

## Association for Information Systems AIS Electronic Library (AISeL)

---

ECIS 2006 Proceedings

European Conference on Information Systems  
(ECIS)

---

2006

# On the impact of the 'linguistic turn' on research in information systems

Alexander Dreiling

SAP Australia Pty Ltd, [alexander.dreiling@sap.com](mailto:alexander.dreiling@sap.com)

Follow this and additional works at: <http://aisel.aisnet.org/ecis2006>

---

### Recommended Citation

Dreiling, Alexander, "On the impact of the 'linguistic turn' on research in information systems" (2006). *ECIS 2006 Proceedings*. 96.  
<http://aisel.aisnet.org/ecis2006/96>

This material is brought to you by the European Conference on Information Systems (ECIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in ECIS 2006 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact [elibrary@aisnet.org](mailto:elibrary@aisnet.org).

# ON THE IMPACT OF THE ‘LINGUISTIC TURN’ ON RESEARCH IN INFORMATION SYSTEMS

Alexander Dreiling, SAP Research, SAP Australia Pty Ltd, Level 12, 133 Mary St, Brisbane  
QLD 4000, Australia, alexander.dreiling@sap.com

## Abstract

*The linguistic turn within philosophy has recently gained increased attention within social sciences. It can be seen as an attempt to investigate traditional philosophical problems by analysing the linguistic expressions used for these investigations. More generally, the phenomenon of language itself must be considered because of its (constitutional) impact on the investigation of phenomena in social sciences. In order to understand the consequences of the linguistic turn, its origins in philosophy are important and will be discussed. Within social sciences the linguistic turn already had significant impact. As an example, we will therefore discuss what directions the linguistic turn enabled for organizational analysis. Information Systems as a discipline must face the consequences of the linguistic turn as well. We will discuss how the linguistic framework introduced impacts the development of knowledge management and that of managerial and organizational support systems. This example shows what different perspectives the linguistic turn can provide for investigations within Information Systems. In addition, we will briefly outline the impact of the linguistic turn with respect to methodologies in Information Systems research.*

*Keywords: Linguistic turn, philosophy, Information Systems research, language games, hermeneutics, enterprise systems, knowledge management*

## 1 INTRODUCTION

The linguistic turn within philosophy has recently gained increased attention within social sciences. Under the label of postmodernism a consideration of the nature of language has led to significant changes in our scientific world-views. However, the linguistic turn originated in philosophy and can be embraced within social sciences only by understanding its philosophical foundations. In this light, Wittgenstein’s and Gadamer’s work are of paramount importance. Wittgenstein [1953, 1961/1922] brought to our attention that every perception of the world is language-bound, so that language becomes the ‘mediator’ between reality and an individual. Gadamer [1975, 1976], on the other hand, established a hermeneutic understanding, which is bound to language. Even if both approaches are independent of each other, they share a common property: in both instances, language constitutes our access to reality.

The phenomenon of language is examined in linguistics. The work of several linguists has shaped our contemporary picture of language and must therefore be discussed. In this respect it is important to focus on the relationship between a linguistic sign and what it refers to. Additionally, the locus of meaning within language deserves some attention. Notions of interpretation, understanding, and metaphor will be considered in this context. This discussion will show that language is a very complex phenomenon and suggest that its consideration is inevitable.

Not only is a consideration of language inevitable for inquiries within the social sciences, it furthermore changes the way with which social phenomena must be approached. Thereby, it is a fundamental difference if language is seen as a tool with which an independently existing reality can be formulated or if language is assumed to reify phenomena, that is to create social reality by

providing words for things that do not exist a priori. Especially the latter view led to paradigm shifts within the social sciences and thus their development.

Our objective in this paper is to show that the linguistic turn can and should impact Information Systems as well. Our argument is structured as follows: In the next section we briefly introduce its philosophical background. We then discuss recent developments within linguistics and the philosophy of language in order to establish an understanding of language as it is used in this paper. This is subsequently followed by a short discussion on how the linguistic turn impacted one closely related field to IS, that is Organization Science. We will then turn to the impact of the linguistic turn within IS by discussing two examples: the development from data management to knowledge management and the development from Enterprise Resource Planning systems to Enterprise Systems. But the linguistic turn also impacts research methodologies in IS, which will be briefly discussed before this paper concludes with some final remarks.

## 2 PHILOSOPHICAL ORIGIN OF THE LINGUISTIC TURN

Bertrand Russell [1903] quite early assumed that the “study of grammar [...] is capable of throwing far more light on philosophical questions than is commonly supposed by philosophers.” Twenty years later this suspicion was substantially reinforced by Ludwig Wittgenstein. In fact, the linguistic turn is often associated with the early Wittgenstein [1961/1922] and his attempt to describe the relationship between language and the world in *Tractatus Logico-Philosophicus*. The fundamental claim Wittgenstein makes with regard to the philosophy of language is that language defines and restricts the perception/apprehension of individuals [1961/1922, propositions 5.6, 5.63, 5.632, italics in original]:

*The limits of my language mean the limits of my world. [...]*

*I am my world. (The microcosm.) [...]*

*The subject does not belong to the world: rather, it is a limit of the world.*

Wittgenstein uses the analogy of the visual field and the fact that the eye itself is not included in it. He concludes [1961/1922, proposition 5.634]:

*This is connected with the fact that no part of our experience is at the same time a priori.*

*Whatever we see could be other than it is.*

*Whatever we can describe at all could be other than it is.*

*There is no a priori order of things.*

Resulting from Wittgenstein’s propositions, the “order of things” is not posited in advance but constructed by means of our language. “[W]e never have signifying systems of objects in the pure state; language always intervenes” [Barthes, 1988, p. 180]. It became therefore inevitable to consider language in philosophical investigations and more specifically the way in which language contributes to the construction of the “order of things.” Thus, the linguistic turn in philosophy can be seen as an attempt to investigate traditional philosophical problems by analysing the meaning of linguistic expressions [Bublitz, 1994, Rorty, 1967].

Wittgenstein later [1953] proposed the notion of language games. He uses a primitive culture where people build structures of different types of stones and introduces the vocabulary of this culture as “block,” “pillar,” “slab,” and “beam” [Wittgenstein, 1953, § 2]. He goes on and explains the language game that is used to learn this language: pointing at something and uttering the word. Thus people of this culture are “conditioned” (Wittgenstein uses “Abrichtung,” the German word for training animals). He then asserts that if the introduced language is the *whole* language [...] of a tribe [then] children are brought up to perform *these* actions, to use *these* words as they do so, and to react in *this* way to the words of others [Wittgenstein, 1953, § 6].

Hence, language plays a fundamental role in “conditioning” members of this tribe (via a language game). Their description of reality cannot transcend their language and is thus limited to four words. If they perform a speech act, others can only react by getting a certain stone. There is no other reaction pattern embedded in this language. They know no different reality; their reality is constituted by their language. These assertions presumably do not change if “tribe” is substituted by “society.”

