvement of the management and transfer of knowledge about clients, assignments, work procedures within the home care unit. The business development project should introduce IT as an enabling force together with development of competence and knowledge as organisational assets. The ToP model should not only be seen as a "theoretical model", but also as an intellectual instrument for making a business definition in the initial phases of ISD. Such a business definition should play an important role in IS planning and as a basis for requirements engineering. We will in the paper, through the use of our example, relate basic concepts of the model to information systems and systems development (section 4). The paper ends by some concluding remarks (section 5).

¹ The notion of practice system is described and defined in sec 3 below.

2 ORGANISATIONS AS PRACTICE SYSTEMS - THEORETICAL GROUNDING

2.1 Knowledge in organisations

When discussing knowledge in organisations it is important to distinguish between individual and collective knowledge. All knowledge is individual and subjective in the sense that it is part of a person's consciousness. This does not imply that the person is always aware of the piece of knowledge or that he can directly formulate it through the use of words. Knowledge can be tacit (Polanyi, 1958) and it can reside in "practical consciousness" which is in this sense opposed to "discursive consciousness" (Giddens, 1984). A lot of knowledge is, however, also intersubjective. This means that it is shared by several people. Social phenomena, like organisations, would not be possible without the existence of intersubjective knowledge. Shared meanings arise through social interaction. People use common language and they work together and through these processes intersubjective knowledge is created (Berger & Luckmann, 1969).

Literature on knowledge in organisations often distinguishes between tacit and explicit knowledge (e.g. Nonaka & Takeuchi, 1995; Zack, 1999). Tacit knowledge is personal, context-specific and hard to formalize. Explicit knowledge, also regarded as codified knowledge, refers to knowledge that is transmittable in formal, systematic language (ibid). Deployment of knowledge in organisations is often seen as such a codification process. Nonaka & Takeuchi (1995) describes a model with several subprocesses (socialisation, externalisation, internalisation and combination) for organisational deployment of knowledge. The externalisation is said to be the most important process, because during this process tacit knowledge becomes explicit.

When talking about codifying knowledge Zack (1999) emphasises that organisations need to determine which knowledge should be made explicit and which should remain tacit. It is the explicit knowledge that is the basis for codification. The codification process starts with the acquisition of knowledge, which is then refined and stored in a repository. The repository is used to distribute and present knowledge with different contents, formats and presentation contexts (ibid). In order to develop meaningful knowledge repositories, "*their structure must reflect the structure of shared mental models or contextual knowledge tacitly held by the organization*" (Zack, 1999:56).

This kind of codification strategy is not the only possible one. Besides this strategy Hansen et al (1999) have identified what they call a personalisation strategy. This strategy deals with person-to-person contacts; and instead of storing codified knowledge it is concerned with communicating knowledge by word of mouth. Hereby, the personalisation strategy does not pay any appreciable regard to technology as an enabling instrument for knowledge management. Hansen et al (1999) say that organisations need to decide whether they should focus on a codification strategy or a personalisation strategy.

One stream of literature that conceptualises the personalization strategy concerns theories on organisational learning. Those theories concentrate on issues like how actors learn and how they think. Argyris (1991) claims for instance that people in general are not very good at learning, and criticises organisations for focusing too much on the creation of organisational structures like new reward systems, common culture and factors of motivation. He also asserts that actors do not understand what learning is and how to bring it about. In order to reach a deep learning managers as well as employees need to critically reflect on their own behaviour and identify the ways that, often inadvertently, contribute to an organisation's problems.

There is a tendency that the focus on codification and externalisation might lead to a far too isolated and narrow view of knowledge and how knowledge can be managed. One drawback is that these authors seem to treat knowledge as an object that can be managed independently of the subjective knower. This is in line with Quintas et al (1997:398) who criticise knowledge management because “*it assumes that knowledge is a ‘thing’ (object) which is amenable to being ‘managed’ – by a ‘subject’ (a manager)*”. On the other hand, if we look at theories on organisational learning and the like they mainly talk about individuals and about intellectual learning. The limitation of those approaches is an inclination to disregard the actability of technology and other organisational abilities. In addition, they do not pay very much attention to issues like how to manage and reuse knowledge that exists in the organisation.

We would like to emphasise the need for a pragmatic view on management of organisational knowledge and as Scarbrough et al (1999:vii) express we “*will have to turn it (read: knowledge management) away from knowledge as a commodity and towards the benefits of people acting knowledgeably*”. Hereby we need to pay greater regard to questions like knowledge about what, for what and for whom?

