Introduction

What makes interpretive research interpretive? How is interpretive research valid? Why are these two questions important for the conduct of research in the information systems discipline?

Interpretive research is not only qualitative research. It is qualitative research in which a researcher does not take for granted but interprets the meanings expressed by the people whom the researcher is observing, much as one person would interpret the words expressed by others speaking a foreign language with which the former is not very familiar. Rather than risk imposing his or her own meaning for, and misunderstanding of, what the people themselves mean, the researcher engages in a deliberate effort of interpretation. One of the objectives of this chapter is to examine what constitutes this research effort of interpretation – in other words, what makes interpretive research interpretive. And when interpretation has taken place, how may the researcher know that it is valid? Providing a basis for the examination will be phenomenology, a field of study that has made the investigation of meaning its raison d’être.

The approach taken in this chapter is from the perspective of philosophy and method. By one definition, “philosophy is thinking about thinking” (Quinton 2005). Method, in the sense of research method, refers to the specific techniques, instruments, and procedures used to obtain information for the purposes of research and for the analysis of the information gathered or generated [and] [i]ncludes observations (measurements), interviews, questionnaires, archival and literature searches, and the gamut of quantitative and qualitative techniques.

(Duignan 2016)

In other words, rather than simply advance research methods in the spirit of how to use them, this chapter will regard research methods themselves as objects of research upon which we further think and reflect. As such, this chapter is intended to add to the body of philosophical and methodological research on interpretivism in information systems, of which just a few prominent examples are Walsham (1993, 1995a, 1995b, and 2006), Klein and Myers (1999), and Myers (1999, 2013).
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The first section of this chapter, following this introduction, will offer examples problematizing meaning. The second section will offer suggestions for how to interpret meaning. The third section will offer discussion about assessing the validity of interpreted meaning.

**Problematizing meaning**

Meaning is not to be taken for granted. I offer three examples to make this point – two originating in the work of Martin Heidegger and one in the work of Alfred Schutz.

For the first example, I turn to Harman (2013), who relates this story from his own reading of Heidegger (pp. 22–23):

As he stands in a lecture hall in Freiburg, addressing his students from the podium, Heidegger notes that professor and students all use the various objects in the room, taking them for granted. The podium is simply used, not consciously seen. The desks of the students, their pens and notebooks, are also taken for granted as useful items before they are ever clearly and consciously noticed. Heidegger now asks us to imagine what would happen if a [person from a tribe that has had no contact with the rest of the world] suddenly entered the room. This . . . foreigner might have no concept at all of a lecture hall and its usual equipment. He might be utterly confused by the podium and have no idea of how to use it. Even so, he would not see the podium and the desks as meaningless colors and shapes. Instead, he might think of the podium as an item for [his religion], or as a barrier for hiding from [offensive weapons]. [This person’s] failure [from the perspective of the professor and students] to understand the room does not mean that the room is a sheer perception without any practical use. Instead, he would encounter the room as a form of “equipmental strangeness.”

This is what the world means for the young Heidegger: it is not a spectacle of colors and shapes, but rather an environment in which all things have a special significance for us and are linked with one another in a specific way. What we learn from the [foreigner] is that objects always have a highly specific meaning even when they are not lucidly present in consciousness.

The lessons are about meaning – not only what meaning the “podium” might have for the foreigner, but also the taken-for-granted meaning of the “podium” for the professor and students. And just as we might be intrigued by how the foreigner comes to form whatever meaning he does for the “podium,” we should be equally intrigued by how the professor and students themselves understand the “podium” in the way that they do. There is, moreover, another lesson, about equipment; we will examine this lesson in detail shortly.

Consider now an information system in place of the podium. Consider the engineers (who created the information system) in place of the professor and students. And consider the middle-level managers and clerks (who see this information system for the first time) in place of the foreigner. Suppose the information system ends up being a failure. What role in the failure could have been played by the differing meanings that the information system had for the engineers on the one hand, and for the managers and clerks on the other? How did the respective meanings originate in the first place? By what method may a researcher, conducting a study of the information systems failure, come to interpret the meanings that the information system has for the different people rather than simply impose his or her own taken-for-granted meaning (or misunderstanding) of it?
For our second example, we again go to Heidegger and a description by Harman (pp. 1–2):

Consider Heidegger’s famous example of a hammer . . . In one sense, a hammer remains invisible to us: we tend to use our tools without noticing them, and focus instead on the house or ship we are building. The hammer usually withdraws from view. But even when we notice it, such as when it breaks, the hammer will always be more than whatever we see or say about it. This means that the being of the hammer is always absent; it labors silently in invisible depths, and is not “present-at-hand,” to use Heidegger’s term. But absence is only one side of the story. Hammers, candles, and trees cannot be only absent, because then we would never see anything or have any relations with anything at all. Yet quite obviously, the hammer is also present: I see its wooden handle and metallic head, feel its weight, and interpret it either as a tool for building, an item of hardware priced for sale, or a weapon for hand-to-hand combat. For a dog, a baby, an ant, or a parrot, most of the hammer’s usual properties are not there at all, which shows that the presence of a thing is also determined by those who encounter it.

