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## Interpretivism in Information Systems: A Postmodern Epistemology?

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### Abstract

This paper investigates the relationship between postmodernism, epistemology and interpretivism. The paper's objective is to show that the interpretivist research paradigm shows very clear postmodernist traits. After defining the three concepts the paper attempts to answer two research questions, namely whether interpretivism may be regarded as an epistemology and whether it is a typical postmodern approach to Information Systems science and research. The paper is conceptual, using a philosophical-logical approach.

**Keywords:** Interpretivism, Positivism, Epistemology, Postmodernism, Information Systems

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## **1. Introduction**

This paper investigates the relationship between postmodernism, epistemology and interpretivism. The paper's objective is to show that the interpretivist research paradigm shows very clear postmodernist traits. After defining the three concepts the questions are asked whether interpretivism may be regarded as an epistemology and as a typical postmodern approach to science and research. A substantial body of scholarship exists on all three topics, but it is not that clear in IS literature whether interpretivism may be regarded as an epistemology or a broader paradigm of which epistemology is only one aspect. Postmodernism has received even less attention in IS literature and very little research outputs have been found so far that reflect on the possible linkages between this overarching philosophy of our times and alternative research theories in our discipline. The paper aims to make a contribution to Information Systems (IS) theory and philosophy by attempting answers to these intricate questions, while acknowledging that all knowledge is provisional, especially when it touches on fluid belief systems. The paper is a follow-up of Kroeze (2010b) in which a linkage between interpretivism and postmodernism was suggested and discussed briefly. It also builds on and extends some of the ideas in Kroeze (forthcoming).

In interpretive research it is preferable to use the term “premise” or “proposition” for the central theoretical statement (golden thread) of a piece of research, rather than the positivistic term hypothesis (cf. DeLuca et al., 2008:58). The premise of this paper is that interpretivism may be regarded as a postmodern epistemology. The acceptance of the idea of multiple subjective realities and “dynamic, socially constructed meaning” (e.g., how different IT company cultures experience truth, knowledge and methodologies) is part and parcel of the interpretivist paradigm. According to Oates (2006:292-293), interpretive studies try to understand a pluralistic world based on the principle that people assign meanings and values to their unique contexts. These propositions will be explored in more depth and the essential characteristics of interpretivism will be contrasted with positivism on the one hand, and aligned with postmodernism on the other hand.

The conceptual research approach adopted for this paper is typical of humanities research, more specifically “conceptual philosophical research” using “philosophical-logical arguments” (cf. Becker and Niehaves, 2007:199-200). The literature review is more than a mere summary of what has been written on the subject before. The relation between the relevant concepts, that has not been discussed in depth in IS literature, is explored in an analytical and synthesizing way.

The paper is a study in the philosophy of science. The term “philosophy” is sometimes used in a very wide sense to describe any viewpoint, value or belief. Ballsun-Stanton (2010:123) uses the term, for example, to describe three perspectives on data: the binary, electronic representation of data; empirically measured data; and interpreted data. In this paper, however, “philosophy” is used to refer to the humanities discipline that searches for foundational truths and a comprehensive view of reality (see “wysbegeerte” in HAT, 1979:1064). The philosophy of science explores the foundational issues and assumptions of science in general and with regard to specific disciplines.

## 2. Defining epistemology

The two major branches of philosophy are ontology and epistemology. Ontology is the analytical view of the fundamental *nature* of the universe and all its components. It systematically describes how diverse communities have looked at reality in different eras. According to De Villiers (2005:52) ontology is the “science of the essence of being; closely related to one’s view of reality”.

In the philosophy of science, however, epistemology is the main focus. Although closely related to ontological perspectives, epistemology explores knowledge systems: how communities understand and describe aspects of reality, how they attain these insights and what constitutes valid knowledge. Ulrich (2001:65) defines epistemology as “the philosophical discipline concerned with the nature, origin and validation of knowledge”. It is the “[t]heory of the method or grounds of knowledge” (Concise Oxford, 1964:408). Epistemology, therefore, may be defined as the analytical view of the fundamental *understanding* of the universe and its components.

## 3. Defining interpretivism

Interpretivism is a philosophical system that focuses on reality as a human construction which can only be understood subjectively. Although it is possible and even probable that there is an independent, concrete reality out there, humans can only know it through the filtering lenses of their sensory organs. We could never be one hundred percent sure that the world exists like we perceive it to. Social realities are even less concrete since they are created by cultural communities.