Knowledge is here considered to be an organisational asset (Drucker 1993; Edvinsson & Malone, 1997). There should be a clear link between knowledge as an asset and the value for customers (Wikström & Normann 1994). Knowledge should be a basis for value creation. A principal causal chain can be described in the following way: Knowledge → organisational action → products → customer use → value to the customer. Knowledge is exercised in organisational action that creates products of value to customers. Knowledge is thus considered to be an *actable*² asset; i.e. an asset which should be utilized and transformed into action. Knowledge is an ability to act. Philosophically this is rooted in pragmatist traditions from Aristotle’s knowledge characters of *phronesis* and *techne* to American pragmatists like Peirce, James and Dewey (Thayer, 1981) who emphasised the penetrating functions of action on knowledge.

Management of organisational knowledge is concerned with the processes of making knowledge intersubjective, i.e. the deployment of knowledge in organisations. Language is a key instrument for such processes. This is, however, not always recognised in the knowledge management literature. We will discuss this further in sec 2.3 below.

The establishment of intersubjectivity is a “socio-natural process”, taking place all the time. Shared meanings arise through explicit communication and through people working together and observing each other’s behaviour. Shared meanings can arise on a typical level, i.e. people hold similar categories of the world. Such *shared typical meanings* enable the creation of *shared situational meanings*, i.e. that different persons interpret the same situation in similar ways. Intersubjective knowledge is not restricted to what we know *about* the world. Values and norms are important parts of such intersubjective knowledge. It is the matter of how we should act in the world and how we want the world to be and thus not only what we know about the world. Intersubjective knowledge consists of (subjective) knowledge of different individuals which is shared among them.

We should not take it for granted that the establishment of intersubjectivity is always a successful process. Misunderstandings, misconceptions, intended and unintended

² The concepts of actability andactable asset are described in Goldkuhl & Ågerfalk (2000) and Goldkuhl & Braf (2000).

misrepresentations and concealments occur which hamper the rise of intersubjective knowledge. All individual knowledge is not part of the intersubjective stock of knowledge. Sometimes people interpret the same situation in similar ways and sometimes they interpret the same situation in different ways.

2.2 Artefacts in organisations

Knowledge is an essential and primary part of organisational ability. The members of an organisation must have adequate knowledge in order to perform actions in favour of the customers. Knowledge must be an actable ability, i.e. it must be possible to transform this knowledge to executable and valuable action. Knowledge is however not the only actable asset and ability of an organisation. In order to produce goods and services most organisations use some technical equipment. For many organisations technology is essential to production. The performance of organisations is usually dependent on different kinds of equipment; both information, manufacturing and transportation technology. Technical equipment is, however, not only a tool in the hands of a competent staff. Many such artefacts have an ability for active production. Technical artefacts and humans perform organisational action - sometimes together and sometimes independently - in order to create products of customer value. Organisational action can be performed by people or by artefacts created and arranged by people. Both humans and non-humans (i.e. artefacts) have the ability to act (Latour, 1992). This position should not be conceived as a reified view, i.e. assigning an ability to artefacts to fully act on their own. Artefacts are constructed by humans with a predefined ability to perform action.

For a human to act skillfully in his/her organisational role there is a need for knowledge. The performance of organisational action by artefacts implies an appropriate functionality of these artefacts. Such artefact functionality is part of the organisational ability (Goldkuhl & Braf, 2000). Different artefacts have different predefined abilities according to their different purposes. There are different degrees of independence between different artefacts.

Weizenbaum (1976) distinguishes between prosthetic tools and automatic machines. A prosthetic tool, like an axe, extends the ability of humans. An axe does not perform anything by itself. It must be yielded by a human. An automatic machine, like a washing machine, has an autonomous ability to function on its own. A human initialises the machine and then it works totally by itself. These two artefact categories can be labelled *static tool* and *automatic machine*. Goldkuhl & Ågerfalk (2000) adds another artefact category between these categories: The *dynamic tool*. Such a tool, like a car, has abilities to perform work (like moving), but it does not function totally on its own. A human drives a car. A car needs constant manoeuvring. It is a dynamic tool, designed to be operated by a human. A dynamic tool can perform work which is contrary to the static tool. It cannot, however, work totally by itself. It needs constant supervision by a human, which is contrary to the automatic machine, which after being initialised works by itself.

IT-based information systems (IS) can be used in all these artefacts roles. It can be used as a static tool, e.g. when a user is reading his e-mail. Many information systems are today designed to be interactive tools. A user and an IT artefact can interact and together perform organisational acts; this means usage of an IS as a dynamic tool. E.g. when a user places an order in and with the support of an interactive order processing system. Nowadays we often take the interactive character of computers for granted. We perhaps tend to forget the original automatic machine power of computers, i.e. their ability to function, according to the predefined rules of the software, without any surveillance by humans. We still use computers to perform calculations and other operations in a non-interactive and automatic mode.

2.3 Signs in organisations

What has been said above can be summarised as follows: Knowledge and artefacts are important parts of the organisation's ability to perform action with the purpose of creating products of value to the customers. What has been partially implicit above is the role language and other sign systems play for organisational action and for the abilities of knowledge and artefact functionality. In this section, we will focus on signs in organisations. In doing so, we adopt an organisational semiotics perspective (Stamper, 1994; Liu et al, 2001).

