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Universal Actability of and with Knowledge: Managing and Communicating Knowledge with Patterns

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Abstract
Managing and communicating information and knowledge with patterns entail a multitude of assumptions, interests, and validity claims. Patterns are socially constructed, and they may consequently be socially more or less acceptable or contested. Before the background of global diversity, the issue of *universal actability* of and with knowledge gains significance and calls for more reflections. In this context, this paper deals with some concepts for enabling reflective practice in applying and communicating knowledge.

1 Introduction

"Knowledge in action" is the "buzz phrase" with which scientists, practitioners, and managers operate. It emphasizes simultaneously that knowledge acts or does something and that it plays a significant role in an (human) action or doing. Consequently, it invites us to pay more attention to the actability of knowledge and human actability with knowledge. Especially, before the background of value pluralism, universal actability of and with knowledge gains more significance and requires additional reflections. Relevant is not only the question of what is and is not knowledge, but also that of what knowledge should or should not be known by or communicated to individuals and the society as a whole.[1]

In this context, this paper reflects on some aspects of universal actability when patterns of communication are used for managing and communicating knowledge. These reflections cannot do justice to these issues entirely. More

[1] A typical case example for controversies is the imparting sexual knowledge in the school, which conflicts with the religious and cultural values (see, for example, the resolution of administration court in Hamburg, 12.01.2004 (15 VG 5827/2003)).

detailed discussions can be found in Yetim (2002a,b, 2004b). The phrase "Universal Actability" refers to a research framework (Yetim 2004a), which aims at an integral understanding of universal usability (Schneiderman 2000), (intercultural) communication competence, and information systems actability research (Goldkuhl & Ågerfalk 2002).

In the following, I will first briefly discuss the related notions: information, knowledge, and rational action. I will then describe the pattern concept for managing and communicating knowledge. Finally, I will reflect on the clarifying patterns in a meta-communication in terms of their information, knowledge, and rationality aspects in order to facilitate rational practice.

2 Information, Knowledge and (Rational) Action

Most literature in Information Science as well as in Information Systems discusses the concepts of data, information and knowledge, and a great deal of emphasis is placed on understanding their differences and drawing implications for rational practice. The diversity of views exists concerning not only what is deemed to be information and knowledge, but also concerning the direction of transformation from one to another (for an overview of definitions in Information Science and Information Systems, see: Wersig 1997; Alavi & Leidner 2001).

One commonly held view is that data consists of raw numbers and facts, information is processed data, and knowledge is authenticated information. Knowledge is regarded as information stored in the minds of individuals: It presumes a hierarchy from data to information and from information to knowledge. Contrary to this view, it is also argued that the assumed hierarchy from data to knowledge is actually inverse: Knowledge must exist before information can be formulated and before data can be measured to form information. In other words, knowledge exists which, when articulated, verbalized and structured, becomes information which, when assigned a fixed representation and standard interpretation, becomes data (Alavi & Leidner 2001).

Although these views differ in their understanding of the hierarchy, they both assume that knowledge does not exist outside the knower. Either information is converted to knowledge once it is processed in the minds of individuals, or knowledge becomes information once it is articulated and presented in the form of text, graphics, words, or other symbolic forms (e.g., Drucker 1994). However, what some researchers call information is for others explicit

knowledge (Nonaka & Takeuchi 1995), codified knowledge (Zack 1999), objectified knowledge (Spender 1996) or public knowledge (Boisot 1995). Berger and Luckmann (1966) speak of a social stock of knowledge, which is constructed through the articulation of subjective experiences, i.e. a person's subjective knowledge is translated into signs and transmitted to other persons.

Depending on the definitions used, information and/or knowledge are regarded as necessary conditions for rational action. Actors not only have knowledge about things, but also knowledge for action, and knowledge can also be gained in and through action. Habermas (1984) points out that possession of knowledge alone cannot secure rational practice and that "rationality has less to do with the possession of knowledge than with how speaking and acting subjects acquire and use knowledge" (ibid. p.8).

By using the phrase "information is knowledge in action," Kuhlen (1999) expresses that for a specific action all actors need not only specific knowledge, but also a specific form which on one hand relates to the actor's existing state of knowledge and on the other hand fits the requirements of the action situation (e.g., in space, time, economy, etc.). In this view, information is regarded as a relevant subset of knowledge. "Information work" takes existing knowledge and transforms it in such a way (i.e., adds value to it) that it can more easily become information (i.e. understandable and relevant) for specific actions (for other views in information science, see Wersig 1997).

The various views reveal the disagreement about where the phenomena of information and knowledge exist and whether they are something documented, something said or something "in" the mind. Are they permanent or ephemeral? Definitions give neither a unique ontological determination, nor a unique direction for their transformation. And it is also not the aim of this paper to "add another item" to the "forest of definitions," but rather it acknowledges this diversity of views within "academic culture".