The lesson here is about equipment. The meaning of something, such as a hammer, is not fixed by whatever its dictionary definition might be. Its meaning to a person depends on what purpose or use, if any, it might serve at the moment to the person, as if it were one or another piece of equipment.

Consider now an information system in place of the hammer. The information system would include the complex of hardware, software, data structures, networks, procedures, and operations comprising an enterprise resource planning system. Applying Harman’s discussion of Heidegger, we can say the following. Whatever the information system, we tend to use it without noticing it, focusing instead on the task that we are using it for, so that the information system withdraws from view. But even when the information system fails to work and we then notice it, it is more than what we happen to notice at the moment. And for people not directly using the information system – that is, for whom it is not equipment – most of the information system’s usual properties are not there at all, which shows that the meaning that an information system has is relational, determined by those who encounter it at the moment. By what method may a researcher, conducting a study of an information system, come to interpret the meaning(s) that the information system has?

For the third and final example problematizing meaning, we turn to Alfred Schutz (1962a, p. 54):

The same overt behavior (say a tribal pageant as it can be captured by the movie camera) may have an entirely different meaning to the performers. What interests the social scientist is merely whether it is a war dance, a barter trade, the reception of a friendly ambassador, or something else of this sort.

The lesson here is about the meaning that a researcher imputes to overt behavior manifested by the people who he or she is observing. Consider overt behavior in the form of a person’s deliberate non-use of an information technology. Does the person’s non-use of the technology indicate that the technology carries the meaning of little or no “usefulness” or “ease of use” to this person? Does the person’s non-use of the technology indicate the meaning of “resistance to technology” from this person? Or does the person’s non-use of the technology indicate that the person regards the effects of the technology as potentially harmful to others
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and is therefore acting protectively and benevolently (Mohajeri 2014)? By what method may a researcher, conducting a study of some people’s overt behaviors relating to a technology, come to interpret the meaning(s) underlying the overt behaviors?

The three preceding examples make the point that the meanings held by the people in a study are pivotal to the outcome of the study. Interpreting the meanings differently would result in a different study. And for a researcher not to interpret the meanings at all, but to somehow proceed with implicit assumptions about what they are, would likely result in an incomplete or outright invalid study. By what method or methods may a researcher deliberately interpret the meanings that are present in a research setting? We address this question next.

Interpreting meaning

I offer two complementary approaches to the task of how to interpret meaning. The first approach is primarily philosophical, drawing on phenomenology. (Heidegger and Schutz, just mentioned, are phenomenologists.) The full range of phenomenological philosophy can hardly be captured in any single essay, so just some leading concepts of it (relying on the work of Schutz (1962b) as a guide) will be touched upon.

Definitions of phenomenology are deceptively straightforward. The *Oxford English Dictionary* (2005a) offers this definition:

A method or procedure, originally developed by the German philosopher Edmund Husserl (1859–1938), which involves the setting aside of presuppositions about a phenomenon as an empirical object and about the mental acts concerned with experiencing it, in order to achieve an intuition of its pure essence; the characteristic theories underlying or resulting from the use of such a method. In more recent use: any of various philosophical methods or theories (often influenced by the work of Husserl and his followers) which emphasize the importance of analysing the structure of conscious subjective experience.

The *Encyclopaedia Britannica* (Biemel 2016) states:

**phenomenology**, a philosophical movement originating in the 20th century, the primary objective of which is the direct investigation and description of phenomena as consciously experienced, without theories about their causal explanation and as free as possible from unexamined preconceptions and presuppositions.

In both definitions, any straightforwardness is deceptive owing to the challenge involved in freeing oneself from “unexamined preconceptions and presuppositions” in achieving the “pure essence” of a phenomenon. As for the subtleties and complexity involved in phenomenology, consider the following hypothetical situation that Schutz provides (1962b, p. 106):

I perceive the blossoming tree in the garden. This, my perceiving of the tree as it appears to me, is an indubitable element of the stream of my thought. And the same is valid for the phenomenon “blossoming-tree-as-it-appears-to-me,” which is the intentional object of my perceiving. This phenomenon is independent of the fate of the real tree in the outer world. The tree in the garden may change its colors and shades by the interplay of sun and cloud, it may lose its blossoms, it may be destroyed
by fire. The once perceived phenomenon “blossoming-tree-as-it-appears-to-me” remains untouched by all these events . . .

In any case, each act of perceiving and its intentional object are indubitable elements of my stream of thought; and equally certain is the doubt I may have about whether the “tree as it appears to me” has a correlate in the outer world. The foregoing example has illustrated the fact that my cogitations and their intentional objects are elements of my stream of thought which are not influenced by the changes that may happen to their correlates in the outer world. But this does not mean that the cogitations are not subject to modification by events happening within my stream of consciousness. In order to make this clear let us first distinguish between the act of perceiving and the perceived, between the cogitare and the cogitatum or, to use Husserl’s technical term, between the Noesis and the Noema.

A key takeaway from this example is the distinction between the correlate in the outer world (the blossoming tree in the garden) and the intentional object of my perceiving (the blossoming-tree-as-it-appears-to-me, in my thinking). What the former “means” to me is the latter.