The transfer of knowledge can be made when people are *working together* and *observing* each other. A person can *show* another person how to work. There are certain advantages with such approaches, but there are also limitations. People use language and other semiotic devices in order to communicate and transfer knowledge in richer ways than only showing and observing. Language has of course limitations, but the very rich expressiveness makes it to a dominant communication medium. Thoughts, wishes, promises, etc are expressed in very subtle ways through language. Communication, written or recorded in other ways, can defy time and place.

In order to make knowledge intersubjective within an organisation, language is used as a key instrument for knowledge transfer. Knowledge is *codified* and *expressed* in ways which makes it possible to establish shared knowledge as we described in sec 2.1 above. Different documents can be used in order to *keep* the expressed knowledge over time. It is important to identify the different ontological domains of knowledge and signs. Knowledge is what a human subject knows and what resides within her consciousness. A sign is an expression of knowledge which has an existence outside humans. A sign can be interpreted by a human and thus being transformed into knowledge again.

Signs play an important role for organisational action. Signs are necessary for coordination of organisational work; see sec 2.4 below. Signs can be important instruments for the performance of competent actions. We have emphasised that a human being must have knowledge in order to perform actions. Instructions for such an action can often be made by the use of signs. To be more specific we can talk about different *manuals* used. There can be manuals describing and prescribing the human work. There can also be manuals for the utilization of different artefacts. Manuals of different kinds can be seen as supports and extensions of the organisational abilities of knowledge and artefacts.

2.4 Processes in organisations

We have stated the role of knowledge as being exercised in organisational action. This calls for a discussion on organisational acts and how they can be related in different ways.

Different organisational acts are structured together in sequences or other collections aiming at producing a composed result to a customer. Such groups of actions are often labelled business processes. The change approaches of Business Process Reengineering - BPR (e.g. Hammer & Champy, 1993; Davenport, 1993) and Total Quality Management - TQM (e.g. Harrington, 1991) have had a tremendous impact on the view on organisations. The traditional view on organisations with different hierarchical levels, which was reflected in traditional organisational theory (e.g. Mintzberg, 1979), has to a great extent been replaced by a horizontal perspective on organisations. Horizontal work processes aiming at producing results with value to the customers

have been placed in the foreground. Vertical relations of power and the traditional organisation chart have been put in the background.

Hammer & Champy (1993:35) have made a short and clear definition of a business process: "A collection of activities that takes one or more inputs and creates an output that is of value to the customer". This input-output view of business processes can also be found in many TQM approaches (e.g. Harrington, 1991). We call this a transformative view on business processes. It has an emphasis on how some input (often raw-material) is transformed to some output (often finished goods). This transformative view - an industrial engineering perspective - has been challenged by several authors, e.g. Keen (1997), who contrasts it with a coordination view. Coordination means an orientation towards the communicative interaction between different parties such as the customer and the producer. The performance of work is dependent on exchanges of proposals and commitments and of made agreements. A coordination approach emphasises the communicative acts performed by different parties with different coordinating purposes. The theoretical roots can be traced to speech act theory (e.g. Searle, 1969; Habermas, 1984). This coordination view on business processes has been operationalised into methodological approaches like Action Workflow (Denning & Medina-Mora, 1995) and DEMO (Dietz, 1999).

The transformative business process view (of BPR and TQM) can be seen as a reaction towards the classical vertical view on organisational work. The transformative view emphasises the horizontal dimension instead of the vertical. The coordination oriented process approach is also a horizontal view on organisational work. It can be seen to be a reaction towards the transformative view, with emphasis on communication instead of transformation. There are dialectical contradictions between these three views (figure 2.1).

Goldkuhl & Röstlinger (1999) have argued for a reconciliation between these three perspectives. All three are needed in order to describe an organisation properly. There are relations of power and authority within an organisation; this means that there is a need to describe *vertical coordination*. There are also transformations of inputs to outputs in an organisation; i.e. there is a need to describe *horizontal transformation*. There is also communication and coordination between customer and producer; this means that there is a need to describe *horizontal coordination*. A model of an organisation with these three types of processes is depicted in figure 2.2.