Figure 1 shows a possible interpretation of the dependency of information, knowledge, and rational action. The idea of organizing them in form of a 'staircase' is borrowed from (Ulrich 2001). Ulrich only uses a one-sided staircase (the left side). I additionally regard the right side as a staircase as well. The double-sided staircase allows us to include both receiver's and sender's perspectives in our interpretations. Accordingly, the left side expresses the perspective of receivers/users of information whereas the right side the perspective of senders/providers of information.

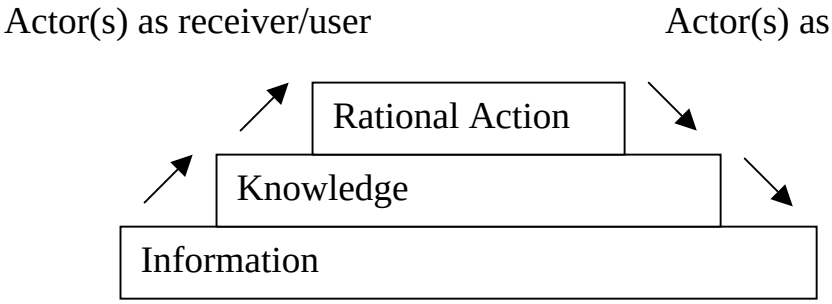

Figure 1: Information, knowledge, and rational action

From the perspective of a receiver, data becomes information when it is comprehensible and relevant. Being comprehensible and relevant does not also mean being valid or free of errors. Information becomes knowledge when it is validated. Knowledge is then applied for conducting rational action (i.e. information → knowledge → rational action). In other words, in the receiver's perspective, an actor's main goal is conducting rational action and reflects whether received information is also relevant knowledge for that purpose (e.g., Is this information reliable? Does it allow rational practice?).

In the provider's perspective, an actor's main goal is informing others (i.e., rational action → knowledge → information). Actors(s) can reflect on what knowledge (or subset of knowledge) and experiences from previous actions should be provided/articulated/transferred, and in what form in order to become information for the potential receivers (e.g., What knowledge was useful? What knowledge was not appropriate? How should I articulate and transfer my experiences? For whom? For what purpose?)

Thus, when used in this way, the staircase can facilitate reflective practice during the interpretation and use of information received from others as well as during the articulation and transferring of experiences as information to others. Each of the three concepts in the staircase encompasses further detailed aspects that help to clarify basic issues in information systems development (see, e.g., Ulrich 2001, and for an extended version Yetim (2002a, 2004b)). The reflective practice is especially relevant when knowledge is managed and transferred with patterns.

3 Managing and Communicating Knowledge with Communication Action Patterns

In Yetim (2001, 2002a,b), the notion of communication action pattern is used to refer to pre-patterned structures (templates) of communication. This notion reflects the view that communication is a kind of action (Austin 1962, Searle 1969, Habermas 1984) which in this case has a pre-patterned form. In contrast to the prevailing notion that communication is just exchanging sentences, expressing propositions about a world, this view also emphasizes that communication as a kind of action creates commitments between communicating parties. By using communication action patterns, we perform communicative acts. Letters, syllabuses, résumés, calls for papers, etc. are examples of such patterns.

Pre-patterned solutions to a recurrent communicative problem have already been expressed in sociology by the concept of genre (e.g., Luckmann 2001, Günthner & Knoblauch 995) and in linguistics by the concept of "speech action pattern" (Ehlich & Rehbein 1979). In the Information system field several researchers use the concept of genre for modeling organizational communication (e.g., Orlikowski & Yates 1994,), designing communication systems, (Erickson 2000) and managing documents (Päivärinta 2001). They are concerned with the use and support of appropriate genre for communication to enhance user participation and user satisfaction. They argue that designing a system with genre in mind and thus supporting appropriate genres of communication would enhance user participation and user satisfaction as well as better classification, storage and search of documents. In addition, the notion of pattern is also used in software engineering and knowledge management, e.g. to capture, transfer, and management of design knowledge (Rising 1998).

May and Taylor (2003) discuss the potential of using patterns for knowledge management by illustrating how patterns fit with the spiral of knowledge:

- *From tacit to tacit knowledge*: Tacit knowledge is critical to rational action and performance. It is typically passed on by craft-like mentoring of apprentices over many years.
- *From tacit to explicit knowledge*: Making tacit knowledge explicit by writing, review and refinement of patterns allows incremental growth and evolution of tacit knowledge expressed in pattern form. Externalizing fragments of tacit knowledge in pattern form also enables explicit knowledge to be analyzed, critiqued, learned, shared, and combined. The cost of externalizing fragments of tacit knowledge in

pattern form begins to be repaid when the pattern is published and used widely. The providers or authors of a pattern have the opportunity to see how others have interpreted and used the pattern.