Wittgenstein’s early and later philosophy focuses on the property of language—even though his understanding of language had dramatically changed—to reify and restrict the individual’s (perception of the) world. However, in order to discuss the linguistic turn a second, yet independent stream of philosophy must be considered: that of *philosophical hermeneutics* [Lafont, 1999]. Especially on the Gadamer side of what Vattimo [1997] calls the Heidegger-Gadamer axis of philosophical hermeneutics, language is the constitutional part of interpretation and understanding [Gadamer, 1976]. Roughly spoken, an individual can *solely* interpret observations; there is no other way [Gadamer, 1976, Vattimo, 1997]. Language is of paramount importance within this interpretation process, because it is the “fundamental mode of operation of our being-in-the-world and the all-embracing form of the constitution of the world” [Gadamer, 1976, p. 3]. The hermeneutic problem is universal and language plays the major role in it [Gadamer, 1975, Gadamer, 1976].

Moreover, every act of interpretation is restricted by the historicity of an individual [Gadamer, 1975, Gadamer, 1976]. Historicity refers to the experiences of the individual itself. Additionally, historicity comprises the cumulative experiences of ancestors which manifest in culture, values, heritage, and the like. An individual cannot escape the frame set by her historicity.

It must again be underlined that Wittgenstein’s and Gadamer’s philosophy is independent of each other. Yet they both stress the importance of language for the inquiry of social phenomena. Wittgenstein attributes the shape of the social world and all knowledge of individuals to language. Learning of languages is inseparably bound to language games. Gadamer attributes hermeneutic experience to language. This hermeneutic experience is constituent of an individual in that it constructs in a continuous process the historicity of this individual.

### **3 RECENT DEVELOPMENTS IN LINGUISTICS AND THE PHILOSOPHY OF LANGUAGE**

Two aspects of research within linguistics and the philosophy of language are of paramount importance in this discussion and are therefore introduced in this section: the *relationship between the linguistic sign and what it refers to*, and the *locus of meaning within language*. We must limit the discussion on developments in linguistics and the philosophy of language to very recent contributions, because of the long historical tradition of linguistic investigations that can be traced back, at least, to the Babylonians [Hymes, 1974, Kristeva, 1989], but more commonly to the Greeks and in particular Socrates, Plato, and Aristotle [Harris and Taylor, 1989, Hymes, 1974, Robins, 1967].

It is meaningful to begin our discussion much later with de Saussure, whose conceptualization of the linguistic sign [de Saussure, 1974/1960] developed a broad research tradition in linguistics and significantly contributed to our contemporary understanding of linguistic symbols. Because “[a]s an entity, the sign is too large,” [Eco, 1984, p. 20] de Saussure’s basic claim was, roughly spoken, that the linguistic sign is a composite of two opposites, the *signified* and the *signifier* (Kristeva [1989] argues that this distinction already existed in the Arab world in the 8th century). The former is the expression, or the mere appearance of a linguistic sign, whereas the latter refers to its content. The combination of signified and signifier is arbitrary.

The linguistic sign is part of the so-called *semiotic triangle*, which relates the sign itself, a thought/reference of an interpreter, and a referent (Figure 1). The semiotic triangle in its contemporary form goes back to Ogden & Richards and is discussed and critically reviewed, for instance, by Eco [1976, p. 58 ff]. As Eco elaborates, the semiotic triangle has severe limits for comprehensively

analyzing semiotic processes (“embarrassment” in connection with studying *codes*, p. 60). However, it is useful for discussing a major inherent and commonly accepted proposition in semiotics: the relationship between the linguistic symbol and the referent is only *assumptive*. Hence, there is *no direct* relationship between a linguistic symbol (or more specifically the signified) and some thing in the “real world.” The relationship can only be established by an *individual* through a thought/reference. In this sense, linguistic symbols can only be interpreted (by an individual); they do not signify *a priori*.

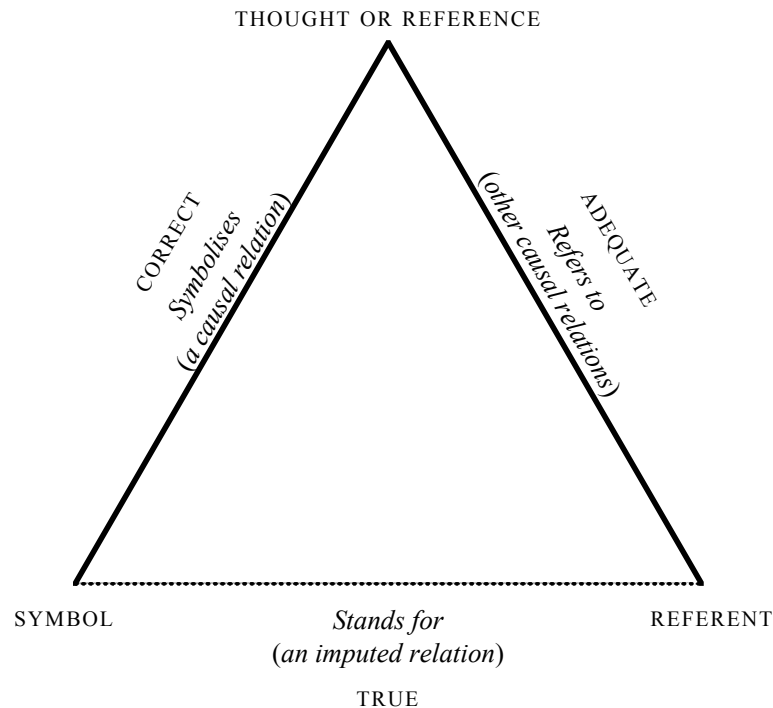


Figure 1: The Semiotic Triangle [Ogden and Richards, 1923, p. 14, footnotes removed]

The way in which meaning is assigned to language renders language a purely individual phenomenon where communication is only possible to the extent that the languages of two individuals are sufficiently similar [Chomsky, 1988]. This is an inevitable consequence of the historicity of an individual [Gadamer, 1975], which is by definition different for each individual. Connotation [Allan, 2001] of certain terms, for instance, varies significantly between individuals depending on their respective historicity, which is bound to their specific experiences.

Having sketched the nature of the relationship between a linguistic sign and a “thing” in the “real world,” we can now turn to the *locus of meaning within language*. It becomes immediately apparent that meaning is not a trivial problem given the assumptive nature of the relationship between linguistic symbol and thing. Nevertheless, meaning is important because authors try to transfer it to readers in scientific texts within the IS literature. Understanding how meaning is assigned to language thus helps to depict possible pitfalls in IS research.

De Saussure’s structuralist conceptualization of the linguistic sign introduced above cannot account for all aspects of meaning within language. If, in fact, de Saussure’s concept accounted for all meaning within language then the field of computer science would not have failed to deliver natural language interfaces for computers and continue to fail in delivering them [Dreyfus, 1998], because then meaning could somehow be traced back to a calculable problem. Rather, the illegitimately simplifying assumptions regarding language led to the belief that this goal could eventually be attained.