An additional, rich complication arises regarding the meaning held by a researcher, as distinct from the meaning held by a research subject, namely, a person whom the researcher is observing or who is a part of the social scene that the researcher is studying. For the researcher, there is the distinction between the correlate in the outer world (here, it is [the blossoming-tree-as-it-appears-to-the-research-subject, in the research subject’s thinking]) and the intentional object of the researcher’s own perceiving ([the blossoming-tree-as-it-appears-to-the-research-subject, in the research subject’s thinking] as this appears to the researcher, in the research subject’s thinking]). (NB: The reason for the use of brackets will be made clear.) Strictly speaking, the meaning held by the researcher is a second-order meaning; it is the researcher’s meaning of the meaning held by the research subject. The seriousness of the challenge in forming a second-order meaning becomes apparent when we return to the example of the foreigner in Heidegger’s classroom – the person from a tribe that has had no contact with the rest of the world. How do I, as a researcher, learn the meaning that the podium has, or comes to have, for this person?

There is the associated task of my “setting aside of presuppositions about a phenomenon as an empirical object and about the mental acts concerned with experiencing it.” How do I, as a researcher, set aside my own presuppositions about the podium when my presuppositions are invisible to me, in much the same way as, according to Harman’s example involving Heidegger, “a hammer remains invisible to us”? According to this line of thinking, I would need to identify and set aside my presuppositions so that I, as a researcher, may come to know what an object (such as a podium or a hammer) or an overt action means to a person in a social setting that I am researching.

For an information-systems example, consider overt behavior in the form of a research subject’s deliberate non-use of a new information system. Consider also that the focus of the research, at the moment, is not on the new information system itself, but on [the overt behavior in the form of the research subject’s deliberate non-use of the new information system]. In other words, the correlate in the outer world is [the overt behavior in the form of the research subject’s deliberate non-use of the new information system]. Suppose, on the one hand, the intentional object of the information-systems researcher’s perceiving ([the overt behavior in the form of the research subject’s deliberate non-use of the new information system] as this appears to the information-systems researcher) is “resistance to technology,” but on the other hand, the intentional object of the research subject’s own perceiving ([the overt behavior in the
form of the research subject’s deliberate non-use of the new information system] as this appears to the research subject) is instead “protection of the well-being of my co-workers and clients.” In this situation, what is or what should be the relationship between the second-order meaning (“resistance to technology”) and the first-order meaning (“protection of the well-being of my co-workers and clients”)? Under what conditions is the second-order meaning better or worse, or even justifiable in the first place? In past interpretive research in information systems, have researchers related the two meanings or even recognized the distinction between them in the first place?

Helping to bring some clarity to this methodological situation is what phenomenology calls bracketing. As the previous usage of brackets suggests, it involves setting aside a group of elements (much as bracketing is performed in mathematics, from which this term is borrowed), which are then treated not only as a group, but are also subjected to the question, “what is this?” In this sense, the same function could be served by scare quotes, which are “quotation marks used to foreground a particular word or phrase, esp. with the intention of disassociating the user from the expression or from some implied connotation it carries” (Oxford English Dictionary 2005b). One’s belief of what is bracketed, or is placed in scare quotes, is placed in temporary suspension as one no longer takes its meaning for granted but instead wonders anew about what it is.

According to Schutz (p. 104), “Husserl called this procedure ‘putting the world in brackets’ or ‘performing the phenomenological reduction.’” He continues (pp. 104–105):

Although “phenomenological reduction” does not require any magic or mysterious faculty of mind, the technique of bracketing which it suggests is by no means a simple one if applied with the necessary radicalism. What we have to put in brackets is not only the existence of the outer world, along with all the things in it, inanimate and animate, including fellow-men, cultural objects, society and its institutions. Also our belief in the validity of our statements about this world and its content, as conceived within the mundane sphere, has to be suspended. Consequently, not only our practical knowledge of the world but also the propositions of all the sciences dealing with the existence of the world, all natural and social sciences, psychology, logic, and even geometry – all have to be brought within the brackets.

The foregoing approach to the task of how to interpret meaning, drawing on Schutz, is philosophical, where the task of interpreting meaning can be as challenging as it is abstract.

We now consider a complementary approach, from the perspective of research methods. It remains challenging but is less abstract and more practical. In other words, step by step, how may an information systems researcher interpret the meanings that are present in, say, the organizational setting where she is studying an information systems failure? Casebier, Kuhn, and Kanter each provide some pointers.

