



Targeting the Social: A Sociopragmatic Approach Towards Design and Use of Information Systems

Boris Wyssusek and Martin Schwartz
Technical university Berlin, Department of Computer Science, Germany
Tel: +49 (308) 472-1458, Fax: +49 (308) 472-1483, {bw, ms}@wsap.net

Bettina Kremberg
University Leipzig, Department of Philosophy, Germany
Tel: +49 (341) 424-5238, Fax: +49 (341) 424-5238, bk@wsap.net

ABSTRACT

Information Systems Research is being attributed of having no substantial philosophical foundation. A review of contemporary literature reveals not only positivism as the dominating paradigm of human inquiry, but also an increasing criticism and the rise of alternative paradigms. Referring to postmodern organization theory allows a different perspective on IS research, which is based on an epistemological foundation we call Sociopragmatic Constructivism. Presupposing that human inquiry relies on social contextualization, common practice and cultural history, several consequences for the design and use of IS as well as for IS research in general are resulting.

INTRODUCTION

General management and industrial engineering can be regarded the “mother disciplines” of IS research, since they provide use cases for practical application of IS research findings. This history has led to an unreflected transfer of their methodologies and methods to the field of IS research. An analysis of contemporary literature reveals that underlying epistemological presuppositions are rarely explicated, and that positivism is the dominating position (Klein and Hirschheim 1987, Orlikowski and Baroudi 1991, Ridley and Keen 1998). Recurring failures in IS development as well as the “productivity paradoxon” (Brynjolfsson 1993, Attewell 1994) give rise to the questioning of the appropriateness of today’s presuppositions in IS research and provide a practical motivation for engaging in philosophical reflections. But, as McFarlan (1984) states, “many IS researchers, although they possess strong technological skills, lack the tools and perspectives necessary for cross-disciplinary work. Further, even if they have such skills, IS scholars are often not intellectually inclined to undertake these complex studies”. It is therefore not surprising that IS research is still lacking a philosophical foundation (Keen 1980, Klein and Hirschheim 1987, Fitzgerald and Howcroft 1998).

Most findings in IS research are based on presuppositions of human inquiry already being criticised in disciplines like organization theory and sociology. The field of organization theory has considerable impact on theories of design, development, and use of information systems, since organizations provide the context for information systems in the business domain. The postmodern movement in organization theory has led to the development of interpretive approaches towards human inquiry. Based on relativistic ontological and subjectivistic epistemological positions, interpretive approaches do not regard organizations as given facts, but as subjective constructions of the inquirer. Viewing information systems as systems of mediated inquiry, this means that these systems do not provide their users with an objective description of reality – it is the user who creates the ‘reality’. Radical-constructivistic approaches explain this process of “reality construction” on the basis of a sole individual. It is our conviction that in trying to understand “reality construction” we have to take the social environment of the individual into consideration.

Consequently, we develop a paradigm of inquiry called Sociopragmatic Constructivism which provides a methodological means for design and use of information systems. Emphasizing the social and pragmatic aspects of reality construction, we see information systems

as constituents of socio-technical systems. Design and use of information systems are subsequently determined by the meaning human actors attribute to them. But meaning is not a matter of a single individual. Rather, it is a result of socially contextualized interactions within a given community, sharing not only a common language, but engaging in a common practice.

METHODOLOGICAL CONSIDERATIONS ABOUT HUMAN INQUIRY

The function of information systems in the process of human inquiry can only be understood on the basis of a sound conceptualisation of presuppositions, underlying the concept of inquiry. In reference to Kuhn (1962), these concepts are considered as inquiry paradigms and often characterized by their ontological, epistemological, anthropological, and methodological presuppositions (Morgan and Smircich 1980, Guba 1990, Fitzgerald and Howcroft 1998).

The paradigm of positivism, dominating the field of IS research, is depicted in Figure 2.

The paradigm of radical constructivism, as depicted in Figure 3, provides the foundation for most of the interpretive approaches towards human inquiry.

According to Lincoln (1990) “the adoption of a paradigm literally permeates every act even tangentially associated with inquiry, such that any consideration even remotely attached to inquiry processes demands rethinking to bring decisions into line with the world view embodied in the paradigm itself”. Likewise, the adoption of a paradigm has severe consequences for the interpretation of information systems.