The discussions on *metaphor* provide a point of departure for why meaning in language transcends de Saussure’s opposition of signified and signifier. Despite of views that metaphors consists of “breaking

of semantic rules” [Fromkin and Rodman, 1988, p. 235] or that “[m]etaphors mean what the words in their most literal interpretation mean, and nothing more” [Davidson, 1984, p. 245], Lakoff & Johnson [1980] convincingly argue that using metaphors belongs to the ‘normal mode’ of linguistic use. In fact, virtually all language use has a metaphorical depth of some degree and metaphors become especially important for expressing (new) ideas [Black, 1962, Eco, 1979, Radman, 1997]. This was already acknowledged by the ancient Greeks [Gadamer, 1975]. It is therefore inappropriate to investigate the meaning of each single word exclusively and separately in order to understand the meaning of sentences or texts. Ricoeur thus argues that the “excessive and damaging emphasis put initially on the word” should be abandoned because a “properly semantic treatment of metaphor proceeds from a recognition of the sentence as the primary unit of meaning” [Ricoeur, 1978, p. 44].

Later, it was argued that meaning is located exclusively in the text [Barthes, 1988, Derrida, 1978, Eco, 1984] and thus that the sentence as a carrier of meaning is not the appropriate linguistic unit. More specifically, only through a text as a whole can meaning be transferred. The text, however, also redefines the meaning of words: “A text is not simply a communicational apparatus. It is a device which questions the previous signifying systems, often renews them, and sometimes destroys them” [Eco, 1984, p. 25]. Gadamer’s discussion on hermeneutics also emphasizes the text as the locus of meaning [Gadamer, 1975]. More specifically, he builds his comprehensive theory of interpretation upon the work of the ancient Greeks who established that the whole can only be understood by understanding its parts and the parts by understanding the whole. Even though Gadamer’s discussion focuses on quite a different topic—interpretation or understanding as opposed to meaning—both topics are interrelated because one influences the other. Gadamer’s assertions are especially important, because they emphasize that meaning is not a property of the word, which is stored dictionary-like, and that meaning of text cannot be grasped by understanding each single word. Moreover, word meaning is determined by the text (“mass” in a text by Einstein has a different meaning from “mass” in Newton—the former is convertible with energy and the latter not, which Kuhn [1970] explains in the context of scientific progress. If the prevalent scientific understanding of “mass” as in Newton’s work had not been challenged, Einstein’s work would not have been possible.).

In summary, it is important that meaning is assigned to linguistic signs always and exclusively through a subject and more specifically, a subject’s thought/reference. This constitutes a subject’s individual language, which in turn restricts any observation, perception, or apprehension. Meaning is located in the entirety of the text, which forms with its parts a mutual dependence for the process of its understanding.

## **4 ON THE APPLICABILITY AND IMPACT OF THE LINGUISTIC TURN FOR ORGANIZATION STUDIES**

The linguistic turn impacted social sciences in general and organization theory in particular. Within Hatch’s [1997] distinction of research in organization theory into the *classical* (1900–), *modern* (1950–), *symbolic-interpretive* (1980–), and *postmodern* (1990–) eras there is a clear break between the modern and symbolic-interpretive eras. Roughly speaking, classical and modern approaches enquire about the phenomenon of organization using language as a tool. Language as a reification instrument or as some sort of bias during the examination of organizational phenomena was not significantly discussed in these eras. In contrast to classical and modern approaches, symbolic-interpretive and postmodern approaches assert that we reify or socially construct [Berger and Luckmann, 1966] organizational reality. Organizations are for us as they are because we have a language to talk about them. Wittgenstein’s notion of language games [Wittgenstein, 1953] becomes immediately apparent in these arguments and the researcher’s impossibility of remaining unbiased by language is more often acknowledged. Within the postmodern era [e.g., Boje et al., 1996, Chia, 1996, Clegg, 1990, Kilduff, 1999, Wallace, 1998], this thought is developed further and results in an instrument for critique.

*Deconstruction* as a method [Boje and Dennehy, 1994, Rosenau, 1992] uses language to critically examine literary/scientific works and plays a major role in challenging our scientific understanding of concepts such as *management*, *organization*, or *decision*. *Management control*, for instance, is seen as a myth, which requires the abandonment of this notion [Gephart Jr., 1996]. *Management* in general can be described as a language game if it is accepted that management power is nothing naturally given [Pondy, 1978]. As another example, the traditional understanding of *decision science* has been deconstructed [Chia, 1996] reducing this understanding based on common assumptions such as future knowledge, knowledge of preferences (esp. those in the future), possibility of assigning probabilities to future consequences, and the like [Kallinikos, 1996] *ad absurdum*. And finally, the understanding of what *organization* is—as outlined by March and Simon [March and Simon, 1958]—differs significantly with Kilduff's [1999] deconstruction. It was seen as abnormal and something to be “repaired” in modern approaches, if the power structure within an organization deviated from the management structure of the formal organization, whereas Max Weber's *bureaucracy* [Weber, 1970] becomes the object of scrutiny in postmodern times.

Astley [1985] asserts “that the body of knowledge that constitutes administrative science is a socially constructed product. Because empirical observations are inevitably mediated by theoretical preconceptions, our knowledge of organizations is fundamentally shaped by the subjective world views through which we perceive data” (p. 497). Later, Astley & Zammuto [1992] reinforce this assertion with direct reference to Wittgenstein's language games. They propose that the relationship between scientists and practitioners should be adjusted in that no longer “technical advice to managers” should be provided within organization science but a “conceptual and symbolic language for use in organizational discourse” (p. 443).

Ferraro et al. [2005] go even further and claim that, through language, theories become self-fulfilling:

Social science theories can become self-fulfilling by shaping institutional designs and management practices, as well as social norms and expectations about behavior, thereby creating the behavior they predict. [...] Theories become self-fulfilling when the language and assumptions they promulgate affect how individuals see and understand themselves and their world. [Ferraro et al., 2005]

Such claims not only lead to the (partial) dissolution of the prevalent scientific understanding of organizations or phenomena in the organizational nexus but also to the challenge of our understanding of scientific activities. This point will be discussed in more detail in the next section with regard to Information Systems.

## **5 ON THE IMPACT OF THE LINGUISTIC TURN ON INFORMATION SYSTEMS IN PARTICULAR**

Focussing the nature of language is neither new in Computer Science nor Information Systems. Several authors have already referred to the nature of language in order to establish an alternative understanding of traditional tasks in these sciences, e.g., design [Ehn, 1988]. Furthermore, the implications of the nature of language on the IS and the lack of linguistics as a reference discipline to IS have been discussed [Lyytinen, 1985]. Linguistic-related discussion of knowledge management were also already conducted [Walsham, 2004]. The linguistic turn amongst others was also discussed in relation to methods used in IS [Klein, 2004]. However, despite these valuable contributions mainstream discussions on knowledge management and developments in managerial and organizational support systems hint at a continuous illegitimate simplification of the phenomenon of language. Therefore, knowledge management and managerial and organizational support systems shall be discussed based on the linguistic framework discussed above.