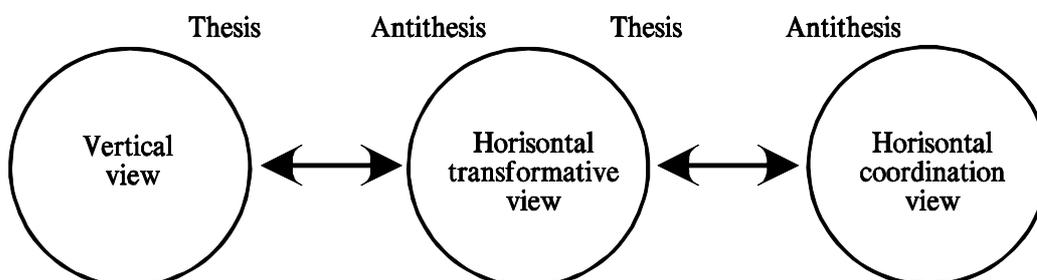


Figure 2.1 Dialectical contradictions between different organisation views

Besides the critique of the transformative process view, Keen (1997) also emphasises the importance of looking at processes from an economic perspective, i.e. to see processes as parts of the organisation's capital. Keen's main message is to focus on processes that contribute to real

economic value of the organisation. Processes generate costs but they must substantially generate revenues and worth to the organisation.

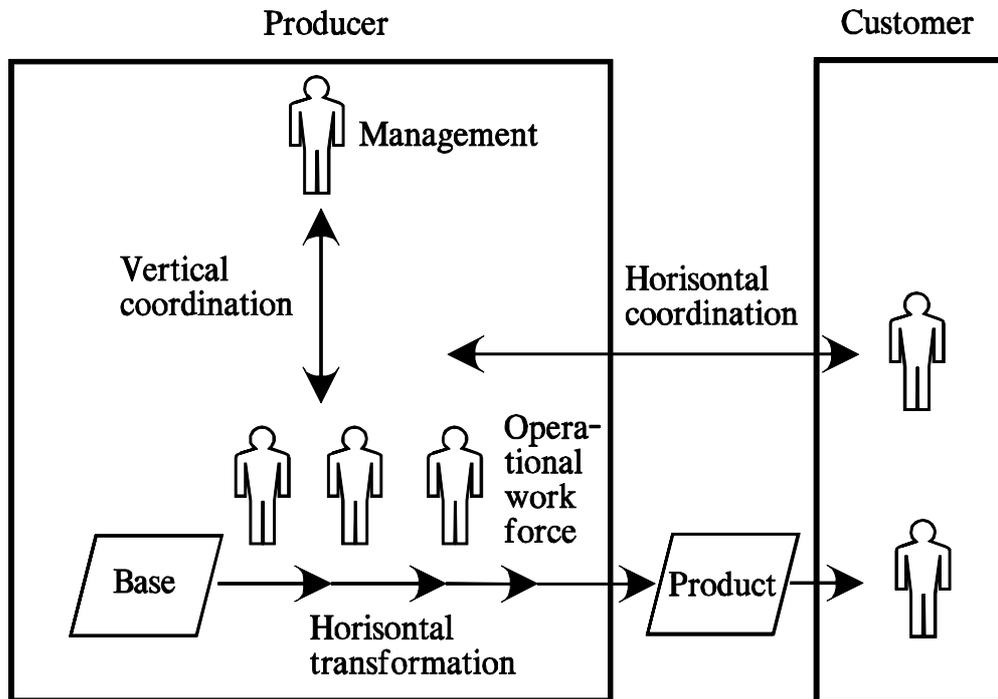


Figure 2.2 An organisation seen as consisting of three types of processes (vertical coordination, horizontal transformation, horizontal coordination)

3 ORGANISATIONS AS PRACTICE SYSTEMS - A GENERIC MODEL

In this section we present our model of organisations as practice systems. In the model we integrate the different discussions performed above on knowledge, artefacts, signs, actions and processes in organisations. It is a generic model of organisational work. Organisations are viewed as practice systems. This means that they are systems for the performance of organisational actions aiming at producing products of value for customers or other clients. These organisational actions are performed by human actors and different artefacts. The actions are based on different coordination "forces" of vertical and horizontal characters. They are also based on the different abilities as the actable knowledge of humans (i.e. the subjective and intersubjective domain) and the functionalities of artefacts (i.e. the technical domain) and also supported by description of abilities in manuals (i.e. the semiotic domain).

The different arguments in sec 2.1-4 above are put together in this generic model of organisations as practice systems. In this holistic model we try to integrate the following aspects:

- Knowledge as actable assets on individual and intersubjective levels
- Artefacts as actable assets
- Manuals (descriptions) as actable assets
- Vertical coordination of organisational actions
- Horizontal coordination of organisational actions
- Organisational actions as horizontal transformation
- Organisational actions as creation of products of value to customers/clients

- Organisational actions as generation of economic worth
- Organisational actions as sources of organisational learning

The model has been presented earlier in Goldkuhl & Röstlinger (1998; 1999). It has been called a model of generic practice or the ToP model; ToP stands for Theory of Practice. We have made some improvements³ to the model here making the different organisational abilities more visible (following the theoretical development in Goldkuhl & Braf, 2000). The model emphasises the organisational actions. It is a contextualised model describing results of action and prerequisites for action (figure 3.1). This means that it gives a contextualised and relational view of organisations.