Casebier (2014) provides an illustration of bracketing that can be particularly practical for social scientists:

It is important to realize that utilizing the reduction or bracketing is not some special kind of introspection. It is rather a process much like what often occurs in philosophy and other inquiries in whatever tradition, including Anglo-American analytic philosophy. The method is best described as cognitive transformation. In legal settings, the experience of novels, and many other contexts, we are familiar with cognitive transformation. For example, in a legal setting, it may be significant that for purposes
of a trial in progress someone testifies to the court that Maggie was upstairs in the mansion when the owner was killed. Normally, in our lived experience, such information directs our attention to the state of affairs represented, involving Maggie and upstairs in the mansion and at a certain time. In cases of testimony in court, however, a retreat may be made. We suspend our judgment on the truth of the claim—Maggie was upstairs then—we consider only the fact that, according to the witness, Maggie was upstairs at the time that the owner was killed. We have thus made a cognitive transformation. We have been taken from the original use of a basic sentence (Maggie was upstairs then) to a transformed sentence expressly about what has been asserted, questioned, commanded, and so forth. We have thus bracketed whether Maggie was upstairs then to focus only on the representational content and mode of the original sentence. We may be noncommittal about whether what the witness testified to was true.

Especially in a social-science context, not only a legal context, we can be noncommittal about whether what organizational members (or others whom we, as researchers, interview or otherwise observe) tell us is true. And even in the event that what they say turns out not to be true, we would remain no less interested in what they meant; indeed, this is a point of a 1979 article by Van Maanen, the telling title of which begins, “The Fact of Fiction. . . .” In other words, in continuing to reason along the path of what the preceding discussion has alternatively called a cognitive transformation, the phenomenological reduction, and bracketing, we focus on what Casebier calls the “transformed sentence” (literally, regarding the comments we hear and, figuratively, regarding the overt actions we see), whereupon the meaning behind the words and actions may emerge.

Kuhn, as a scholar in the history and sociology of science, also offers some concrete advice in this regard. He states, in the preface to an anthology of his essays, The Essential Tension (Kuhn 1977, p. xii, also cited in Lee 1991, p. 348; emphasis added):

When reading the works of an important thinker, look first for the apparent absurdities in the text and ask yourself how a sensible person could have written them. When you find an answer . . . when those passages make sense, then you may find that more central passages, ones you previously thought you understood, have changed their meaning.

In other words, when reading a passage, one may actually ascribe to the passage a meaning that simply and naturally occurs to oneself—indeed, even a meaning rich in one’s own (as yet unidentified) preconceptions and presuppositions. Of course, such a meaning could very well turn out to be incorrect (the passage that is read with such a meaning might not then make sense in relation to other passages), whereupon one would then need to depart from the presumed meaning and try out re-reading the text with a different meaning—namely, one that “a sensible person” might have meant. And in the event that the re-reading contains any remaining apparent absurdities, or new ones appear, the process is repeated.

The beauty of this approach is that it does not require a researcher to explicitly perform the phenomenological reduction, where the researcher would explicitly identify and set aside her “unexamined preconceptions and presuppositions” in pursuit of the “pure essence” of a phenomenon. In contrast, this approach would actually allow the researcher to wholeheartedly embrace the presence of his preconceptions and presuppositions, all in the spirit of accepting that they provide a mere starting point in the researcher’s quest for the text’s meaning. Indeed,
the greater any apparent absurdity that subsequently arises, the richer the material for identifying previously unexamined preconceptions and presuppositions.

Of course, for Kuhn and for others following an interpretive tradition, this manner of interpreting text is not only for interpreting text, but for all else that can be “read” as “text analogues,” such as spoken words that a researcher might hear in an interview or overt actions a researcher might observe in people working in an organization. Where a research subject’s spoken words and overt behaviors are text analogues, the interpretation of meaning proceeds in the same way as in the reading of text.

In other words, when a researcher observes behavior that he or she considers to be puzzling or nonsensical (i.e., an “apparent absurdity”), the researcher then re-“reads” the problematic “passage” with a changed meaning – one that a sensible person, engaging in this behavior, might have meant. The researcher keeps on trying out different meanings in a trial-and-error manner, until the passage makes sense. As Kuhn points out, the change in meaning ascribed to the passage could call for the meanings of related “passages” also to be changed, thereby altering the meaning of the overall “text” or the overall organization if the object of research is an organization.


> With Michel Crozier, I wanted to demonstrate that everyone is rational, that everyone within an organization, no matter how absurd or irrational their behavior seemed, was reacting to what their situation made available, in such a way as to preserve dignity, control, and recognition from others.

The practical rule of thumb here is: for the scientific observer, do not presume irrationality, but entertain meanings that presume the observed behavior or spoken words are rational, or have a rationale behind them. This is akin to Kuhn’s advice of considering “how a sensible person” could have written text that initially appears puzzling to the reader.

In other words, for Kanter, if a person makes comments or engages in overt behaviors that appear to the scientific observer (such as an information systems researcher) to be irrational, then either the person is acting in a way that he himself would consider to be irrational (which is not likely) or the interpretation of irrationality is not correct; the rule of thumb for the scientific researcher is to make the second choice.