## 5.1 Discussion of knowledge management in the light of the linguistic turn

What has been said in the previous section can be assumed to be applicable to Information Systems primarily because it is also a social science. As the importance of deconstructive and postmodern approaches (it has been argued above that the latter are indirectly bound to the linguistic turn) in organization science grew and challenged the prevalent scientific understanding of *organization* and phenomena in an organizational context it is rather unlikely that IS can ignore these trends. Moreover, with KUHN's [1970] notion of scientific revolutions, it is not even meaningful to reject paradigmatically new developments if the protagonists of IS as a discipline wish the discipline to evolve. In fact, some deconstructive approaches, e.g., Styhre's deconstruction of knowledge management [Styhre, 2003], already exist and challenge the prevalent understanding of this subject:

The question is, then, not whether we 'really' are capable of managing knowledge, but if we are happy with the knowledge management practices that we are making use of. Thus, the question 'are we capable of managing knowledge?' can be answered 'yes' if we believe that we are. [...] Of course we can manage knowledge as long as we define 'management' and 'knowledge' in accordance with the practices we are capable of undertaking. Thus, we define our own concepts and truths [...]. The credit system works because we believe it works; the credit system thus thrives on [...] the self-fulfilling prophecy [...]. [Styhre, 2003, p. 148]

Styhre, as Ferraro et al. [2005, quoted above], highlights the character of contemporary scientific activities as self-fulfilling prophecy.

Assumptions within knowledge management include that tacit knowledge can be made explicit to a certain extend. During this process knowledge is de-contextualized and separated from the historicity of an individual. It is captured in rules, relations, or any other means and can then be "handed over" to another individual. Wilson argues:

[I]f all knowledge is situational and we are always and already in a situation, then we can never be at any distance from the knowledge we need. Relativist practice cannot present us with the knowledge we seek because its lesson is that we already have it. This is explicitly the lesson taught by [Polanyi, 1967] in the name of 'tacit knowledge'. Tacit knowledge is knowledge already known or dwelt in; it cannot be handed over in the form of rules or maxims and theories; there is no transition from 'knowing that' to 'knowing how'. The difficulty in the acceptance of this notion of tacit knowledge computer and information scientists is noted by [Collins, 1990]. He identifies the continuing desire among scientists to describe tacit knowledge through the establishment of sets of 'behavioural coordinates' of skill, together with the dangers resulting from these attempts at creating formalisms. [Wilson, 1999, p. 167, references substituted]

It was argued above that first, this "handing over" of explicit knowledge is subject to interpretation. This interpretation is restricted by the historicity of the individual trying to capture the "packaged knowledge." In other words, it is more than unlikely that the original knowledge and the consumed knowledge have anything to do with each other if the nature of language is considered. Moreover, knowledge is bound to action [Piaget, 1980], so that the interpreted "explicit knowledge" can hardly be conceived of as to closely resemble the original, because a specific action that led to knowledge acquisition is missing in the historicity of an interpreter.

Galliers & Newell [2003] argue that we can manage data, but not information or knowledge. Obviously, we have been able to manage data for quite a long time, especially since the introduction of relational databases. Yet, it was obviously not enough at any point in time to examine data management and the object of interest changed to knowledge. The question arises as to what exactly the object is that is managed within knowledge management. Polanyi's [1967] distinction of knowledge into tacit and explicit knowledge provides a powerful account of how language impacts a field. Most researchers would agree that knowledge management does not refer to tacit knowledge. Yet the name of the field is not "explicit knowledge management." Rather the term "knowledge management" suggests (at least to individuals who do not confront themselves intensively with this topic) that the object that is supposedly managed is knowledge (in the common sense). And this could



not be farther away from truth. From the beginning of data management, underlying questions concerned *what data to store, how to store it, by whom to access it, in which situation to provide it*, and the like. *These questions did not change with the rise of knowledge management*. What might have changed is the content, or what the data represents. Knowledge management is not considered to focus on something like customer master data or article master data, even though this is knowledge about customers. Rather, it is concerned with something like the knowledge on how to perform a certain action. But again, if the nature of language is considered, both customer master data and the knowledge on how to perform a certain action are stored somehow on a computer and must be interpreted by an interpreter. This interpretation *relates the linguistic signs to referents individually for each interpreter restricted by the interpreter's historicity*. Finally, it must even be questioned that the content as just discussed significantly changed over time with regard to attempts in the 1960s to capture expert knowledge by means of rules [Dreyfus, 1992, Dreyfus et al., 1986].

Knowledge management is bound to epistemological problems [Currie and Kerrin, 2004, Wilson, 1999], which was motivated in this section so far. What if the development from data management to knowledge management is conceptualized as a language game? This is *not* to say that knowledge and data are the same. Yet, the part that is managed, i.e., stored in computers is data. Hence, the central object of examination, i.e., how to manage data, did not change; rather the label under which it is presented changed from data management to knowledge management. Ultimately, the underlying problem is to build a database with more or less intuitive user interfaces. If “wisdom management” ever becomes a serious research topic within IS, the claim can be extended.

It must be concluded that the terms data management, information management, knowledge management, and wisdom management suggest that we were able to manage richer, more contextualized, and more tacit concepts in time. And this is supposedly intentional. The terms “technical data management” and “conceptual data management” would account for similar concepts. The former is a computer science problem. The latter could be used to signify a field which deals with specifying IT environments that can be used for transferring knowledge, whether this is meaningful or not. The terms would no longer distract from the fact that the object to be managed is essentially data. But managing knowledge is certainly more spectacular and more relevant for organizational practice. Hopefully practitioners are not aware of the underlying epistemological problems so that they perceive this research as relevant.

In summary, the linguistic turn raised awareness for the phenomenon of language. With respect to knowledge management and its development two main propositions have been made in the discussion in this section:

1. If the nature of language is considered and hence, the inevitability of interpretation and the notion of historicity, then transferring knowledge is per se impossible if it is intended that the original and the interpreted knowledge are equivalent.
2. The development of knowledge management from data management is—to a certain extend—a language game in Wittgenstein's sense. Underlying assumptions did not change. Such assumptions include, for instance:
  - a) that it is possible to transfer something tacit from one person to another
  - b) that it is possible to explicate something tacit and store it on computers, or
  - c) that interpretation of stored data leads to similar results when performed by different individuals.

The language game distracts from the fact that the underlying assumptions did not change. We think we have undergone significant development and we certainly have. But the language game inhibited fundamental development that is a change in underlying assumptions leading to a paradigmatically different examination of knowledge or rather data management.

## 5.2 Discussion of the development from MIS to ES in the light of the linguistic turn.

A second attempt to highlight illegitimate simplifications of language in IS is the development of organizational and managerial support systems (OMSS). We specifically discuss the development from Enterprise Resource Planning (ERP) Systems to Enterprise Systems (ES).