The main result is products for customers or clients. There are several different prerequisites for action. Different coordination forces are recognised as assignments for the organisational work. Horizontal coordination is expressed by "product order", which e.g. can be an assignment from a customer to the producer for delivering a product. Vertical coordination is expressed by "role assignment", which can be a job description, and "product repertoire", which is defining the product types of the organisation. Organisational work as transformation means that some input ("raw material") is transformed to some output (i.e. products). This kind of input is in the model labelled "base". The need for economic compensation is also recognised in the model. What is also important, but not explicitly mentioned in the discussion above, is the "normative pressure" an organisation is exposed to. Different norms and judgements have an impact on what is performed in an organisation. Such norms⁴ and judgements are both externally furnished and internally created. The coined term "normativists" are actors framing norms, making judgements and expressing opinions both outside and within the organisation.

As mentioned above knowledge is part of the organisational ability. Other parts are artefact functionality and manuals. Creators of these abilities can be both internal and external to the organisation. Through experiences from action, knowledge is always evolving over time. It is gradually changing. Changes in artefacts and manuals - other than unintentional wearing - must be carried out in a conscious way.

The model expresses a *multi-functional* view on organisational action. Organisations do several things at the same time. One organisational action performed by one actor can at the same time be a fulfilment of a customer assignment, a fulfilment of a management assignment, part of a production process transforming base into products, a creation of value for a client, a generation of economic worth, a norm-governed action, a knowledge-utilising and instructed action, an artefact-supported action and a basis for organisational learning. This multi-functional view on organisational action seems not to be recognised in many theories.

We define an organisational practice in the following way: *A organisational practice means that some actor(s) - based on assignments from some actor(s) - makes something in favour of some actor(s), and sometimes against some actor(s), and this acting is based on material, immaterial and financial conditions and an organisational ability which is established and can continuously be changed.*

³ We have made one simplification in our presentation here by excluding other result takers than the clients.

⁴ If there is to be a compliance to norms in organisational action, such norms must be internalised (and possibly adapted/transformed) by the organisational actors and thus be part of their actable knowledge. Not all norms and judgements which are exposed to an organisation will be accepted and internalised by the actors. Some norms and judgements may be refused.

