

Communication in Action and Design Research on Information Systems

Research-in-Progress

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Abstract

Information Technology and Systems are built to provide a means and environment for human communication (Lyytinen, 1985). While interest in Action Research and Design Research has garnered increasingly sophisticated thinking about methodology and knowledge that comes from intervention oriented research and the activity of creation. The aim here is to challenge Action Research and Design Research for information systems to account for communication. Three standpoints about communication are advanced with the aim of fostering a deeper, more productive meta-communicational reflectiveness in AR and DR.

Keywords: Communication as Design, Practical Theory, Materiality, Proof

Introduction

Action Research (AR) and Design Research (AR) go past the aims of descriptive research in search for knowledge "in the doing and in the making." AR is change oriented. As Baskerville (1999, p. 4), explains AR assumes that "complex social processes can be studied best by introducing changes into these processes and observing the effects of these changes." DR is artifact oriented. The aim is for utility and novelty and persuasiveness about the artifact's effectiveness (Gregor, 2006; Hevner, March, Park, and Ram, 2004). Together there is an emphasis on how to do something, and at a minimum this is the knowledge developed. Efforts to combine AR and DR, such as in Action Design Research (Sein, Henfridsson, Purao, Ross, and Lindgren, 2011), seek to integrate building, intervening, and evaluating into an improved design methodology. Whether separate or integrated, two interrelated issues stem from the pragmatist orientation of AR and DR for information system design.

The first issue is highlighted by Simon (1996) when he observes that artifacts "have no dispensation to ignore or violate natural law. At the same time they are adapted to human goals and purposes" (p. 3). He is making the crucial point that "with goals and 'oughts' we also introduce into the picture the dichotomy between normative and descriptive" (p. 5). AR and DR research must find ways to come to terms with the role of descriptive and normative models, and their relationship, in information system design.

The second issue is highlighted by an observation made by (Lyytinen, 1985): "The very idea of an information system, however, is to provide a means and an environment for human communication" (p. 61). Maybe it should go without saying but the point is that design for IS is only partially about the technological artifact or the information system because the creation of these instrumentations are intended to realize some form and quality of communication while preventing other forms and qualities. In an important sense, what is designed is communication (Aakhus and Jackson, 2005; Aakhus, 2007).

These two issues intersect in information technology and system design and pose a problem to be addressed in AR and DR -- that is, how to come to terms with models of communication in AR and DR for information system design? In particular, the role of normative and descriptive assumptions and presumptions in building, intervening, evaluating, and persuading about artifacts and the prospects for learning and generating knowledge. To address these issues, a branch of communication theory also known as *Practical Theory* (e.g., Barge & Craig, 2009) is drawn upon as it most openly reflects on

managing the confluence of descriptive and normative assumptions about communication. The aim is to develop a deeper, more productive meta-communicational reflectiveness in AR and DR.

Communication as object/objective

A first point to consider is the value in recognizing that communication is not just part of the process of design but that communication can be an objective and object of design. There are ways to practice communication in the design process and positions are taken about how to orchestrate interaction among designers, clients, design materials, and the design object. If Dubberly's (2008) compendium of design models is any indicator, there is a robust discourse about conceptualizing design process in which communication is deeply implicated. AR and DR explicitly cultivate views about these matters of communication as design process (Baskerville, 1999; Hevner, March, Park, & Ram, 2004).

An important challenge for AR and DR is recognizing that communication can be seen as part of the process of design but communication is also something that is designed. While it makes sense to attend to the artifact, as in Design Science, or to how social-organizational context shapes an artifact, as in Action Design Research, the matter of communication as an object of design remains. So, when the objective of design entails communication further complexity is introduced into the design process. Finding ways to draw together these senses of communication and design could be helpful.

The community around the Language/Action Perspective provides some guidance. L/AP has gone to great lengths to develop ontologies about the nature of communication with the aim of articulating its designable features. Prominent in this has been the work of Winograd and Flores (1986) and Goldkuhl and Lyytinen (1983). An active community that offered highly specified accounts about modeling communication emerged during the 1990s and 2000s with exemplary work by Lind and Goldkuhl (2003) and Dietz (2003). An important dimension of this work has been around devising models of communication that offer theoretically and empirically sound premises about communication for information system design. L/AP, however, has focused primarily on realizing models of communication grounded in a Habermasian version of Speech Act Theory.

While there have been important discussions about methodology and design, there remains more to be done to explicitly work in means for reconstructing communication to render communication as designable. While not a necessary consequence given LAP's starting points, much of the work became organized around advancing particular models of communication, with specific descriptive and normative commitments, rather than also developing methods for exploring the varieties of models possible and learning how to determine the relevance of particular models for particular situations. An alternative can be found in the Practical Theory branch of Communication Research that has taken care to begin the articulation of 'practical theories' of communication in everyday institutional/organizational interaction (Craig & Tracy, 1995) by communication specialists who intervene on communication problems (Aakhus, 2001) and through methods that articulate and join grammars of practice (Cronen, 2001).