Traditionally, interpretivism is the opposite pole of positivism, a “[p]hilosophical system ... recognizing only positive facts & observable phenomena” (Concise Oxford, 1964:949). Positivism provides a framework to explore reality as a concrete, given entity which can be understood objectively.

Unlike positivistic research, interpretivist research does not work with “falsifiable statements” or “strict hypotheses” (Ballsun-Stanton, 2010:123). Like the incommensurable viewpoints on the nature of data (digits vs. observations vs. interpretations), it may also be true with reference to these two encompassing research philosophies that “the large subjective-objective gulf between filterable observations and ‘hard measurements’ seems difficult to reconcile with the same philosophy” (Ballsun-Stanton, 2010:124).

The differentiation between the two ‘philosophies’ is often used in IS theory to clarify unique, but complementing research approaches. According to Northover et al. (2008) the positivism debate has become irrelevant. They regard agile methods as an emerging paradigm that may overcome the traditional gap between divergent epistemologies and may even replace traditional methodologies. Hovorka & Lee (2010:2, 3, 9), however, want to revive the differentiation, which has become ‘muddled’, because they believe that IS needs both explanatory and interpretive inputs. Explanation is typical of the natural sciences while understanding is typical of the human sciences. The fact that IS is an interdisciplinary science explains the need for both approaches.

The two perspectives should not be separated completely, but should be seen as complementary views that enrich the process of knowledge creation.

#### 4. Defining postmodernism

Postmodernism can be defined as an encompassing paradigm, referring to a set of assumptions regarding ontology (realities are created), epistemology (knowledge is fluid and provisional), methodology (interpretive and critical methods are more apt to study a plural society) and axiology (the study of values: no one set of values are per definition better than another). It is a widespread and deep-cutting cultural movement that is changing perceptions regarding being and knowing the world over. Although people may realise that they cannot revert to a previous worldview, they still yearn for old fashioned lifestyles based on a nostalgic recreation of the past “as a form of substitute reality” (Watson, 2001:55).

In this era, the objectivist divide is not that sharp anymore. “Given this unexpected convergence between the natural and the human sciences, technology, ironically, emerges as a vital component driving and shaping postmodern culture itself” (Grant, 2001:66).

Especially the internet has played a major part in realising the postmodern era by compressing time and space and fragmentizing experience (Watson, 2001:58-59). ICT has caused an overload of information which undermines the viability of a single meta-narrative, while multimedia and hyperlinking allow users to make their own connections and sequences, all of which results in an eclectic experience of life (Watson, 2001:62).

Simulations and hyperreality developed from direct representations of the real world through an intermediate phase of emancipation into independent signs (cf. Watson’s 2001:59-60 discussion of the history of simulacra). Simulacra now replace the realities that they represent resulting in a situation where people are not able to differentiate between them (Sim, 2001b:11). In the twenty-first century simulacra very often are electronic simulations. Edutainment, for example, presents products in advertisements in the cloak of rigid research results. The pretention is made all that more feasible by pseudo-scientific, computer-aided graphs and statistics. Artificial intelligence is another good example of electronic simulation. The Turing test is, like postmodern science in general, more interested in signs and simulations than in reality itself. A machine or program may be regarded as intelligent if it is impossible to differentiate between a human’s real intelligence and the computerised simulation thereof (Grant, 2001:66, 73).

This eclectic trend to borrow freely from different sources (Concise Oxford, 1964:387) has also impacted IS research theory and philosophy to a certain extent. The one and only “scientific method” (positivism) has made way to a plethora of research philosophies and approaches, from which IS researchers may pick and mix. Mixed methods and triangulation of strategies and data generation methods have become perfectly acceptable, especially in the social sciences which include Information Systems (cf. Oates, 2006; Myers, 2009). Another attempt to pluralise research approaches in IS, is to borrow more intensely from the humanities in order to enrich IS (see Kroeze, 2010a; Kroeze et al. 2011).

It is, therefore, not surprising to find postmodern traits in the computing disciplines themselves. For example, ICT practitioners are called upon to take into account the pluralised concept of reality during systems analysis and design. “IT practitioners must serve as the interface between computing and people. They must understand what people actually want and must understand the reality *from which they desire that thing*” (Ballsun-Stanton, 2010:119). Taking people’s constructed realities into account may help to make created systems more useful (ibid.:124).