The scientific researcher’s posture is to depart from ascribing any meaning that harbors even a hint of irrationality and to try out different meanings in a trial-and-error manner until the person’s comments and overt behaviors would make sense to the person herself. What might the comments and overt behaviors mean if the person is attempting to preserve her dignity in her work environment? . . . if the person is acting to maintain some sort of control over the resources she needs to get her job done? . . . if the person is moving ahead with her goal to gain recognition as an outside-of-the-box thinker in the eyes of her supervisors? In other words, a necessary condition for a scientific observer’s ascribing of a plausible meaning to the observed people’s comments and overt behaviors is that the meaning not be seen as irrational, self-defeating, counterproductive, uncomplimentary, unethical, or otherwise negative in the eyes of the observed people themselves. The interpreted meaning should be, in Schutz’s term, “subjectively meaningful,” namely, it would need to be regarded as meaningful in the eyes of the research subjects themselves.

To recapitulate up to this point, the researcher’s task of interpreting meaning can take an approach based on phenomenological philosophy (involving the phenomenological reduction and bracketing), as well as an approach based on practical methods (such as those inspired by
Casebier, Kuhn, and Kanter). However, once a researcher has conducted interpretive research, which involves the interpretation of the meanings present in a setting that he or she is studying, how may he or she know that the interpreted meanings are valid?

Assessing the validity of interpreted meaning

Applying a philosophy or research method for interpreting meaning is one thing; assessing the goodness of the resulting interpretation is quite another thing. This is a case of the difference between formative validity and summative validity. As Lee and Hubona explain (2009, p. 246): “A theory achieves formative validity by following one or another accepted procedure in the process of its being formed. A theory, once formed, achieves summative validity by surviving an empirical test that uses the logic of modus tollens.” Whereas Lee and Hubona are addressing theory, the same lesson applies to meaning. I will demonstrate this with ideas from Føllesdal (1979), Hirsch (1967), and Agar (1986). Føllesdal and Hirsch offer their ideas in the context of hermeneutics; Agar, in ethnography. All are compatible, indeed inseparable, from the phenomenological thinking informing the preceding portion of this chapter.

Another common theme across the works of Føllesdal, Hirsch, and Agar is hypothetico-deductive logic. Føllesdal and Hirsch recognize this explicitly; Agar recognizes this implicitly and, as I will show, necessarily. First, I will provide a general explanation of hypothetico-deductive logic as an application of modus tollens, which I will illustrate with ideas from Føllesdal, Hirsch, and Agar. Second, I will provide an illustration of the iterative process of applying hypothetico-deductive logic in assessing the validity of an interpretation, drawing on the work of Sarker and Lee (2006).

Modus tollens is a form of the syllogism. The major premise is “if \( p \) is true, then \( q \) is true.” The minor premise is “\( q \) is not true.” The conclusion is “therefore \( p \) is not true.”

Hypothetico-deductive logic is an application of modus tollens used in empirical inquiry where \( p \) stands for a universal or general statement and \( q \) stands for a statement of particular, such as a fact resulting from an observation. Furthermore, hypothetico-deductive logic considers \( p \) to stand for a hypothesis and \( q \) to be a fact that would be observed to be true if the hypothesis is true. If it is observed not to be true, then the hypothesis is considered incorrect.

Suppose instead that \( q \) is observed to be true, so that the minor premise, instead of being “\( q \) is not true,” is “\( q \) is true.” At first blush, one might think, given the major premise, “if \( p \) is true, then \( q \) is true,” that this allows the conclusion to be “therefore \( p \) is true,” but this would be incorrect. Consider the major premise, “if it is raining outside is true, then the street is wet is true.” We observe that the street is wet. We may not conclude that the hypothesis it is raining outside is true because the street could be wet for any number of other reasons. Indeed, to conclude incorrectly that the hypothesis \( p \) is true based on \( q \)’s being true has the general name, “the fallacy of affirming the consequent.” For this reason, the term “consistent with” rather than “prove” is often used in scientific discussions; for example, one may assert that the facts are consistent with the hypothesis, but not that the facts prove the hypothesis. This also means that, because evidence may never prove a hypothesis true, empirical testing (involving the collection of facts through, for instance, experiments or surveys) continues ad infinitum, at least in principle, until contradictory facts appear, whereupon the hypothesis would have to be revised.

A presumption about hypothetico-deductive logic is that the hypothesis \( p \) is (what information systems researchers and others would consider to be) a positivist theory, such as a theory of physics; however, there is nothing in the logic itself that precludes the hypothesis \( p \) from standing for something interpretive, such as “the new information system’s meaning to the managers
and clerks is a loss of jobs and job advancement opportunities.” Indeed, Føllesdal and Hirsch each claim explicitly that hermeneutic interpretation employs hypothetico-deductive logic.

Føllesdal describes hypothetico-deductive logic as follows (1979, p. 321): “As the name indicates, it is an application of two operations: the formation of hypotheses,” referred to earlier as $p$, “and the deduction of consequences from them,” referred to earlier as $q$, “in order to arrive at beliefs which – although they are hypothetical – are well supported, through the way their deductive consequences fit in with” or are, as referred to earlier, consistent with “our experiences and with our other well-supported beliefs.” Føllesdal continues: “The beliefs that make up such a hypothetico-deductive system are not justified ‘from above,’ as they are in an axiomatic system, where the axioms are supposed to be justified by some special kind of insight or necessity. Instead, they are justified from below, through their consequences,” referred to earlier as consistent observations in the form of $q$. “In a hypothetico-deductive system, the hypotheses are never known with certainty. From a system of hypotheses an infinite number of consequences follow and there is always a risk that some of these consequences may turn out not to fit in with our experience,” referred to earlier as the need to continue empirical testing *ad infinitum*, at least in principle, until contradictory facts appear, whereupon the hypothesis would need to be revised.