Contemporary Enterprise Systems (ES) are the result of a long development of organizational and managerial support systems (OMSS). This development commenced and gained momentum on a large scale quite early with Management Information Systems in the 1950s. Notions of integration, support, or control were the driving force for fostering the adaptation of such systems in practice. Information Technology seemed to make the management of large organizations easy for the first time in history. Since the 1950s there has been significant technical development regarding many aspects of these systems, including user interfaces, architectures, or integration of data and processes. In parallel, our knowledge about inter-organizational IT-support, human-computer interaction, and IT-success [DeLone and McLean, 2003], escalation, and failure [Keil, 1995, Keil et al., 2000] factors has increased dramatically.

Yet, all this development and knowledge did not prevent major failures during implementation projects of large-scale OMSS from happening. Examples include the implementation disaster at FoxMeyer drug, where the company sued SAP over R/3 [Stein, 1998] or hundreds of millions of dollars spent for installation by, e.g., Mobil Europe and Dow Chemical [Davenport, 1998]. Customizing a contemporary OMSS is a tedious task bound to committing significant resources. In fact, a success factor for bringing an escalated ES implementation project back on track is abandoning its process customization [Sumner and Hamilton, 2005]. This is rather surprising for contemporary ES and all talk about flexibility and adaptability.

We argue that major failures are partially attributable to the underlying assumptions of large-scale OMSS. If a direct line of development is assumed to have commenced with Material Requirements Planning (MRP) Systems, and followed successively by Manufacturing Resource Planning (MRP II) Systems, Enterprise Resource Planning (ERP) Systems, and Enterprise Systems (ES), then this development can be explained differently than commonly done. Usual narratives are concerned with technical development, development in functionality, development in scope (management, administrative staff, and workers), or development in boundaries (intra-organizational, inter-organizational).

As in the case of knowledge management, we do not intend to negate this development. We rather want to show what impact a closer examination of the discourse on OMSS can have.

Each of the narratives depicts development in a different way. However, the development of large-scale OMSS such as SAP's or Oracle's solutions did not necessarily head the same way as the identifiers suggest. As an example, over the last few years companies including SAP, Oracle, Baan, Peoplesoft, or JD Edwards (partially before consolidation) have been referred to as vendors of Enterprise Resource Planning Systems [Gattiker and Goodhue, 2005, Hitt et al., 2002, Klaus et al., 2000, Lee, 2000] and Enterprise Systems [Davenport, 1998, Scott and Vessey, 2002, Shang and Seddon, 2002]. In some instances the terms ERP Systems and ES are used interchangeably [Ko et al., 2005, Lorenzo et al., 2005, Robey et al., 2002]. The software certainly improved during this time, but not back and forth (as suggested by the years of the cited sources) if we assume that ES succeeded ERP Systems [Volkoff et al., 2005]. And certainly it did not develop according to the definitions given in the literature for ERP [Klaus et al., 2000] and ES [Volkoff et al., 2005].

If we do not assume that authors across the IS literature cannot use these terms correctly, we have to conclude that these terms cannot be used correctly. We will then have to subsequently explain why the terms cannot be used correctly and thus how the fuzziness of use arises. And again, the nature of language provides a useful basis for argumentation. It is exactly this inquiry into the nature of language that characterizes the 'linguistic turn' in philosophy. Traditional problems (in this case, how

can ERP Systems be distinguished from ES?) are examined by focusing on the linguistic expressions used and on the discourse on this topic. This example can easily be extended if MRP II is compared to MRP and ERP to MRP II.

In having a classification system with the four labels MRP, MRP II, ERP, and ES, our perception is restricted to these four types of system (with respect to systems supporting operations of an organization and management holistically). This is the fundamental claim made by Wittgenstein [1953]. Other differences (categorizations) are deferred in time and are now irrelevant for us. This is the fundamental claim made by Derrida [1978]. As in the example of knowledge management, we are under the impression that we have undergone significant development. And in fact we have undergone significant development. However, as in the case of knowledge management, the assumptions underlying ERP systems and ES did not change. This claim can be extended to other OMSS such as Management Information Systems (MIS) in the late 1950s. The central assumptions have remained the same [Introna, 1997], and do not significantly transcend the notion of first order cybernetics as outlined by Beer, Ashby or Wiener [Ashby, 1956, Beer, 1959, Beer, 1966, Wiener, 1948]. Some of the static assumptions of OMSS are:

- ☐ Control: Management is being provided with a means to control the organization
- ☐ Integration: Central notion since the beginning of MIS
- ☐ Decision support / automated decision making: Information is provided in order to support decisions or automated decisions are made by the system
- ☐ Anthropological determinism: Managers must be assisted to appropriately react to their environment
- ☐ Ontological realism (with respect to the social world): The organization is out there as well as their requirements towards a holistic OMSS
- ☐ Design of information systems: An information system is designed according to organizational requirements.

All of these assumptions have been seriously challenged from the beginning [Ackoff, 1967, Chia, 1996, Ciborra and Hanseth, 1998, Dearden, 1964, Dearden, 1966, Dearden, 1972, Dreyfus, 1992, Dreyfus, 1998, Dreyfus et al., 1986, Markus, 1983, McCulloch, 1965, Weizenbaum, 1976]. This hints at the necessity to perform the re-naming language game because of a partial untenability of the underlying objective to deliver an integrating, overarching support system for the entire organization in order to continue investigations on the phenomenon as such. What if:

- ☐ Control is illusion? [Dermer and Lucas, 1986]
- ☐ Pursuing integration is untenable in the light of social conflict? [Markus, 1983]
- ☐ Decision support and automated decision making is to a large extent impossible because decisions of major importance do not reveal themselves as such [Ciborra and Hanseth, 1998] or are unforeseeable in their consequences?
- ☐ Managers enact their environment rather than react to it? [Weick, 1969]
- ☐ Organizations are social constructions [Berger and Luckmann, 1966] as well as their requirements whereby the latter are bound to a consensual process that is difficult in the light of social conflict?
- ☐ The information system is not designed after an organization but designs an organization? [Floyd, 1992]

Due to the criticism that accompanied assumptions of OMSS throughout the past fifty years [Ackoff, 1967, Chia, 1996, Ciborra and Hanseth, 1998, Dearden, 1964, Dearden, 1966, Dearden, 1972, Dreyfus, 1992, Dreyfus, 1998, Dreyfus et al., 1986, Markus, 1983, McCulloch, 1965, Weizenbaum, 1976], the language game of re-naming enabled continuous research and interest. A new term is somehow “innocent” and many people would agree that notoriously negative connotations make the concept of MIS untenable, whereas ES present appropriate solutions for contemporary organizations. If the notion of a language game is accepted as well as the other propositions with respect to language made in this paper, then we are trapped in the belief that further functional extensions, further increased computing power, and better architectures will overcome the remaining problems.

Furthermore, it will be assumed that disastrous ES implementation failures in the future can be avoided.