- *From explicit to explicit knowledge:* Once made explicit, combining existing pieces of knowledge may create new explicit knowledge. Patterns can be combined with other patterns and other knowledge representations and models, such as business processes. Pattern languages support the linking and combining in a way that conventional documentation does not.
- *From explicit to tacit knowledge*: When a refined and synthesized explicit knowledge in patterns is internalized back into tacit knowledge, the knowledge spiral completes. In this phase, pattern languages become significant and allow people to navigate through complex, multidimensional problems by using patterns that link to each other.

May and Taylor (2003) points out that the applicability of patterns as a technique for knowledge management and its benefits rest on two key characteristics: knowledge capture and knowledge communication. Although patterns allow capturing and sharing information/knowledge/competencies etc., there are also some difficulties associated with them such as writing good patterns and introducing change as well as indexing patterns.

In organizational and business contexts, patterns are expected to fit the ways that organizational knowledge is understood, valued, and managed, and they thus must fit comfortable with the organizational and business models of knowledge in order to become acceptable, useful and usable. If we expand our perspective by including societal and global contexts, further requirements and challenges pose themselves with respect to managing and communicating knowledge with patterns.

4 Global Differences and the Need of Meta-Communication

Given the plurality of values, needs, interests, etc., it remains a challenge for developer/designer of patterns to specify what action is the appropriate or right one and what information and knowledge is relevant and thus should be captured or communicated. The entire spectrum of contents and normative aspects of patterns require their treatment in a reflective way.

In (Yetim 2002a,b; 2004b), a meta-communication model is suggested for reflective practice by extending the work of Ulrich (2001). The model provides individuals or groups with several steps for discursive clarification of various issues. It goes beyond viewing knowledge processes as within-person processes and emphasizes their intersubjective dimensions. In the following, we limit the focus of our attention to the staircase (figure 1) and briefly discuss how both sides of the staircase can be used to reflect on patterns received from as well as created for others.

(a) Clarification of Information Aspects

We adopt the semiotic perspective for the clarification of the information aspects of patterns, since their textual structure is determined by sign-systems (Stamper 1996). This includes, physical clarity (readability), syntactic clarity, semantic clarity, and relevance of the signs. In the receiver perspective, actors can clarify their interpretations of a sign and its relevance. In the sender perspective, a conversation for clarification aims at achieving agreement on whether the sign to be communicated may be information for potential receivers, i.e., whether it is comprehensible at the physical, syntactic, and semantic level as well as relevant.

(b) Clarification of Knowledge Aspects

Whereas conversations about information aspects provide semiotic clarity, conversations about knowledge aspects aims at epistemological clarity. Knowledge is regarded as fundamentally discursive in the sense that claims to knowledge must always remain open to argumentative challenge. In order for communication to be considered successful, a recipient must accept it as valid. According to Habermas (1984), the validity of an utterance can be evaluated with respect to a set of universal validity claims (sincerity, truth and appropriateness). That is, information should not only be comprehensible and relevant, it should refer to the true (commonly believed) state of affairs, reflect sincere pragmatic intentions, and it should be communicated in accordance with accepted social norms. The reflections on knowledge aspects take place in both receiver and sender perspective.

(c) Clarification of Rationality Aspects

The clarification of the rationality aspects of communication action patterns is based on the assumption that clear information and valid knowledge alone cannot secure rational practice. Rational practice requires both justified knowledge and its successful transformation into effective and efficient action and justified normative implications for those involved and affected (Hirschheim et al. 1996, Ulrich 2001). It is thus related to the ethical core of action and is concerned with the interpersonal “rightness” (appropriateness,

desirability, legitimacy) of action. In line with Habermas's (1984) concepts of rationality, conversations for clarification of designed patterns can include reflections on: (a) instrumental rationality, i.e. assessing the efficient use of means for the purpose of pattern; (b) strategic rationality, i.e. assessing the efficacy of a pattern in influencing rational opponents; (c) aesthetic rationality, i.e., reflecting on whether the patterns are in accord with or deviate from culturally established standards of (aesthetic) values; (d) communicative rationality, i.e., reflecting on whether a resultant pattern is based on a mutual agreement of those affected.

5 Conclusions

Managing and communicating knowledge with patterns entail a multitude of assumptions, interests, and validity claims. Since they are socially constructed, they may consequently be socially more or less acceptable or contested. Before the background of diversity, we regard the issue of what is deemed to be information, relevant knowledge and legitimate action as essential for developing (global) information systems in general and communication action patterns in particular.

In a meta-communication, the systematic examination of patterns in terms of underpinning assumptions regarding "information," "knowledge" and "rationality" can allow actors to find commonalities as well as to understand the reasons for their differences. All the reflections on patterns from the perspective of senders as well as receivers can take place before, during and after the application of patterns. As a result discursive meta-communication may integrate different views and values, in the sense of interculturality (Yetim 1998), but also leaves room for diversity (at least partly) in the sense of multiculturality, where it is morally justifiable. Even though discourse cannot secure rationality, and rationality may not be able to eliminate all disagreements by "the force of better arguments," the meta-communication is useful for reflective practice.

6 References

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