Figure 1: Conceptualisation of epistemological paradigms

Ontology	What is the nature of the “knowable”? What is the nature of “reality”? Is reality external to the individual and imposing itself on the individual consciousness or a product of individual cognition?
Epistemology	What is the nature of the relationship between the knower (the inquirer) and the known (the knowable)? What are the grounds of knowledge? What is truth?
Anthropology	What is the nature of the relationship between human beings and their environment?
Methodology	How should the inquirer go about finding out knowledge?

Figure 2: Paradigm of positivism

Ontology	realist ontology; reality exists independent of human mind; reality driven by natural laws and mechanisms
Epistemology	objectivist; inquirer has direct access to nature; inquirer performs a noninteractive inquiry process, biasing factors are thereby excluded from influencing the findings (outcome); correspondence theory of truth
Anthropology (human nature)	mechanistic view; human as stimulus-response mechanism; behaviorism; computational theory of mind
Methodology	empirical experimentalism; questions/hypotheses are stated in advance in prepositional form and subjected to empirical tests (falsification) under carefully controlled conditions; nomothetic

Figure 3: Paradigm of radical constructivism

Ontology	relativist; realities exist in the form of multiple mental constructions; dependent for their form and content on the person who holds them
Epistemology	subjectivist; inquirer and subject inquired into are fused into a single (monistic) entity; findings are literally the creation of the process of interaction between the two; the concept of truth is substituted by the concept of viability
Anthropology	human as creator of realities
Methodology	hermeneutic; individual constructions are elicited and refined hermeneutically, with the aim of generating constructions on which there is substantial consensus; ideographic

HUMAN INQUIRY AND INFORMATION SYSTEMS

Information systems can be regarded as instruments of human inquiry. Within the process of inquiry they have the role of a medium, which provides the user with information on matters of interest. The instrumental view on information systems puts them close to other instruments like microscopes, observatories, and the like. From the viewpoint of positivism, these instruments do not have any effect on the way we perceive the reality, thus the objective status of the inquirer is not affected by the use of tools. From the viewpoint of interpretive approaches, the use of tools is bound to theories the inquirer holds about them. Thus, human inquiry is guided by theories.

Since theories can be viewed as models for the purpose of description, explanation or prediction of a subject under consideration, we use the term “model” in this broader sense. Models are simplified representations of something. But as with different paradigms of inquiry, there are different interpretations of the notion of model. These are depending on ontological and epistemological positions, since they determine the interpretation of “representation” – one of the essential features of models, as we will see in the following paragraphs.

On the Notion of Model in Positivism and Radical Constructivism

From the viewpoint of positivism, a model is regarded as a representation (mapping) of the ‘true’ reality. This representational notion of model presupposes a direct relationship between the model

(the representation) and the model source (the original). A model is ‘good’ or ‘true’ if it is in *correspondence* with reality. The simplification (abstraction) of the representation is realized by the intentional neglect of ‘objective’ properties of the part of reality under investigation. Applied to information systems, the positivistic notion of model implies that what we perceive through the use of information systems is an ‘objective’ representation of reality. Subsequently, the use of information systems does not make a difference to the direct perception of reality.

Constructivists, on the contrary, question the direct relationship between model and reality. For them, models do not have an existence independent of humans *using* them as models. Since constructivists assume that realities are subjective, models are subjective too. Research findings as well as models are the result of the interaction between the inquirer and inquiry situation, and are influenced by the knowledge, attitudes, and values of the inquirer. Applied to information systems, the constructivistic notion of model requires a very different interpretation of the function of information systems within the inquiry process: they are no longer considered to be an objective phenomenon and to provide an objective representation of reality, rather they are subject to individual constructions performed by ‘users’. From the epistemological point of view users do not only construct information systems, but they also construct the information ‘provided’ by the information system. In an organizational setting, organization theories – assumptions a user holds about organizations – provide a framework for the creation of organizations.

On the Notion of Information in Positivism and Radical Constructivism

The positivistic understanding of information systems views information in a model of sender-receiver-processes. Information exchange is regarded as a transactional process. Janich (1996), who distinguishes between a narrow and a broad form of “informationism”, criticises this understanding with the comment that with this notion of information we are no longer capable to distinguish between ingestion and digestion of nutrition: “Brain and intestine as equivalent organs – this is what informationism finally boils down to.”