In summary, the development from ERP systems to ES can be made attributable to language. This proposition abstracts from development in, for instance, functionality (if we assume that packages such as SAP's R/3 really developed during the "transition from an ERP system to an ES"). The view that significant improvement takes place is abandoned makes room for an investigation of how fundamental the development really was. An analysis of underlying assumption however, reveals that the development must be characterized as a "development in the small." Fundamental development, i.e., development by changing underlying assumptions is missing. Paradigmatically new ways of OMSS are not explored. Many questions are not even asked because, again, through the power of language, we believe ourselves already within fundamental development. Such questions include:

3. How would an OMSS look like that supports managerial voluntarism, because we believe that managers enact their environment?
4. How would an OMSS look like that supports free consensus of involved actors as to what must be supported and how it must be supported rather than relying on "best practices"?
5. How to disintegrate ES meaningfully, because the vision of overall integration is an illusion (or even illegal in the light of European data security laws)?

### **5.3 Discussion of the impact of the linguistic turn on research methodologies**

But the linguistic turn not only implies that established scientific understandings of phenomena in an IS context are fundamentally challenged, it also potentially challenges the research practices within the field of IS. If the underlying assumptions of the linguistic turn are commonly accepted, the epistemological subjectivist/objectivist dimensions will become less important [Clegg, 2003] for two basic reasons:

- The common distinction of empirical IS research places it in one of the two categories, positivist or interpretivist. Accepting the linguistic turn with all its implications, this distinction becomes meaningless if empirical material is observed by researchers. There is only one possible avenue, which lies in interpreting the data by the researcher [Gadamer, 1975, Gadamer, 1976, Vattimo, 1988, Vattimo, 1997]. There is no researcher-independent result as demanded by the positivist agenda. The positivist researcher must process (interpret & understand) the data that she is confronted with, which reveals the universality of the hermeneutic problem [Gadamer, 1975, Gadamer, 1976]. Even if we accept the notion of researcher-independent results for a moment, once the researcher documents the results by writing articles or books, can we assume that she uses any term while writing without presuppositions? The answer must be 'no' with reference to language as an individual phenomenon and the historicity of the individual. In addition, no two researchers will present the results in an equivalent way. Hence, the researcher impacts the results. Why can this not be acknowledged?
- In the same instance, interpretivist research must not lead to arbitrary results. Vattimo [1997] argues that there is truth in hermeneutics and that the interpreter must take responsibility within the interpretation process. Since the interpreter's pre-understanding will influence the results of the interpretation task, research results presented must be examined in this light. They constitute an individual's belief and the credibility of presented research results increases with the way the results are presented. In other words, the researcher must put more effort in presenting the results convincingly.

Gadamer states:

Historically effected consciousness is so radically finite that our whole being, effected in the totality of our destiny, inevitably transcends its knowledge of itself. But that is a fundamental insight which is not to be limited to any specific historical situation; an insight which, however, in the face of modern historical research and of science's methodological ideal of objectivity, meets with particular resistance in the self-understanding of science. [...] Hence what is here affirmed—that the province of hermeneutics is

universal and especially that language is the form in which understanding is achieved—embraces “pre-hermeneutic” consciousness as well as all modes of hermeneutic consciousness. [Gadamer, 1975p. xxxiv]

Hence, there is no self-speaking objectively deliverable data. A scientific piece of work consists of data and language (if we accept this distinction for the sake of this argument) and it is the entirety that is interpreted by the reader. That reader (or researcher) has a pre-understanding of the subject matter and a piece of scientific work will influence the reader’s (or researcher’s) post-understanding. Furthermore, since language constitutes our access to reality, something such as an objective epistemology can only exist if we assume that this access provides no bias. With respect to Whorf’s [1956] linguistic relativity principle, this is questionable. This principle

means, in informal terms, that users of markedly different grammars are pointed by their grammars toward different types of observations and different evaluations of externally similar acts of observation, and hence are not equivalent as observers but must arrive at somewhat different views of the world. [Whorf, 1956p. 221]

In conjunction with Chomsky’s [1988] assertion that language is a purely individual phenomenon, objective epistemology becomes even more difficult. The dominance of positivism in Information Systems [Orlikowski and Baroudi, 1991, Vessey et al., 2002] must thus be questioned. It was argued recently that debates of sense and non-sense of positivism and interpretivism are not fruitful within IS or organization science [Tsoukas, 2000, Weber, 2004]. In fact, taking the nature of language into account while doing IS research may lead to overcoming this dichotomy. There exist many propositions. Critical realism, for instance, was recently argued to provide a basis for research in information systems [Mingers, 2004]. According to Mingers the original aims of critical realism were:

(i) to re-establish a realist view of being in the ontological domain whilst accepting the relativism of knowledge as socially and historically conditioned in the epistemological domain; and (ii) to argue for a critical naturalism in social science. [Mingers, 2004, p. 91]

This view rather takes into account the nature of the phenomenon of language than an objectivist epistemology and might therefore be a more appropriate avenue for IS researchers. Critical social theory (CST) [Klein, 2004] or philosophical hermeneutics [Gadamer, 1975, Gadamer, 1976] are different avenues, both of which also consider the phenomenon of language.

## Conclusions

In this paper, we have argued that the propositions of the linguistic turn with its origins in philosophy are of substantial importance within Information Systems research. Considering the nature of language within IS, one must acknowledge the importance of the researcher (especially her pre-understanding and historicity) during data interpretation.

The linguistic turn has already impacted IS and this impact may well increase. The language game of *re-naming* is practiced to a certain extent within the discussion of knowledge management and the transition of Enterprise Resource Planning Systems to Enterprise Systems. The linguistic framework discussed in this paper leads to a different perspective on these two subject matters. Importantly, the linguistic turn not only impacts at the “application level,” but also on the methodological level. If the nature of language is considered, then positivist methodological dominance in IS must be questioned.

## References

- Ackoff, R. L. (1967). Management Misinformation Systems, Management Science (14) 4, B-147–B-156.
- Allan, K. (2001). Natural Language Semantics. Blackwell, Oxford, UK et al.
- Ashby, W. R. (1956). An Introduction to Cybernetics. Chapman and Hall, London, UK.