The impact of ICT and postmodernism is bi-directional. A typical postmodernist standpoint is to accept and acknowledge that values and beliefs are built into computer programs. These encoded principles cause the technologies to have philosophical implications in turn (Ballsun-Stanton, 2010:119), resulting in a repetitive ICT-Postmodernism cycle.

## 5. Is interpretivism an epistemology?

This section addresses the first research question, namely whether interpretivism may be regarded as an epistemology, or rather as a paradigm of which epistemology is only one aspect. Strictly speaking, a paradigm refers to a set of theories which is typical of a historical phase in the philosophy of science. Such a paradigm contains three main aspects, namely ontology, epistemology and methodology. Epistemology is a theory which makes explicit the underlying assumptions about understanding and knowledge. According to De Villiers (2005:52), epistemology is the “theory of the grounds of knowledge, how knowledge is produced, basis of claims to knowledge” and a paradigm is the “underlying philosophy and assumptions that form the foundation to one’s approach and methodology”. De Villiers (2005:17) regards positivism and interpretivism as paradigms or “primary philosophical point[s] of departure”. According to this view, interpretivism is a paradigm which believes that realities are created and multiple (ontology), that knowledge is fluid and provisional (epistemology) and that empirical approaches should be complemented by probing methods that aim to answer how and why questions (methodology). A research philosophy is the consistent combination of an epistemology and related methodology.

There is, however, a big however here. The terminologies introduced above, namely research philosophy, scientific paradigm and epistemology, are often used in a fluid way, more or less as synonyms. This may be due to the phenomenon that ontology has to a large extent dwindled away as a separate field of philosophical study and has become part and parcel of knowledge theory. Indeed, when one reflects on positivism and interpretivism the main focus seems to be on our concepts of knowledge and the processes of knowledge creation, which assume certain ideas about the essence of reality. Even concepts like ‘qualitative research’ (a research approach that aims to understand patterns and to answer how and why questions) and ‘quantitative research’ (a research approach that aims to identify patterns by means of numerical and statistical means) are regarded either as data analysis methods (only one element of the research process model) or as encompassing research frameworks (cf. Oates, 2006:33 vs. Myers, 2009:22-26).

The conflation of these terms is also very clear in IS philosophy of science. Northover et al. (2008) discuss epistemological issues of software engineering. They refer to interpretive and positivist approaches as research methodologies but do not differentiate clearly between the concepts of philosophy, epistemology and methodology.

Gregg et al. (2001:170) regard positivism and interpretivism as paradigms, both of which have unique ontological, epistemological and methodological characteristics. They suggest a new, sociotechnologist/developmentalist paradigm to cater for software engineering research. This paradigm incorporates assumptions of both traditional paradigms. While positivism focuses on the confirmation of hypotheses, interpretivism generates new research contexts and propositions, and the sociotechnologist/developmentalist paradigm concentrates on the creation of new systems and the knowledge processes aligned with it. However, these paradigms are intertwined and feed into each other, especially in software engineering (Gregg et al., 2001:173). Software engineering research in general have conceptual, formal and developmental components, and a specific project needs to contain at least two of these aspects in order to be regarded as rigorous research (Gregg et al., 2001:175).

According to De Villiers (2005:11-13, 17) interpretivism is – like positivism – a paradigm, including both ontological and epistemological perspectives. Ontologically speaking, interpretivism assumes “multiple realities, which are time- and context dependent” (a manifold of worlds that are created by different communities in various eras). Epistemologically speaking, inquiry is value-related and findings are subjective. Since interpretivism tries to make sense of the manifold of worlds it may be deduced that its main focus is indeed epistemological. The reference to the ontological view is merely necessary since epistemology and ontology are two sides of the same coin. Myers, for example, uses the terms ‘paradigm’ and ‘epistemology’ interchangeably (cf. p. 36). Even De Villiers (2005:20), who regards interpretivism as a paradigm, seems to conflate the concepts paradigm and epistemology when she says that action research, having “an interpretivist ethos”, operates under a qualitative epistemology.