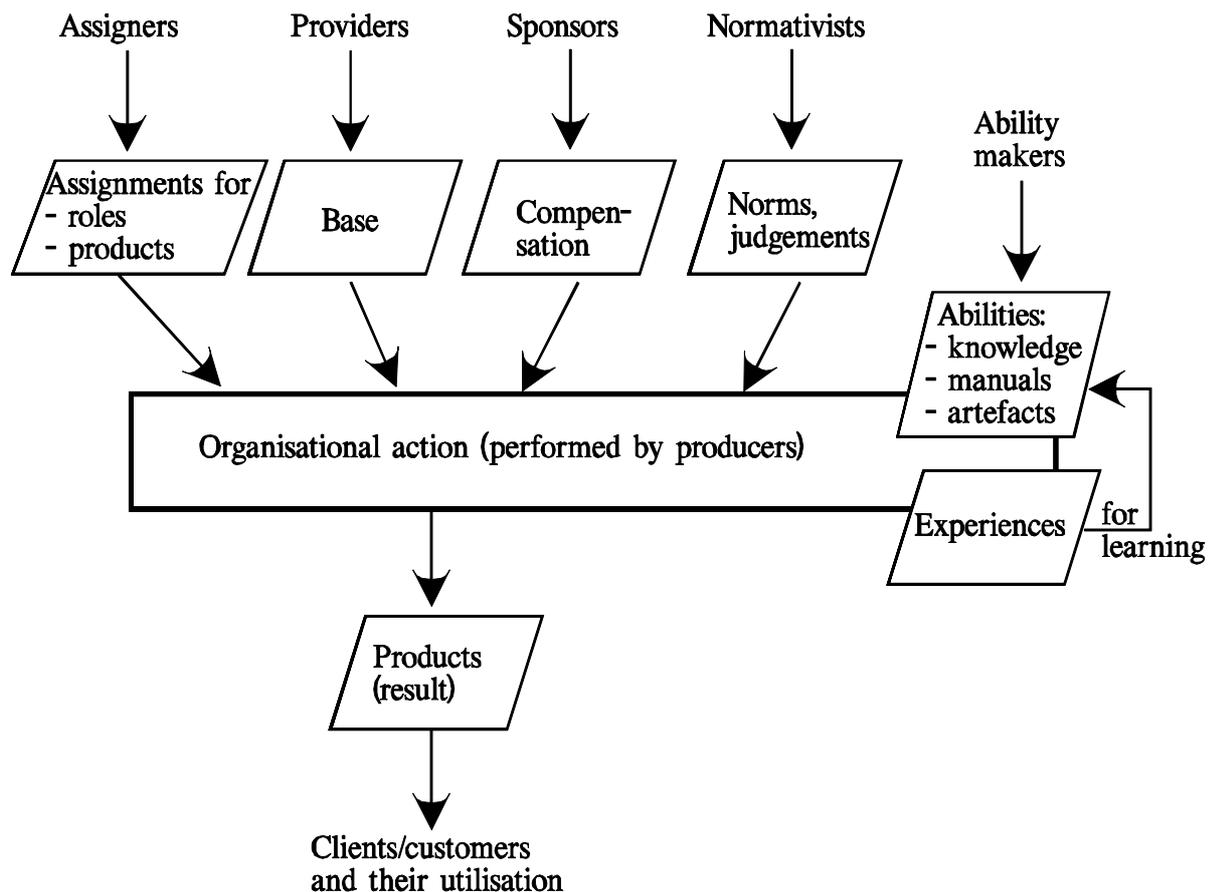


Figure 3.1 A generic model of organisations as practice systems

4 INFORMATION SYSTEMS DEVELOPMENT IN AN ORGANISATIONAL PRACTICE PERSPECTIVE

Computer-based information systems are important artefacts for most organisations today. Based on our organisational practice perspective we can give the following definition of an information system: A computer-based information system is a *sign system embedded in an artefact with action capabilities for organisational purposes*. We can call it an *organisational sign and action artefact*. The sign aspect means that it has signifying functions. Knowledge can be expressed by the use of signs as stated above. The action aspect means that it can give support to human action and also that it can perform actions in cooperation with humans or independently. The artefact aspect means that it is artificially shaped and constructed and that it has a material extension. The IS as an artefact can - through its software and hardware - perform "information work" such as collecting, processing, storing, transporting, retrieving and displaying signs. The organisation aspect means that it is one part of the organisational ability to perform organisational actions.

One important argument behind this paper is that development of IS should be made based on a broad and integrated understanding of different organisational phenomena. IS development should not just be seen as a question of rendering more efficient information handling. It should rather be seen as an organisational change with relations to several other organisational aspects. The generic model of practice can guide IS developers to take a broad view of the organisation as a starting point for the development activities.

The planning and development of information systems should thus be made with a clear conception of their organisational context (e.g. Nilsson et al, 1999). Business modelling is often performed in initial phases of ISD with such a purpose. There are transformation oriented methods for business modelling and there are coordination oriented methods based on language action views (cf discussion in sec 2.4 above). We acknowledge the importance of making business modelling a part of IS planning and IS development. We do however want to add to such a business modelling the making of a business definition. For the performance of a business definition in IS planning and IS development, we propose using the generic model of organisations presented above in sec 3.

Several studies have been performed using this approach for business definition. We will briefly show one example here. A research study on a municipal home care unit has been performed. One purpose was to investigate the knowledge utilisation as a basis for decision on and design of a prospective IT-based system. We have performed the case study with the following collection techniques: Interviewing directors and home care assistants, observation, collection and analysis of documents. The home care service is to a large degree dependent on tacit knowledge and implicit communication between employees. A closeness to the empirical phenomena was necessary in order to gain reliable data. The case study has been carried out on a action research basis by the three authors together with several other research colleagues. A participatory approach has been taken, including active cooperation with the personnel at the home care unit.

At an early stage of the case study we made a business definition of the home care unit according to the generic model of practice (figure 3.1). This business definition can be found in figure 4.1. We comment on it briefly below.

The coordination of the home care unit is distinctive due to its municipal character. The home care service is partially financed by taxes, which means that there is not a direct order relationship between the client (the elder) and the home care unit. A social welfare administration acts as an intermediary decision maker.

There are different norms governing the home care service. Many norms are legally codified in the laws for social welfare. There are, however, also many norms concerning the home care service work which emanates from the practice itself. These norms are mainly implicit and they have continuously emerged. Parts of the work are, however, described in routine manuals by the personnel.

The case is a service business. The client is an elder receiving care in his/her residence. The service products⁵ consist of individualised treatment of humans. In the transformation process the elder has the role of being both input (base before receiving care) and output (result after receiving care).

The business definition has, in the case study, served as a basis for further investigation on current business processes and for the design of new processes and an information system. The business definition has guided attention towards important aspects in the home care unit. The business definition has been used to emphasise the basic objectives of the home care unit:

- Quality assurance of the home care services
- Customisation of the home care services to the individual clients

⁵ Accompanying the generic model of practice there is a practice oriented product classification schema consisting of 27 different product classes; encompassing both goods and services (Goldkuhl & Röstlinger, 2000).