Then, in contradistinction to those who might insist that hypothetico-deductive logic may pertain only to positivist science, Føllesdal offers a refutation in the form of hermeneutic interpretation using hypothetico-deductive logic in an example of literary criticism of Henrik Ibsen’s *Peer Gynt* (p. 324):

The pattern of this interpretation is clearly hypothetico-deductive. One sets forth an hypothesis [$p$], that the strange passenger is Ibsen the author himself, and then deduces a number of consequences [$q$] from it, that are shown to fit in with [i.e., are consistent with] the text.

Føllesdal adds (p. 331):

As we saw in the example from Peer Gynt, one proceeds, however, hypothetically-deductively when one uses the hermeneutic method, and instead of contrasting the two methods [“explaining” as in the natural sciences and “hermeneutic” as in the social sciences], we have found it natural to say that the hermeneutic method is the hypothetico-deductive method applied to meaningful material.

Hirsch is no less a proponent of the use of hypothetico-deductive logic in hermeneutics than is Føllesdal. He states in his book, *Validity in Interpretation*, “the hypothetico-deductive process is fundamental in both of them [the sciences and the humanities], as it is in all thinking that aspires to knowledge” (1967, p. 264, cited in Packer and Addison 1989, p. 276). Hirsch also states (1967, pp. 203–204, cited in Packer and Addison 1989, p. 276): “The act of understanding is at first a genial (or a mistaken) guess,” which corresponds to the previous exhortation for a researcher to wholeheartedly embrace the presence of his or her preconceptions and presuppositions, all in the spirit of accepting that they provide a mere starting point in the researcher’s quest for the text’s meaning, “and there are no methods for making guesses, no rules for generating insights.” Hirsch continues:

The methodological activity of interpretation commences when we begin to test and criticize our guesses. These two sides of the interpretive process, the hypothetico-
Allen S. Lee

and the critical, are not of course neatly separated when we are pondering a text . . . But the fact that these two activities require and accompany one another in the process of understanding should not lead us to confuse the whimsical lawlessness of guessing with the ultimately methodical character of testing.

“The hypothetical” refers to the formulation of the hypothesis $p$ in modus tollens’s major premise, “if $p$ is true, then $q$ is true.” “The critical” refers to the search for instances fitting the minor premise “$q$ is not true,” the absence of which may never prove $p$ to be true, but only at best to provisionally qualify $p$ as valid; elsewhere Hirsch notes: “Since we can never prove a theory to be true simply by accumulating favorable evidence,” which would be committing the fallacy of affirming the consequent, “the only certain method of choosing between two hypotheses is to prove that one of them is false” (1967, p. 180). Hirsch emphasizes, “there is no way of compelling a right guess by means of rules and principles. Every interpretation begins and ends as a guess, and no one has ever devised a method for making intelligent guesses” (p. 170). Where every theory, hypothesis, and interpretation is a guess, the guess must therefore, after formulation, be subjected to testing, the manner of which is described by Hirsch, as well as Føllesdal, as hypothetico-deductive.

Agar, like Føllesdal and Hirsch, adopts a logic that is hypothetico-deductive, but unlike them, does not label it explicitly as such. In his description of how ethnographic understanding proceeds, he refers to “coherence,” “breakdown,” and “resolution,” which he ties together with what he calls “strips.”

Agar bases his notion of coherence on the work of Schutz, whose work we earlier referred to. Agar states (1986, p. 25):

From Schutz we get an elaborate description of coherence. It requires the reflective examination of an action as an act, whether distantly observed or shared as lived experience with informants. The act is coherent if it fits into a plan that we imagine it might have been a part of, where plan is a cover term for an organization of goals and frames.

A breakdown, in turn, is described by Agar as follows (1986, p. 20, emphasis in the original): “When the different traditions are in contact,” which refers to the traditions of the people being observed and the traditions of the observing ethnographer, “an ethnographer focuses on the differences that appear. Expectations are not met; something does not make sense; one’s assumption of perfect coherence is violated. For convenience, the differences noticed by an ethnographer are called breakdowns.” In other words, a breakdown occurs in my empirical investigation whenever I, in my role as a researcher, observe organizational members or other research subjects acting in a way that would be incoherent from the perspective of the traditions that I, as a researcher, hold. For example, as an information systems scholar who propounds the rationality of the procedures of systems analysis and design, I would regard the refusal of managers to use an information system – one that they previously agreed satisfies all the formally documented information requirements – to be incoherent from my perspective, leading to a breakdown in my understanding. This would qualify as an apparent absurdity (for Kuhn), as an apparently irrational behavior (for Kanter), and as a breakdown – “something [that] does not make sense” where the researcher’s “assumption of perfect coherence is violated” (for Agar).