The (postmodern) radical-constructivistic understanding of information systems and the perception of information in general would have to conceive of information, in contradiction to the positivistic paradigm, as creation *ex nihilo* or something “absolute”, because any stated basis would refer to world and reality; for this reason, these were even no more fictional, because any fiction would already refer to something.

Methodological Implications

Referring to our conceptualization of paradigms of inquiry, an organization theory can thus be viewed as an ontology, constituting and describing the nature of an organization. Adoption of an organization theory can therefore be regarded as a selection of an ontological position. Since ontological, epistemological, anthropological, and methodological positions are not independent from each other, we claim that the adoption of an organization theory is highly influential on the adoption of a certain paradigm of inquiry (and vice versa), and subsequently has a major impact on the way individuals perceive and interpret information, ‘provided’ by an information system, about an organization. With an epistemologically bound ontology, the adoption of an organization theory not only determines what has to be considered as information, but also the relation between information, the organization (the information is about), and the user of the information system. Since models and information are fundamental to the conception, development, and use of information systems, all aspects of the notion of model and the notion of information discussed above apply to information systems as well. Thus, the adopted notions of model, information, organization theory, and paradigm of inquiry have to be taken into consideration when engaging in the interpretation of the role of information systems within the process of human inquiry.

SOCIOPRAGMATIC CONSTRUCTIVISM

The aim of the sociopragmatic approach is the investigation of the cultural, historical and social construction of the relations between world, things and individuals. Following the same conceptualisation of paradigms of inquiry used above, we describe our concept of Sociopragmatic Constructivism in the following paragraphs.

A sociopragmatic ontology is a relativistic one, since “facts are not given, but constructed by the questions we ask of events. All researchers are constructing their object of inquiry out of the materials their culture and their research paradigm provides; additionally, values play a central role in this linguistically, ideologically, and historically embedded project that we call science” (Lather 1990). Since the sociopragmatic-constructivist ontology is epistemologically bound, the processes of reality construction (ontology) and cognition of reality (epistemology) have to be considered as one and the same. Reality and cognition of reality therefore have to be regarded as a result of interaction between socially contextualized humans and their environment. We do not assume an isolated subject perceiving or constructing objects, but a common, socially shared construction of world, objects and subjects. In our view, collaborative action takes place on the basis of symbolically constituted worlds of meaning which, being rooted in practical needs of human life, are constructed not always with the individual’s conscience. Interactive communication by symbolization modifies both individual and common worlds of meaning.

Human nature, the very essence of our existence, can only be understood if we try to understand dynamic cultural systems – in the sense of a “second human nature”. It is not very likely that there is a single anthropological basis: mono-causal explanations will therefore not be sufficient when explaining the complexity of culture is the issue. The dialectics of general and specific knowledge, theory and practice, individual and society have to be explored with their mutual dynamic relations in mind. It should become obvious that this project requires the effort of researchers from many different strands.

The very idea of construction within Sociopragmatic Constructivism has to be understood in the sense of a socially, pragmatically oriented description of intersubjective processes, within which humans create, stabilize, share, and modify their knowledge. Paying regard to these practices of cultural involvement and knowledge acquisition one will realize that they are not solipsistic acts of a sole individual, but common structures of purposes and needs, guiding all human activity. The constitution of human knowledge is thus only to be explained on the basis of their cultural history.

Sociopragmatic Constructivism separates from both positivistic and radical constructivist understanding of model and information. Information is neither purely creative nor purely material, it is shapeless, but operationalizable, can be formed. Information is a wildcard or placeholder for intellectual objectifications of man. Thus, it works similar to symbols (Cassirer 1929, Schwemmer 1997). For models, the assumption of an “external world” (a “false paradigm” in Heidegger’s words), is rejected because “the world” is not constructed by a single individual. It is rather embedded in a social context with social practices that eventually determine the individual actions. Thus, social practices not only determine the form of representation of a model, but also *what* is to be represented, since the “what” is neither an objective fact in the positivistic sense nor something created *ex nihilo* in the sense of radical constructivism.