Generic categories	Personal care
Role assigner	Welfare board
Role assignment	Rules and job descriptions for municipal home care producers
Form of communication	Oral and written
Product repertoire	Different types of personal care
Product definer	The state, welfare board
Product orderer	1) Elder person receiving care and 2) Social welfare administration (decision-maker)
Product order	1) Desire of receiving personal care 2) Decision of measures of care (the need and type of personal care)
Form of communication	1) Oral via telephone, 2) Written
Provider	Elder person receiving care
Base	Elder person receiving care in her/his residence
Buying sponsor	Elder person receiving care
Subsidising sponsor	Citizens of the municipality
Paying sponsor	Welfare board
Compensation	Person receiving care: Amount related to income Citizens of the municipality: Local taxes Welfare board: According to agreement
Framer of norms	1) The state 2) Home care management and co-workers
Norms	1) Laws and regulations 2) Emergent and implicit norms
Knowledge developer	Trainers, home care director, home care assistants
Knowledge	Home care competence and administrative competence
Author	Home care management and co-workers
Manuals	Routine descriptions
Artefact constructor/ supplier	Supplier of home care facilities, external IS-consultants
Artefacts	Lifting facilities and IS
Producer	Home care director, home care assistants organised in teams, receptionist
Actions	Care-tasks: Assistance with personal hygiene, personal assistance with clothing, medicine assistance, assistance at meals Administrative tasks: Planning, scheduling, information and documentation
Result	Personal care (customised to each different client)
Product class	Treatment of clients
Main-client	Elder person receiving care
Side-client	Related person
Utilization	Person receiving care: Possibility to remain in home quarters Related person: Feeling relieved and assured that the related person having a good care-situatiuon

Figure 4.1 A business definition of a home care unit

It was also very important to get a clear view of the different assigners and their different roles; i.e. the welfare board as a role assigner and product definer, the client as an original product orderer and the social welfare administration as an intermediary product orderer. Different assignments, external and internal norms and financing principles have a great impact on the business logic of the home care unit. Clarification of these matters were vital to the definition of IS requirements.

This business definition (figure 4.1) has played an important role in the development of an information system. The IS will be used as a support for planning, execution and follow up of home care work. We can talk about a *business definition driven information systems development*. When defining the requirements of the information system we have had different parts of the business definition in mind. We will give some examples of this below.

The information system handles different measures within individualised home care services. There is a planning module where home care assistants describe measures to be taken in order to supply individual receivers with care. Some measures are recurrent, others are specific for a day or for a limited time. Different measures must be aligned with the *decision* made by the social welfare administration and the original *order* from the elder (figure 4.1). An operationalisation of the decision/order is made in an individualised care plan. The IS will keep track of such plans and have features for revising them regularly.

The information system must be compliant to different norms; e.g the *social welfare law*. Much time during the requirements definition has been devoted to studying law texts and interpreting possible implications for the care work and the system. Different *tacit and emergent norms* held by the personnel have been reconstructed and discussed together in the development group. The core issue has been how to improve the quality for the clients. *Routine descriptions* (in manuals) have been studied. Some routines will be changed due to computerisation. An objective is to have routine descriptions as parts of the IS.

A large portion of the requirements definition has been devoted to discussions of the home care language (concepts and terminology) and how parts of this language should be implemented in the IS (shown in prototypes of screen documents). Vague concepts and terms have been questioned by the researchers and better ones have been developed together by the personnel and the researchers. The home care language is an important part of the *competence* of the home care personnel. Parts of this competence/language will be externalised and implemented in the “formalised” language of the information system.

The result (product) of the home care work is *personal care customised to each client* and in accordance with the different service types of the home care unit (*the product repertoire*). One of the core ideas of the new IS is to keep records of individualised service measures for each client; both planned and performed service measures. The IS will also transfer other information about the elders (e.g background knowledge and care journal notes) as a support for the home care assistant to get a more comprehensive picture of each person. This means that the IS will hold information about each elder who is to be seen as both *base* and *client* for the home care unit. Important *experiences* of the home care assistants from serving the elders should be put in the system as care journal notes.

5 CONCLUDING REMARKS

We have - from a pragmatist position - argued in this paper for an encompassing approach including knowledge, artefacts, signs and business processes of an organisation. A generic model of organisational practice has been presented. Knowledge is seen as a primary organisational asset. People working in an organisation must be knowledgeable in order to perform actions serving the clients of the organisation. Knowledge is however not the only organisational asset. Technology, in the concrete form of different artefacts, plays an important role for organisational action. Descriptions of actions, products and other important aspects do also count as actable organisational assets. In our analysis of business processes we have argued for a combined approach taking account of both horizontal transformation and vertical coordination and horizontal coordination.

A business definition (made according to the model of generic practice) can serve as a key instrument for making IS development (like activities of IS planning and requirements engineering) organisationally contextualised and sensitive.

ACKNOWLEDGEMENTS

Parts of this research has been performed with financial support from the Swedish Association for Local Authorities.