Information systems make specifications about communication and, as such, can be reconstructed as practical theories of communication in the way an information system is explicitly committed to or presumes how communication works and how it ought to work (Aakhus, 2003). Central to Practical Theory is attention to the normative and how normative assumptions about communication guide action and shape the sense of what is possible in terms of communication. Intervention is not always about building a new technological artifact but with building or altering the vocabulary/ontology about communication implicated in what is even seen as communicative possibilities. Coming to terms with models of communication requires going back to the future. Goldkuhl & Lyytinen (1982) point out how a professional language (i.e., a vocabulary and communicative acts) emerges around a business practice as it is used for talking about an activity but also constitutive of that activity. The professional language is a key point of entry into understanding and modeling the communication. DR and AR need to further account for practical theory about communication in attempts at change and activities to create.

Materiality of Communication

A second point to consider is whether the concept of artifact can be opened up to recognize the materiality of communication. The point is that uses of language and human interactivity afford and constrain possibilities for meaning, action, and coherence. Fundamental contributions to this possibility have already been put forward in IS by Goldkuhl and Lyytinen (1982) and Lyytinen (1985) and the streams of work inspired from these and related starting points. Even so, this has only opened the door to a more thorough going engagement with the design-ability of communication.

To go further down this path requires rethinking artifact. The work on socio-materiality has greatly expanded the discussion of artifact, but it is still concerned with how the social enters into some physical or quasi-physical entity (e.g., software). These interests largely follow from a problem initially framed by diffusion and adoption research. What is puzzling for socio-material accounts is the materialization of the ephemeral (i.e., social) into concrete (i.e., technologies). But, if we are concerned with designing communication then the matter at hand, and what is puzzling, is at least a bit different.

Principle artifacts of communication are messages and activities that stand in a design relationship to the materials from which they are constructed -- that is, language and social interaction (Aakhus, 2007; Aakhus and Laureij, 2011). That construction is possible in part due to practical theories about creating messages and activities to serve purposes. This would also entail uses of other materials found in the biophysical world to enable messages and activities to serve those purposes. What we see and experience as the built up world may not in fact be a container for communication but it is indeed there as a byproduct of communication and the effort to shape or discipline communicative possibilities (Aakhus and Jackson, 2005).

Finding a way to more deeply engage the nature of communication artifacts requires finding more comprehensive, integrating views of language and social interaction research. Ways that transcend and integrate the important specializations across that field of work but that do so in a way that draws the insights into IS design.

Proof in Design

A third point to consider is the nature of proof in design. Generally speaking, in descriptive research, models or theories are a built to correspond with how the social-world works. The test of a descriptive theory or model is how well it explains. In critical research, models and theories are used as a means for evaluating or judging how the social-world works relative to a normative standard about how it ought to work. The test of a normative theory or model is whether it generates insights for what prevents the present from being ideal or for moving toward an ideal. AR and DR seem concerned primarily with the tension between positivistic and interpretive stances of discovery and justification. But engaging in behavioristic prediction, the articulation of webs-of-significance and meaning, and the critical analysis of power, while important, can miss something essential about design and communication. Design is not just about artifacts or actions but about constructing social reality – that is, about tinkering with the constitutivity of communication (Aakhus, 2007).

Getting beyond descriptivism and interpretivism to more fully explore the relationship between design and communication as constitutive can be enhanced by building from two developed methodologies for design, Simon's (1996) artifact-functional analysis and Bowker and Star's (1999) infrastructure-infrastructural inversion analysis. Proof in design is organized in part around tests of “problem-solving validity” (i.e., solves the problem) and “intersubjective validity” (i.e., fits community expectations) (Eemeren, Grootendorst, Jackson, & Jacobs, 1993). Simon and Bowker and Star offer insight into reasoning about intersubjective and problem-solving validity. However, further attention to the role of models of communication is required. Here Practical Theory provides some guidance. Grounded Practical Theory (Craig & Tracy, 1995) outlines the reconstruction of communication practice in terms of its problem, technical, and philosophical level. That is, communication practice can be rationally reconstructed as a form of reasoning about what the practice counts as a problem to be solved, the techniques for solving it, and the philosophical rationale warranting the technique as a solution to the problem. The reconstruction provides a basis for reflecting on the practice. A related alternative is a normatively pragmatic design methodology (Jackson, 2002) which involves an empirical examination of

discourse practices, a critical analysis based on a comparison of practices with an idealized model, specification of designable features, and a proposed redesign. Both approaches offer ways to incorporate descriptive and normative communication models into design interventions.

But even AR and DR for information systems do not seem to go far enough in considering how normative and descriptive assumptions and insights are part of the proof of design. Design Science, for instance, does not see the potential for scientific knowledge from design activity but recognizes that potential for improving practical knowledge of interest to communities (Gregor, 2006; Hevner et al, 2004). Action Design Research seeks to integrate building, intervening, and evaluating by re-sequencing the design process so that design process recognizes how the organizational is materialized in the artifact (Sein et al, 2011). Baskerville, R., & Pries-heje (2013) highlight how design is a new science grounded in synthesis, such as the assembling of many functionalities together.