- Astley, W. G. (1985). Administrative science as socially constructed truth, *Administrative Science Quarterly* (30) 4, 497–513.
- Astley, W. G. and R. F. Zammuto (1992). Organization science, managers, and language games, *Organization Science* (3) 4, 443–460.
- Barthes, R. (1988). *The Semiotic Challenge*. Hill and Wang, New York, NY, USA.
- Beer, S. (1959). *Cybernetics and management*. Wiley, New York, NY, USA.
- Beer, S. (1966). *Decision and Control*. John Wiley & Sons, London, UK et al.
- Berger, P. L. and T. Luckmann (1966). *The social construction of reality: a treatise in the sociology of knowledge*. Doubleday, Garden City, NY, USA.
- Black, M. (1962). *Models and Metaphors*. Studies in Language and Philosophy. Cornell University Press, Ithaca, NY, USA.
- Boje, D. M. and R. F. Dennehy (1994). *Managing in the postmodern world: America's revolution against exploitation*. 2nd edition. Kendall/Hunt Pub. Co, Dubuque, IA, USA.
- Boje, D. M., R. Gephart Jr., and T. J. Thatchenkery (eds.) (1996). *Postmodern Management and Organization Theory*, SAGE Publications, Thousand Oaks, CA, USA et al.
- Bublitz, S. (1994). *Der 'linguistic turn' der Philosophie als Paradigma der Sprachwissenschaft. Untersuchungen zur Bedeutungstheorie der linguistischen Pragmatik*. Waxmann, Münster, Germany et al.
- Chia, R. K. G. (1996). *Organizational analysis as deconstructive practice*. Walter de Gruyter, Berlin, Germany et al.
- Chomsky, N. (1988). *Language and Problems of Knowledge. The Managua Lectures*. The MIT Press, Cambridge, MA, USA.
- Ciborra, C. U. and O. Hanseth (1998). From tool to Gestell. *Agendas for managing the information infrastructure, Information Technology & People* (11) 4, 305–327.
- Clegg, S. R. (1990). *Modern organizations: Organization Studies in the Postmodern World*. Sage Publications, London, UK.
- Clegg, S. R. (2003). Reclaiming the Legacy of the Linguistic Turn, *Organization* (10) 3, 421–429.
- Collins, H. M. (1990). *Artificial Experts: Social Knowledge and Intelligent Machines*. The MIT Press, Cambridge, MA, USA.
- Currie, G. and M. Kerrin (2004). The Limits of a Technological Fix to Knowledge Management: Epistemological, Political and Cultural Issues in the Case of Intranet Implementation, *Management Learning* (35) 1, 9–29.
- Davenport, T. H. (1998). Putting the Enterprise into the Enterprise System., *Harvard Business Review* (76) 4, 121.
- Davidson, D. (1984). *Inquiries into Truth and Interpretation*. Clarendon Press; Oxford University Press, Oxford, UK; New York, NY, USA.
- de Saussure, F. (1974/1960). *Course in General Linguistics*. Peter Owen Ltd, London.
- Dearden, J. (1964). Can Management Information Be Automated? *Harvard Business Review* (42) 3, 128–135.
- Dearden, J. (1966). Myth of Real-Time Management Information, *Harvard Business Review* (44) 3, 123–132.
- Dearden, J. (1972). MIS is a marriage, *Harvard Business Review* (50) 1, 90–99.
- DeLone, W. H. and E. R. McLean (2003). The DeLone and McLean Model of Information Systems Success: A Ten-Year Update, *Journal of Management Information Systems* (19) 4, 9.
- Dermer, J. D. and R. G. Lucas (1986). The illusion of managerial control, *Accounting, Organizations and Society* (11) 6, 471.
- Derrida, J. (1978). *Writing and difference*. University of Chicago Press, Chicago, IL, USA.
- Dreyfus, H. L. (1992). *What computers still can't do: a critique of artificial reason*. MIT Press, Cambridge, MA, USA.
- Dreyfus, H. L. (1998). Why we do not have to worry about speaking the language of the computer, *Information Technology & People* (11) 4, 281–289.
- Dreyfus, H. L., S. E. Dreyfus, and T. Athanasiou (1986). *Mind over machine: the power of human intuition and expertise in the era of the computer*. Free Press, New York, NY, USA.

- Eco, U. (1976). *A Theory of Semiotics*. The Macmillan Press, London, UK et al.
- Eco, U. (1979). *The Role of the Reader. Explorations in the Semiotics of Texts*. Indiana University Press, Bloomington, IN, USA.
- Eco, U. (1984). *Semiotics and the philosophy of language*. Indiana University Press, Bloomington, IN, USA.
- Ehn, P. (1988). Playing the language-games of design and use-on skill and participation. In: *Proceedings of the ACM SIGOIS and IEEECS TC-OA 1988 conference on office information systems*, 142–157. ACM Press, New York, NY, USA.
- Ferraro, F., J. Pfeffer, and R. I. Sutton (2005). Economics of Language and Assumptions: How Theories can become Self-Fulfilling, *Academy of Management Review* (30) 1, 8–24.
- Floyd, C. (1992). Software Development as Reality Construction, in C. Floyd, H. Züllighoven, R. Budde, and R. Keil-Slawik (Eds.) *Software Development and Reality Construction*, Springer, Berlin, Germany et al., 86–100.
- Fromkin, V. and R. Rodman (1988). *An Introduction to Language*. Holt, Rinehart and Winston, Fort Worth, TX, USA et al.
- Gadamer, H. G. (1975). *Truth and Method*. Seabury Press, New York, NY, USA.
- Gadamer, H. G. (1976). *Philosophical hermeneutics*. University of California Press, Berkeley, CA, USA.
- Galliers, R. D. and S. Newell (2003). Back to the Future: From Knowledge Management to the Management of Information and Data, *Information Systems and e-Business Management* (1) 1, 5–13.
- Gattiker, T. F. and D. L. Goodhue (2005). What happens after ERP implementation: understanding the impact of interdependence and differentiation on plant-level outcomes, *MIS Quarterly* (29) 3, 559–585.
- Gephart Jr., R. (1996). Management, Social Issues, and the Postmodern Era, in D. M. Boje, R. Gephart Jr., and T. J. Thatchenkery (Eds.) *Postmodern Management and Organization Theory*, SAGE Publications, Thousand Oaks, CA, USA et al., 21–44.
- Harris, R. and T. J. Taylor (1989). *Landmarks in Linguistic Thought. The Western Tradition From Socrates to Saussure*. Routledge, London, UK et al.
- Hatch, M. J. (1997). *Organization Theory. Modern Symbolic and Postmodern Perspectives*. Oxford University Press, Oxford, UK.
- Hitt, L. M., D. J. Wu, and X. Zhou (2002). Investment in Enterprise Resource Planning: Business Impact and Productivity Measures, *Journal of Management Information Systems* (19) 1, 71–98.
- Hymes, D. (ed.) (1974). *Studies in the History of Linguistics. Traditions and Paradigms*. Indiana University Studies in the History and Theory of Linguistics, Indiana University Press, Bloomington, IN, USA.
- Introna, L. D. (1997). *Management, Information and Power. A Narrative of the involved Manager*. Macmillan, Houndmills, UK et al.
- Kallinikos, J. (1996). *Technology and Society. Interdisciplinary Studies in Formal Organizations*. Accedo, Munich, Germany.
- Keil, M. (1995). Pulling the Plug: Software Project Management and the problem of Project Escalation, *MIS Quarterly* (19) 4, 421–447.
- Keil, M., J. Mann, and A. Rai (2000). Why Software Projects Escalate: An Empirical Analysis and Test of Four Theoretical Models, *MIS Quarterly* (24) 4, 631–664.
- Kilduff, M. (1999). Deconstructing Organizations, *Academy of Management Review* (18) 1, 13–31.
- Klaus, H., M. Rosemann, and G. G. Gable (2000). What is ERP? *Information Systems Frontiers* (2) 2, 141–162.
- Klein, H. K. (2004). Seeking the new and the critical in critical realism: déjà vu? *Information and Organization* (14) 2, 123–144.
- Ko, D.-G., L. J. Kirsch, and W. R. King (2005). Antecedents of Knowledge Transfer from Consultants to Clients in Enterprise Systems Implementations, *MIS Quarterly* (29) 1, 59–85.
- Kristeva, J. (1989). *Language-the Unknown: An Initiation into Linguistics*. Harvester Wheatsheaf, Hertfordshire, UK.