There seems to be a specific link between research concepts and epistemology. “Epistemology is customarily used to discuss IS research paradigms and approaches” (Becker and Niehaves, 2007:210). Research methods belong to paradigms and have epistemological assumptions (ibid.) Becker and Niehaves (2007:201) understand epistemology as the way in which scientists understand knowledge of reality. It also contains a reference to ontology since researchers’ concept of reality also differs. For some it is concrete and measurable, for others it is a figment of the mind, or a bit of both extremes.

In a conceptual article on epistemology in library and information science, which is closely related to the other ICT disciplines, Hjørland (2005:130) calls empiricism, rationalism and positivism epistemologies. Empiricism is the conviction that the only valid way of data gathering for research is by means of sensory observations, while rationalism is the conviction that conceptual thinking underlies and directs all knowledge. Interpretivism is often regarded as the antipole of positivism, although Hjørland (2005:139, 148) calls this a ‘vulgar interpretation’ of positivism.

DeLuca et al. (2008:53) regard positivism and interpretivism both as epistemologies. They are strongly linked to research objectives (rigour vs. relevance), methodology (quantitative vs. qualitative) and evidence (confirmatory vs. disconfirmatory). They plead for an integrative synthesis of the benefits of both these epistemologies, and illustrate how this could be done in action research (DeLuca et al., 2008:57). Hovorka & Lee (2010:10) differentiate between

understanding and explanation as the intertwined but unique contributions of interpretivism and “positive science epistemology”.

From the discussion above it may be concluded that interpretivism in IS may be regarded as an epistemology. The next section will investigate the postmodern trait of the interpretivist epistemology by laying relationships between the two concepts.

## 6. Is interpretivism postmodern?

This section contrasts the positivist epistemology with the interpretivist epistemology and compares last-mentioned with the postmodernist paradigm. Table 1 adapts Becker and Niehaves’s (2007:202-209) epistemological framework for this purpose. Gregg et al.’s (2001:173) suggestions regarding the essence (“keywords”) of the paradigms are included, as well as definitions and ideas by several other authors. The keywords and short phrases in the table will be discussed in detail below to evaluate whether interpretivism mirrors typical postmodernist traits.

**Table 1.** Becker and Niehaves’s (2007:202-209) epistemological framework (adapted) used to compare and align interpretivism and postmodernism versus positivism.

<b>Criterion</b>	<b>Positivism</b>	<b>Interpretivism</b>	<b>Postmodernism</b>
<b>Essence</b>	Confirmation	Generation	Antifoundationalism Eclecticism
<b>Conception of reality</b>	External reality	Contextual realities	Poststructuralism
<b>Conception of knowledge</b>	Absolutism	Subjectivism	Theory-laden knowledge
<b>Conception of truth</b>	Reductionism	Holistic and emancipatory view	Emancipatory view
<b>Conception of cognition</b>	Empiricism	Interactive knowledge creation Rationalism	Value-laden process
<b>Methodology</b>	Quantitative methods Hypothesis driven	Qualitative methods Research-question driven	Deconstructionism
<b>Concept of rigour</b>	Reproducibility	Transferability	Performance-driven nature

### 6.1 Essence

According to Gregg et al. (2001:173) the essence of the positivist epistemology is *confirmation*, for example the proving or falsifying of hypotheses. The essence of interpretivism, however, is *generation*, i.e. the invention of new research concepts and contexts. This is typical of postmodernist epistemologies, in which the scientific endeavour may be regarded as a melting-pot of ideas that may eventually give birth to a “fundamentally new form of intellectual vision, one that might both preserve and transcend the current state of extraordinary differentiation”



(Tarnas, 1991:402). Postmodernism may therefore be regarded as *antifoundational* – knowledge is created and truth is provisional. This leads to an *eclectic* approach in science. Parallel to the postmodern possibility of choosing a lifestyle rather than to conforming to old traditions (Watson, 2001:55), is the idea of choosing a research philosophy and methodology. In IS, a variety of legitimate research approaches exist which again reflects the wide variety of products available on the postmodern market. This eclectic drive is mirrored in interpretive IS research. Although empirical studies are perfectly acceptable in interpretivist work, they are not regarded as the only valid method (empiricism) (Hjørland, 2005:131). Research philosophies, approaches and methods can even be mixed and matched to a large extent to suit divergent research fields and objectives.