REFERENCES

- Argyris C (1991) Teaching Smart People to Learn, *Harvard Business Review*, May-June, Vol 69, Iss 3, pp 99-109.
- Berger P L, Luckmann T (1967) *The social construction of reality*, Doubleday & Co, Garden City
- Checkland P (1981) *Systems thinking, Systems practice*, John Wiley, Chichester
- Davenport T (1993) *Process innovation. Reengineering work through information technology*, Harvard Business School Press, Boston
- Davenport T, Stoddard DB (1994) Reengineering: Business change of mythic proportions?, *MIS Quarterly*, p 121-127
- Denning PJ, Medina-Mora R (1995) Completing the loops, *Interfaces*, 25 (3)
- Dietz JLG (1999) Understanding and Modelling Business Processes with DEMO, *Proc. 18th International Conference on Conceptual Modeling (ER'99)*, Paris
- Drucker P E (1993) *Post-capitalist society*, Butterworth-Heinemann, Oxford
- Edvinsson L, Malone M S (1997) *Intellectual capital – the proven way to establish your company's real value by measuring its hidden brainpower*, Piatkus, London
- Engeström Y (1987) *Learning by expanding: An activity-theoretical approach to developmental research*, Orienta-Konsultit, Helsinki
- Giddens A (1984) *The constitution of society. Outline of the theory of structuration*, Polity Press, Cambridge
- Goldkuhl G (1998) The six phases of business processes - business communication and the exchange of value, accepted to the 12th biennial ITS conference "Beyond convergence" (ITS'98), Stockholm
- Goldkuhl G, Braf E (2000) Organisational Ability - constituents and congruencies, Accepted to OR42, Swansea

- Goldkuhl G, Röstlinger A (1998) *Praktikbegreppet - en praktikgenerisk modell som grund för teoriutveckling och verksamhetsutveckling*, CMTO, Linköping university [in Swedish]
- Goldkuhl G, Röstlinger A (1999) Expanding the scope: From language action to generic practice, in *Proceedings of the 4th Int Workshop on the Language Action Perspective* (LAP99), Jönköping International Business School
- Goldkuhl G, Röstlinger A (2000) Beyond goods and services - an elaborate product classification on pragmatic grounds, in *Proc of Quality in Services* (QUIS 7), Karlstad university
- Goldkuhl G, Ågerfalk PJ (2000) Actability: A way to understand information systems pragmatics, accepted to the 3rd International Workshop on organisational semiotics, Staffordshire University
- Habermas J (1984) *The theory of communicative action 1. Reason and the rationalization of society*, Polity Press, Cambridge
- Hammer M, Champy J (1993) *Reengineering the corporation. A manifesto for business revolution*, Nicholas Brealey, London
- Hansen M T, Nohria N, Tierney T (1999) What's your strategy for managing knowledge?, *Harvard Business Review*, March-April, Vol 77, Iss 2, pp 106-116.
- Harrington HJ (1991) *Business process improvement. The breakthrough strategy for total quality, productivity and competitiveness*, McGraw-Hill, New York
- Keen P (1997) *The process edge*, Harvard Business School Press
- Latour B (1992) Technology is society made durable, in Law (ed, 1992) *A sociology of monsters: Essays on power, technology and domination*, Routledge & Kegan Paul, London
- Liu K, Clarke RJ, Andersen PB, Stamper RK (eds., 2001) *Information, organisation and technology. Studies in organisational semiotics*, Kluwer Academic Press, Boston
- Mintzberg H (1979) *The structuring of organizations*, Prentice-Hall, N.J.
- Mumford E (1994) New Treatments or Old Remedies: Is Business Process Reengineering Really Socio-Technical Design?, *Journal of Strategic Information Systems*, 3, 4, pp. 313-326
- Nilsson AG, Tolis C, Nellborn C (Eds, 1999) *Perspectives on Business Modelling. Understanding and changing organisations*, Springer Verlag, Berlin
- Nonaka I, Takeuchi H (1995) *The knowledge-creating company. How Japanese Companies Create the Dynamics of Innovation*, Oxford University Press, New York
- Polanyi M (1958) *Personal knowledge*, Routledge & Kegan Paul, London
- Quintas P, Lefrere P, Jones G (1997) Knowledge management: A strategic agenda, *Long Range Planning*, Vol 30, Iss 3, June, pp 385-391
- Scarborough H, Swan J, Preston J (1999) *Knowledge Management: A Literature Review*, Institute of Personnel and Development, London
- Searle J R (1969) *Speech acts. An essay in the philosophy of language*, Cambridge University Press, London
- Stamper RK (1994) Signs, information, norms and systems, in Holmqvist B, PB Andersen, Klein H, Posner R (Eds, 1994) *Signs at work*, De Gruyter, Berlin
- Thayer HS (1981) *Meaning and action. A critical history of pragmatism*, Hackett, Indianapolis
- Weizenbaum J (1976) *Computer power and human reason*, Freeman, San Francisco
- Wikström S, Normann R (1994) *Knowledge and value: a new perspective on corporate transformation*, Routledge, London
- Zack M H (1999) Managing Codified Knowledge, *Sloan Management Review*, Vol 40, No 4, pp 45-57