The aim of Sociopragmatic Constructivism is to provide a holistic analysis of reductive approaches and to offer possible syntheses. With a wider scope of analysis, Sociopragmatic Constructivism avoids the traps of reductionism. Understanding and explaining the process of human inquiry requires the analysis of paradigms of inquiry with regard to their social and cultural history. In Sociopragmatic Constructivism the cultural genealogy of phenomena (e.g. world, things, individuals) is at issue. These are being analysed from different perspectives (regional ontologies; Husserl 1986) with a focus on their mutual relations. Here, the Sociopragmatic Constructivism stands in the tradition of early efforts on cultural philosophy, going back to 50^{ies} of the 18. century.

Applying the paradigm of Sociopragmatic Constructivism to information systems research, the function of information systems within the process of human inquiry has to be analysed from the perspective of common human practice. “In action research, the emphasis is more on what practitioners do than on what they say they do” (Avison et al. 1999): Action research seems to be a reasonable starting point for conception and development of an appropriate methodology. Interdisciplinary analysis of culture, being the most general conception of methodology in Sociopragmatic Constructivism, gives way to overcome the shortcomings of reductive approaches.

Summarizing all we have said, we propose Sociopragmatic Constructivism as a paradigm for IS research, as depicted in figure 4.

Figure 4: Paradigm of sociopragmatic constructivism

Ontology	relativist; realities are developed by shared language and common practice, embedded in their cultural history; reality is a result of interaction between the social contextualized humans and their environment
Epistemology	constitution of knowledge – what humans want to know and why – is to be explained on the basis of their cultural history; consensus theory of truth
Anthropology	human nature is a result of human practice, embedded in their cultural history
Methodology	transdisciplinary analysis of culture in the sense of an analysis of human practice

Sociopragmatic Constructivism thus goes beyond positivistic and radical constructivist epistemology, beyond the discussion about modern and postmodern – without simply ignoring it. On the contrary, an analysis of these approaches exposes theoretical and practical consequences very clearly. Sociopragmatic Constructivism does neither aim to follow a blind optimism towards progress, nor be pessimistic towards culture; it neither regards everything possible nor arbitrary; the world is neither a fixed, monolithic, material entity nor all-resolving fragmentary fiction. It therefore is not only a position “in the middle”, but also a lifeworld’s paradigm.

CONCLUSION

Persistent problems in IS research and practice give rise to a reconsideration of the prevailing presuppositions of human inquiry. The lack of a philosophical foundation of IS research and its negligence of methodological advances in disciplines like organization theory and sociology can be regarded as a major cause for the recurrent problems in the development and subsequent use of information systems. An analysis of contemporary literature in the fields of organization theory and IS research as well as philosophy of science provides a host of relevant material to be considered as highly influential for the conceptualisation of new paradigms of inquiry, appropriate in the current state of IS research.

We have criticized positivism, the still dominating paradigm in IS research, as being ignorant towards the subjectivity of human efforts – therefore also towards the subjectivity of human inquiry, e.g. IS research, development and subsequent use. Radical constructivism, as the emerging paradigm in IS research, has been criticized because of its explanation of reality construction on the basis of the cognitive performance of the sole individual. Since all human inquiry relies on social contextualisation, shared language, and common practice, we believe that these aspects have to be taken into consideration when pursuing a conceptualisation of a new paradigm of human inquiry.

The proposed paradigm of Sociopragmatic Constructivism is about to overcome the deficiencies of the criticized paradigms of positivism and radical constructivism. With its focus on social contextualisation, shared language, and common practice as constituents of human inquiry, Sociopragmatic Constructivism can be regarded as an appropriate response towards some problems in IS research and practice. It

provides a different view on information, information systems, organizations, and the impact of information systems on human inquiry.

ACKNOWLEDGEMENTS

Thanks to the anonymous reviewers of the initial version of this paper, whose comments helped us in improving the paper.