A resolution involves the restoration of coherence, which occurs as follows. “Ethnographic coherence, in brief, is achieved when an initial breakdown is resolved by changing the
knowledge in the ethnographer’s tradition so that the breakdown is now reinterpreted as an expression of some part of a plan” (Agar 1986, p. 25). The ethnographer, or the interpretive researcher in general, performs this by no longer being beholden to her own preconditions and presuppositions about how people behave, and by instead building up her knowledge of the schema with which the observed people themselves understand their own world and with which they plan and engage in actions to achieve their own goals. Just as Kuhn asked how a sensible person could have written a passage initially appearing nonsensical to a reader (what would the passage mean to the author?), an interpretive researcher asks what schema would lead a sensible person to engage in the action initially difficult for the interpretive researcher to understand (what would the action mean to an observed person?).

With a new schema, the interpretive researcher continues making observations as well as reviewing old ones. For Agar, the unit of investigation for the purpose of checking for any additional breakdowns is called a “strip,” which could be “an observed social act,” “an informal interview,” “a more structured interview or experiment,” “a document of some sort,” or “any bounded phenomenon against which an ethnographer tests his or her understanding” (1986, pp. 27–28). A new schema stands until it meets a strip rendering it invalid, whereupon it is revised and stands until it meets a strip rendering it invalid, and so forth. Even in the event that a schema meets no strip rendering it invalid, the interpretive researcher may never claim that she has discovered the actual schema that the observed people follow; she may, at best, only claim that the schema she has constructed is consistent with the one followed by the observed people.

The logic that Agar uses is therefore hypothetico-deductive, where \( p \) refers to the latest schema and \( q \) refers to “any bounded phenomenon” that would be observable and that would follow from the schema \( p \). A schema’s never being proved true, but at best only being consistent with all the strips it has encountered so far, is an instance of the hypothetico-deductive stance that \( p \) may never be proved true, but may at best only be considered to be consistent with all of the \( q \)’s it has encountered so far.

Sarker and Lee (2006), in their hermeneutic study of business process change (BPC) tools in two organizations, provide material with which to illustrate how to assess the validity of interpretation using hypothetico-deductive logic. In these organizations, MANCO (a manufacturing firm) and TELECO (a telecommunications firm), what is the meaning of the BPC tools that were present? This question is not unlike, “what is the meaning of a hammer?,” posed in our earlier discussion on Heidegger, where we quoted Harman as stating: “For a dog, a baby, an ant, or a parrot, most of the hammer’s usual properties are not there at all, which shows that the presence of a thing is also determined by those who encounter it.” Likewise, Sarker and Lee interpret the meaning of the BPC tools in relation to the people (the business process redesigners) who encounter it in MANCO and TELECO. I will reconstruct, as hypothetico-deductive, Sarker and Lee’s hermeneutic reasoning for assessing the validity of their interpretations of the meaning that the BPC tools had for the people using them.

First, Sarker and Lee adopted, as a starting point, the preconceptions and presuppositions of the BPC academic and trade literature itself for the meaning of BPC tools (2006, p. 137, references suppressed):

Our preunderstanding, based on the BPC literature [both the academic and trade literature], was that computerized BPC tools (especially those for flowcharting/process-mapping and project management) enhance redesign effectiveness by providing: 1) a necessary structure to the complex redesign process involving multiple redesigners over an extended period of time; 2) cognitive support to the redesigners who are
overwhelmed by the amount of information and the linkages between them; and 3) a standardized/shared notation for representing business processes and other related information.

Where this preunderstanding of the meaning of the BPC tools can be designated as the antecedent \( p_1 \) in hypothetico-deductive logic, Sarker and Lee observed consistent observations at TELECO but inconsistent observations (i.e., \( \text{not } q_1 \)) at MANCO, where a key player discontinued her use of a “user-friendly and easy-to-learn” BPC tool and “team-members stated that the tools would not have made the redesign more effective” (2006, p. 138). The consistent observations at TELECO do not prove the interpretation \( p \) to be true (lest the fallacy of affirming the consequent be committed) and the inconsistent observations at MANCO lead to the conclusion \( \text{not } p_1 \), thereby requiring a revision in \( p_1 \), the interpreted meaning of the BPC tools.

Second, Sarker and Lee embarked with a new guess as to an improved interpretation, based on an “outburst” from a TELECO redesigner whom they quoted (2006, p. 138): “The problem is, if you have a tool, you become a slave to that tool . . . The business of producing and documenting was very cumbersome . . . we refined the hell out of this thing and toolsmithed it so many times, it was ridiculous!” Thus, Sarker and Lee moved away from \( p_1 \), the initial meaning of the BPC tools (based on the academic and trade literature), to \( p_2 \), a new interpretation of the meaning (based on practice) that “BPC tools have a negative effect on redesign effectiveness” (p. 138), which they noted was also possibly the case at MANCO. Still, given the weight of the academic and trade literature, Sarker and Lee felt that “the new interpretation that computer-based BPC tools have a negative effect on redesign seemed unsatisfactory,” where this observation is the minor premise \( \text{not } q_2 \) “and constituted an anomaly for us to explore further” (p. 138).