- Kuhn, T. S. (1970). *The structure of scientific revolutions*, 2nd edition. University of Chicago Press, Chicago, IL, USA.
- Lafont, C. (1999). *The Linguistic Turn in Hermeneutic Philosophy*. MIT Press, Cambridge, MA, USA.
- Lakoff, G. and M. Johnson (1980). *Metaphors we live by*. The University of Chicago Press, Chicago, IL, USA.
- Lee, A. (2000). Researchable Directions for ERP and Other New Information Technologies, *MIS Quarterly* (24) 1, iii.
- Lorenzo, O., P. Kawalek, and T. Wood-Harper (2005). Embedding the Enterprise System into the Enterprise: A Model of Corporate Diffusion, *Communications of the AIS* (15) Article 34, 609–641.
- Lyytinen, K. J. (1985). Implications of Theories of Language for Information Systems, *MIS Quarterly* (9) 1, 61–74.
- March, J. G. and H. A. Simon (1958). *Organizations*. John Wiley & Sons, New York et al.
- Markus, M. L. (1983). Power, Politics, and MIS Implementation, *Communications of ACM* (26) 6, 430–444.
- McCulloch, W. S. (1965). Why the Mind is in the Head, in *Embodiments of Mind*, The Massachusetts Institute of Technology Press, Cambridge, MA, USA, 72–141.
- Mingers, J. (2004). Real-izing information systems: critical realism as an underpinning philosophy for information systems, *Information and Organization* (14) 2, 87–103.
- Ogden, C. K. and I. A. Richards (1923). *The Meaning of Meaning. A Study of The influence of Language upon Thought and of The Science of Symbolism*. Kegan Paul, Trench, Trubner & Company; Harcourt, Brace & Company, London, UK; New York, NY, USA.
- Orlikowski, W. J. and J. J. Baroudi (1991). Studying information technology in organizations: Research approaches and assumptions, *Information Systems Research* (2) 1, 1–28.
- Piaget, J. (1980). The Psychogenesis of Knowledge and Its Epistemological Significance, in M. Piattelli-Palmarini (Ed.) *Language and Learning. The Debate between Jean Piaget and Noam Chomsky*, Harvard University Press, Cambridge, MA, USA, 23–34.
- Polanyi, M. (1967). *The Tacit Dimension*. Routledge & Kegan Paul London, UK.
- Pondy, L. R. (1978). Leadership is a Language Game, in J. McCall, Morgan W. and M. M. Lombardo (Eds.) *Leadership. Where else can we go?* Duke University Press, Durham, NC, USA, 87–99.
- Radman, Z. (1997). *Metaphors: Figures of the Mind*. Vol. 4. Kluwer Academic Publishers, Dordrecht, The Netherlands et al.
- Ricoeur, P. (1978). The Rule of Metaphor. *Multi-Disciplinary Studies in the Creation of Meaning in Language*. Routledge & Kegan Paul, London, UK et al.
- Robey, D., J. W. Ross, and M.-C. Boudreau (2002). Learning to Implement Enterprise Systems: An Exploratory Study of the Dialectics of Change, *Journal of Management Information Systems* (19) 1, 17.
- Robins, R. H. (1967). *A Short History of Linguistics*. Longmans, Green and Co, London, UK.
- Rorty, R. (ed.) (1967). *The Linguistic Turn: Essays in Philosophical Method*, University of Chicago Press, Chicago, IL, USA.
- Rosenau, P. M. (1992). *Post modernism and the social sciences: insights, inroads, and intrusions*. Princeton University Press, Princeton, NJ, USA.
- Russell, B. (1903). *The Principles of Mathematics*. Cambridge University Press, Cambridge, UK.
- Scott, J. E. and I. Vessey (2002). Managing risks in enterprise systems implementations, *Communications of ACM* (45) 4, 74–81.
- Shang, S. and P. B. Seddon (2002). Assessing and managing the benefits of enterprise systems: the business manager's perspective, *Information Systems Journal* (12) 4, 271–299.
- Stein, T. (1998). SAP sued over R/3, *InformationWeek* (1998) 698, 134.
- Styhre, A. (2003). *Understanding Knowledge Management – Critical and Postmodern Perspectives*. Marston Book Services, Abingdon, UK.
- Sumner, M. and J. Hamilton. (2005). The turnaround ERP project: Strategies and Issues. 11th Annual Americas Conference on Information Systems (AMCIS), Omaha, NE, USA, 2005.



- Tsoukas, H. (2000). False Dilemmas in Organization Theory: Realism or Social Constructivism? *Organization* (7) 3, 531–535.
- Vattimo, G. (1988). *The End of Modernity. Nihilism and Hermeneutics in Post-modern Culture*. Polity Press, Cambridge, UK et al.
- Vattimo, G. (1997). *Beyond Interpretation. The Meaning of Hermeneutics for Philosophy*. Polity Press, Cambridge, UK et al.
- Vessey, I., V. Ramesh, and R. L. Glass (2002). Research in Information Systems: An Empirical Study of Diversity in the Discipline and Its Journals, *Journal of Management Information Systems* (19) 2, 129–174.
- Volkoff, O., D. M. Strong, and M. B. Elmes (2005). Understanding Enterprise Systems-enabled Integration, *European Journal of Information Systems* (14) 2, 110–120.
- Walsham, Geoff (2004). Knowledge Management Systems: Action and Representation, in: *Proceedings of the ALOIS 2004*. Linköping, Sweden.
- Wallace, W. M. (1998). *Postmodern management: the emerging partnership between employees and stockholders*. Quorum Books, Westport, CT, USA.
- Weber, M. (1970). *From Max Weber: Essays in Sociology*. Routledge and Kegan Paul, London, UK.
- Weber, R. (2004). The Rhetoric of Positivism Versus Interpretivism: A Personal View, *MIS Quarterly* (28) 1, iii–xii.
- Weick, K. E. (1969). *The social psychology of organizing*. Addison-Wesley, Reading, MA, USA.
- Weizenbaum, J. (1976). *Computer power and human reason: from judgement to calculation*. W. H. Freeman, San Francisco, CA, USA.
- Whorf, B. L. (1956). *Language, Thought, and Reality*. The Technology Press of Massachusetts Institute of Technology; John Wiley & Sons, New York, NY, USA; London, UK.
- Wiener, N. (1948). *Cybernetics*. John Wiley, New York, NY, USA.
- Wilson, F. (1999). Flogging a dead horse: the implications of epistemological relativism within information systems methodological practice, *European Journal of Information Systems* (8), 161–169.
- Wittgenstein, L. (1953). *Philosophische Untersuchungen / Philosophical Investigations* (bilingual edition, German, English). Basil Blackwell, Oxford, UK.
- Wittgenstein, L. (1961/1922). *Tractatus Logico-Philosophicus*. Routledge & Kegan Paul, London, UK.