## 6.2 Conception of reality

Positivism assumes a certain view of the world (ontology). The basic idea is that the world exists as an *external reality*. It believes that the world is concrete and empirically observable, a single reality that exists “external to human beings” (De Villiers, 2005:12). In contrast to this, interpretivism in IS, like postmodernism in general, believes in *contextual realities* (*poststructuralism*). It is an idealistic point of departure which sees reality as a figment/notion of the mind. A more balanced view is to believe that both concrete entities and thought constructs exist.

An example of “multiple subjective/constructed realities” in IS practice is the creation of unique working cultures by system developers in different organizations (Oates, 2006:292-293). In many qualitative research approaches – often underlied by interpretivism – taking into account the social context is very important. This is in line with postmodernist traits in other cultural areas, for example art. “[P]ostmodern buildings and cityscapes are characterized by sensitivity to context” (Watson, 2001:61). A related research method that is often used in IS, is action research where the researcher is actively involved with interventions in the field of research. In addition, postmodernist science is often driven by cultural and political motives; the agendas for theoretical and experimental work are determined by people and groups with their own motives and goals (Grant, 2001:66). The importance of taking context into account again implies a “plurality of acceptable ethics and lifestyles” (Easthope, 2001:21-27).

## 6.3 Conception of knowledge

In positivist epistemology knowledge is believed to be *absolute* and objective (De Villiers, 2005:12). “Positivist research is intended to produce an exact representation of reality, free from perceptions and biases of the researcher” (ibid.). Interpretivism, however, believes that inquiry is value-related and findings are *subjective* (De Villiers, 2005:13). It studies “people in their natural social settings” (Oates, 2006:292-293) and focuses on the uniqueness of each situation (ideographic standpoint) (De Villiers, 2005:20). In IS, a formal ontology is a taxonomy of a subset of reality, which defines the relationships between the entities and ensures consistency and reliability by means of description logics. Postmodernist epistemologies acknowledge that all knowledge is *theory-laden* (Hjørland, 2005:133). This prompts qualified views on humanism, progress and consumerism (Easthope, 2001:21-27). A bigger awareness of research participants’

communities and values explains the relatively recent upsurge in ethical committees and ethical clearance processes in Social Informatics research.

#### 6.4 Conception of truth

In a positivist thought-framework truth is *reductionist* (De Villiers, 2005:20). Positivism isolates research objects and ignores the wider context (Hjørland, 2005:136). For interpretivists, however, truth is *holistic and emancipatory* (De Villiers, 2005:20). It accepts that researchers influence their study objects and change perceptions (Oates, 2006:292-293). Researchers and participants negotiate and agree on what is the truth for them. Similarly, postmodern perspectives are *emancipatory* (De Villiers, 2005:28) and is skeptic about “a firm founding for deciding between truth and falsehood” (Easthope, 2001:21-27).

#### 6.5 Conception of cognition

“Positivism is equated with the scientific method, whereby knowledge is discovered by controlled empirical means, such as experiments” (De Villiers, 2005:12). This standpoint is called *empiricism* since empirical and measurable methods are regarded as the main or even only valid knowledge process. Empiricism and positivism have a very close mapping, even to the extent that they are regarded as synonyms or forms of each other (Hjørland, 2005:130, 136; Gregg et al., 2001:171). This approach includes deductivism, in which individual entities are derived from a universal concept (e.g. mathematical sciences; class to object instantiation in object orientation) and inductivism, in which universal concepts are derived from individual entities (e.g. natural sciences; model creation in IS). *Rationalism* is the assumption that understanding is the result of thought processes. It is, therefore, a more qualified view and closer to interpretivism’s assumption that *knowledge is created interactively* (cf. Gregg et al., 2001:172). In postmodernism, which has a fluid view of ontology and epistemology, science and technology are believed to be *value-laden* (Easthope, 2001:21-27). Many case studies in IS are examples of multiple situations that demand unique interpretations (Oates, 2006:142, 300). Meaning is constructed in a dynamic way in societies, as the different IT jargon in various groups and periods demonstrates (Oates, 2006:292-293). Empirical studies are perfectly acceptable in interpretivist work, but this is not regarded as the only valid method (empiricism) (Hjørland, 2005:131). Knowledge is obtained via a combination of observation and interpretation (cf. Hjørland, 2005:144).