Design is an approach that has descriptive and normative elements in that what "works" is at a combined empirical and normative judgment (Aakhus & Jackson, 2005). Proof in design is not limited to matching prior and post through tests of prediction or resonance because an important aspect of design knowledge is how it enables assessing what is now possible that was not possible before. Design is about the construction of social reality and is as concerned with what is not yet there as it is concerned with what is there. Seeing what is there is not merely a descriptive task as it involves the normative element of selecting what to attend to. Seeing what is possible is not merely a normative task as it involves understanding what is there in which to find possibilities. Attention to design in communication then calls for addressing the normative, not simply as an ideal model to be followed or as a basis for evaluation but as an aspect of practice to be engaged and elevated. That is, design research can contribute to advancing the normative aspect of practice (e.g., Aakhus, 2001).

Conclusion

Each point of consideration promises the development of a more productive, deeper meta-communicational reflectiveness in AR and DR. These points are likely to be missed in any direct comparison of AR and DR since those comparisons tend to overemphasize design process at the expense of design content.

References

- Aakhus, M. 2001. Technocratic and design stances toward communication expertise: How GDSS facilitators understand their work. *Journal of Applied Communication Research*, 29(4), 341–371.
- Aakhus, M. (2007). Communication as Design. *Communication Monographs*, 74(1), 112–117.
- Aakhus, M., & Jackson, S. (2005). Technology, Interaction and Design. In K. Fitch & B. Sanders (Eds.), *Handbook of Language and Social Interaction* (pp. 411–433). Mahwah, NJ: Lawrence Erlbaum.
- Barge, J. K., & Craig, R. T. (2009). Practical theory in applied communication scholarship. In L. Frey & K. N. Cissna (Eds.), *Routledge Handbook of Applied Communication Research* (pp. 55–78). New York: Routledge.
- Baskerville, R. L. (1999). Investigating information systems with action research. *Communications of the Association for Information Systems*, 2(October).
- Baskerville, R., & Pries-heje, J. (2013). Discovering the significance of scientific design practice: New science wrapped in old science? In G. Goldkuhl & B. Donallen (Eds.), *SIGPrag Workshop on IT Artefact Design & Workplace Improvement* (pp. 1–15). Tilburg, The Netherlands: VITS.
- Bowker, G. C., & Star, S. L. (1999). *Sorting Things Out: Classification and Its Consequences*. *The Journal of Academic Librarianship* (Vol. 26, p. 377). Cambridge, MA: MIT Press.
- Craig, R. T., & Tracy, K. (1995). Grounded practical theory: The case of intellectual discussion. *Communication Theory*, 5(3), 248–272. Retrieved from
- Cronen, V. E. (2001). Practical theory, practical art, and the pragmatic-systemic account of inquiry. *Communication Theory*, 11(1), 14–35.
- Dietz, J. L. G. (2003). The atoms, molecules and fibers of organizations. *Data & Knowledge Engineering*, 47(3), 301–325.

- Dubberly, H. (2008). *How do you design? A Compendium of Models*. Dubberly Design Office (p. 147). San Francisco.
- Eemeren, F. H. Van, Grootendorst, R., Jackson, S., & Jacobs, S. (1993). *Reconstructing Argumentative Discourse*. Tuscaloosa, AL: University of Alabama Press.
- Goldkuhl, G., & Lyytinen, K. J. (1982). A language action view of information systems. In M. Ginzberg & C. Ross (Eds.), *3rd International Conference on Information Systems* (pp. 13–30). Ann Arbor, MI: Association for Information Systems.
- Gregor, S. (2006). The nature of theory in information systems. *Management Information Systems Quarterly*, 30(3), 611.
- Hevner, A. R., March, S. T., Park, J., & Ram, S. (2004). Design Science in Information Systems Research. *MIS Quarterly*, 28(1), 75–105.
- Jackson, S. (2002). Designing argumentation protocols for the classroom. In *Advances in pragma-dialectics*. (pp. 105–120). Amsterdam: SICSAT.
- Lind, M., & Goldkuhl, G. (2003). The constituents of business interaction—generic layered patterns. *Data & Knowledge Engineering*, 47(3), 327–348.
- Lyytinen, K. J. (1985). Implications of Language Theories for Information Systems, 9(1), 61–74.
- Sein, M. K., Henfridsson, O., Purao, S., Rossi, M., & Lindgren, R. (2011). Action design research. *MIS Quarterly*, 35(1), 37–56.
- Simon, H. A. (1996). Understanding the Natural and Artificial Worlds. In *The Sciences of the Artificial* (3rd ed., pp. 1–24). Cambridge, MA: MIT Press.
- Winograd, T. A., & Flores, C. F. (1986). *Understanding computers and cognition: A new foundation for design*. New York: Intellect Books.