REFERENCES

- Attewell, P.A. (1994), *Information Technology and the Productivity Paradox*, in: Harris, D.H. (ed.), *Organizational Linkages: Understanding the Productivity Paradox*, National Academy Press, Washington, pp. 13–53
- Avison, D., Lau, F., Myers, M., Nielsen, P.A. (1999), Action Research, *Communications of the ACM*, 42(1):94–97
- Brynjolfsson, E. (1993), The Productivity Paradox of Information Technology, *Communications of the ACM*, 36(12):67–77
- Cassirer, E. (1929), *Philosophie der symbolischen Formen*, Berlin
- Fitzgerald, B., Howcroft, D. (1998), *Competing Dichotomies in IS Research and Possible Strategies for Resolution*, in *Proceedings ICIS '98*, pp. 155–164
- Glaserfeld, E. von (1998), *Radikaler Konstruktivismus*, Suhrkamp, Frankfurt/Main
- Guba, E.G. (ed.) (1990), *The Paradigm Dialog*, Sage, Newbury Park et al.
- Husserl, E. (1986), *Phänomenologie der Lebenswelt. Ausgewählte Texte II*, Reclam, Stuttgart
- Janich, P. (1996), *Kulturalistische Erkenntnistheorie statt Informationismus*, in Hartmann, D., Janich, P. (eds.), *Methodischer Kulturalismus – Zwischen Naturalismus und Postmoderne*, Suhrkamp, Frankfurt/Main
- Keen, P.G.W. (1980), *MIS Research: Reference Disciplines and a Cumulative Tradition*, in *Proceedings ICIS '80*, pp. 220–232
- Klein, H.K., Hirschheim, R.A. (1987), A Comparative Framework of Data Modelling Paradigms and Approaches, *The Computer Journal*, 30(1):8–15
- Kuhn, T.S. (1962), *The Structure of Scientific Revolutions*, University of Chicago Press, Chicago
- Lather, P.A. (1990), *Reinscribing Otherwise – The Play of Values in The Practices of the Human Sciences*, in Guba, E.G. (ed.), *The Paradigm Dialog*, Sage, Newbury Park et al., pp. 315–332
- Lincoln, Y.S. (1990), *The making of a constructivist*, in Guba, E.G. (ed.), *The Paradigm Dialog*, Sage, Newbury Park et al., pp. 67–87
- McFarlan, F.W. (1984): *Introduction*, in McFarlan, F.W. (ed.), *The information systems research challenge*, Harvard Business School Press, Boston, pp. 1–6
- Morgan, G., Smircich, L. (1980), The Case for Qualitative Research, *Academy of Management Review*, 5(4):491–500
- Orlikowski, W.J., Baroudi, J.J. (1991), Studying Information Technology in Organizations: Research Approaches and Assumptions, *Information Systems Research*, 2(1):1–28
- Ridley, G., Keen, C. (1998), *Epistemologies for Information Systems Research: A Study of Change*, in *Proceedings of Ninth Australasian Conference on Information Systems*, Volume 2, The University of New South Wales, pp. 520–533
- Schwemmer, O. (1997), *Die kulturelle Existenz des Menschen*, Akademie-Verlag, Berlin

0 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/proceeding-paper/targeting-social-sociopragmatic-approach-towards/31916

Related Content

Modeling Image Quality

Gianluigi Ciocca, Silvia Corchs, Francesca Gasparini and Raimondo Schettini (2015). *Encyclopedia of Information Science and Technology, Third Edition* (pp. 5973-5983).

www.irma-international.org/chapter/modeling-image-quality/113054

FLANN + BHO: A Novel Approach for Handling Nonlinearity in System Identification

Bighnaraj Naik, Janmenjoy Nayak and H.S. Behera (2018). *International Journal of Rough Sets and Data Analysis* (pp. 13-33).

www.irma-international.org/article/flann--bho/190888

Incremental Learning Researches on Rough Set Theory: Status and Future

Dun Liu and Decui Liang (2014). *International Journal of Rough Sets and Data Analysis* (pp. 99-112).

www.irma-international.org/article/incremental-learning-researches-on-rough-set-theory/111315

IoT Setup for Co-measurement of Water Level and Temperature

Sujaya Das Gupta, M.S. Zambare and A.D. Shaligram (2017). *International Journal of Rough Sets and Data Analysis* (pp. 33-54).

www.irma-international.org/article/iot-setup-for-co-measurement-of-water-level-and-temperature/182290

Integrated Data Architecture for Business

Richard Kumaradaja (2018). *Encyclopedia of Information Science and Technology, Fourth Edition* (pp. 862-872).

www.irma-international.org/chapter/integrated-data-architecture-for-business/183798