#### 6.6 Methodology

Positivist research is *hypothesis-driven*, has a preference for *quantitative methods* and aims to find generalisable results which can be used to make accurate predictions (De Villiers, 2005:12). In contrast, interpretive research is *research-question driven*, has an affinity for *qualitative methods* and its goal is to provide deep insight regarding unique social and organisational scenarios (De Villiers, 2005:12-13; Gregg et al., 2001:172). Hermeneutics is its main method. This echoes postmodernism’s critique on the “scientific” method (Easthope, 2001:21-27) and its *deconstruction* of grand narratives (Sim, 2001b:14). In this regard, Oates’s statements about interpretivism relativise the positivist belief: “[T]he scientific method is itself a social construction, developed by a community of researchers over several hundred years as the ‘right’

way to do research” (Oates, 2006:292). Laboratories are “artificial worlds” created for experiments (Oates, 2006:293). To be open for other cultures implies a certain amount of scepticism about the researcher’s own (often Western) culture (cf. Oates, 2006:300).

## 6.7 Concept of rigour

The principle of rigour has always been non-negotiable in traditional positivist science. This explains the emphasis on *reproducibility*: data that can be measured and results that can be replicated (Hjørland, 2005:136). Interpretivist research also accepts the principle of rigour but uses a different set of parameters to determine and evaluate it, namely trustworthiness, confirmability, credibility and *transferability* (Oates, 2006:294-5). It accepts that multiple interpretations are possible (Oates, 2006:292-293), but tries to ensure reliability by means of triangulation (De Villiers, 2005:13). Relevance is more important in interpretivism, as in all postmodern sciences. This may even have found its epitome in artificial intelligence, in which *performance* has become more important than truth, and simulation of intelligence more significant than the understanding of intelligence (Grant, 2001:73). However, despite the relativity of knowledge and the fluidity of understanding and wisdom in the postmodern era, scientists do not have to feel that their work is without value. It has retained its status due to its rigour and practical applications (Tarnas, 1991:404).

## 7. Conclusion

Postmodernism is a philosophical paradigm that has a major influence on all cultural activities including science. A philosophical paradigm is a set of theories which is typical of a historical phase in the philosophy of science. Epistemology is a knowledge theory which makes explicit the underlying assumptions about understanding and knowledge used by a school of scientists. Postmodernism refers to a set of assumptions regarding ontology (realities are created), epistemology (knowledge is fluid and provisional), methodology (interpretive and critical methods are more apt to study a plural society) and axiology (the study of values: no one set of values are per definition better than another). Positivism and interpretivism are examples of epistemologies often used in IS. While positivism focuses on reality as a concrete given entity which can be understood objectively, interpretivism focuses on reality as a human construction which can only be understood subjectively. Interpretivism echoes many postmodernist traits in terms of its assumptions about reality, knowledge, truth, cognition, methodology and rigour. Therefore, it may be concluded that interpretivism, as it is used in IS, is a typical postmodern epistemology.

## 8. Further work

Three issues about IS research and postmodernism bubbled up during this research, but fell outside the scope of this paper. Critical theory, the third major epistemology used in IS, may be even closer to the essence of postmodernism. Its philosophical assumptions are similar to those of interpretivism, but it goes further than a mere description and understanding by also challenging these issues. A detailed study on the postmodernist traits of critical research is needed.

Postmodernism has been around for about four decades, and philosophers have started to reflect on 'post-postmodernism'. Follow-up work should be done to investigate the characteristics of this new phase and how it affects IS research.

Various authors refer to ways to bridge the gap between positivism and interpretivism. Logical positivism may be regarded as an attempt to bridge the gap between empiricism/positivism and rationalism (Hjørland, 2005:132-133). Ulrich (2001) suggests a discursive approach to overcome the epistemological rift between empiricists and rationalists (cf. Becker & Niehaves, 2007:210). Computer simulations include aspects of both rationalism and empiricism and is therefore an example of how the epistemological divide can be overcome (Northover, 2008). According to De Villiers (2005:17, 37) some IS research approaches fall in between the two paradigms, such as design-science research in IS: they are tolerant of ambiguities and follow a pragmatic approach to problem solving and use aspects of both paradigms in an eclectic way. An in-depth study is needed to determine whether the epistemological divide is still valid and if so, how it should be overcome.

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