Third, again motivated by a remark from an organizational member, Sarker and Lee were inspired to make a new guess, this time that BPC tools need not necessarily have just either positive effects or negative effects, but could have positive as well as negative effects depending on contextual factors with “the ‘net’ direction of effects being dependent on the circumstances surrounding use” (2006, p. 139). In other words, Sarker and Lee were no longer interpreting the BPC tools as having an inherent meaning of good or bad, or useful or not, for the redesigners at MANCO and TELECO, but instead offering \( p_3 \), the interpretation that the meaning of these tools for the organizational members depended on the members themselves and the situations they found themselves in.

Fourth, Sarker and Lee returned to “two apparent absurdities that had emerged earlier” (2006, p. 139). The first one pertained to this: where \( p_4 \) is “the BPC tools do have (in certain circumstances) a positive influence on redesign effectiveness by providing structure, cognitive support, and standardized notation” and “Because structure, cognitive support, and notation become more relevant with increasing size [of the firm], it seemed sensible for us to assume that a larger BPC team (or a BPC team in a larger organization) would experience the benefits from using the tools” (p. 139). However, TELECO was, by far, larger than MANCO, where the BPC tools were largely not used after their introduction (hence, \( \text{not } q_4 \)). The second absurdity pertained to this: if “a respected member of the BPC team [at MANCO] had expressed, through the text ‘It would have provided us with some guidance,’ the need for a computer-based tool to provide support to the redesign process” (i.e., \( p_5 \)), then why was it that “MANCO had discontinued the use of the BPC tools that it had acquired” (i.e., \( \text{not } q_5 \))?

To resolve the former absurdity, Sarker and Lee

reached the interpretation [i.e., \( p_6 \)] that, even in large organizations that would seemingly require the use of computerized BPC tools, the distantiation and the resulting
designs [in a politicized redesign process] can outweigh the tools’ intended benefit, and even lead to harmful effects (which can include . . . depersonalization of the redesigns, “meaningless” changes being made, and frustration experienced by the redesigners).

(2006, p. 140)

To resolve the latter absurdity, Sarker and Lee posited the following interpretation ($p_6$) that the BPC tools had for the people using them: “in a smaller company such as MANCO whose employees enjoyed a cooperative working environment, there was no need to win justification for a redesign through formalizing or otherwise embellishing its appearance” (2006, p. 140).

Both $p_6$ and $p_7$ can be regarded as specifications of $p_5$, the interpretation that the meaning of the BPC tools for the organizational members can be “can be positive or negative, depending on the circumstances” (2006, p. 140) that the members themselves found themselves in.

Fifth, Sarker and Lee considered an additional interpretation (i.e., $p_8$) “that BPC tools should be used only in the early stages of the redesign or to satisfy bureaucratic requirements,” which would fit the situations at both MANCO and TELECO. However, Sarker and Lee quickly noted, “yet, many organizations (including ones that cannot be characterized as ‘bureaucratic’ have been reported to use the tools effectively throughout the redesign phase of their BPC initiatives” (i.e., not $q_8$). Sarker and Lee, after revisiting and analyzing remarks made by people in the two organizations, then revised their interpretation (i.e., $p_9$) as follows: “The interpretation that now emerged was that decisions to use BPC tools, and their beneficial or harmful effects, are dependent on the political and organizational-culture context of their use” (2006, p. 140, emphasis in the original). The last interpretation that Sarker and Lee offered was consistent with all of the earlier observations they considered (i.e., “strips,” in Agar’s terminology), including the comments of the organizational members.

In essence, Sarker and Lee treated the people at MANCO and TELECO much as if, regarding the earlier Heidegger example, they were persons who are from a tribe that has had no contact with the rest of the world and who come into contact with the podium, or BPC tools, for the first time. Sarker and Lee investigated the meaning of the podium/BPC tools for these people. Always accepting that the people were acting in ways that they themselves would consider sensible, Sarker and Lee formulated guesses to interpret the meanings the BPC tools had for the people at MANCO and TELECO and used hypothetico-deductive logic to test the goodness of their interpretations.

Discussion

Some points require elaboration. Is the phenomenological reduction, as earlier described, necessary? What is the relation between meaning and theory in interpretive research? And is hypothetico-deductive logic compatible with interpretive research?

First, Sarker and Lee demonstrate how to interpret meaning, just as do Kuhn, Kanter, and Agar, all without mentioning the phenomenological reduction. This, however, does not mean that the phenomenological reduction is unnecessary; instead, it means that an interpretive researcher, following Sarker and Lee, Kuhn, Kanter, and Agar, nonetheless strives for the “pure essence” of what the observed people mean through the interpretive researcher’s successively testing – and therefore successively examining and eliminating – his or her previously “unexamined preconceptions and presuppositions,” where this successively applied method aims for each iteration of testing to achieve an interpretation closer to what the observed people mean. The phenomenological reduction can thus be achieved even if it is not explicitly named.
Second, an interpreted meaning alone is not a theory, but it may be a part of a theory. One plausible conception of interpretive theory is that it is theory which delineates the social structure and the culture for the people being studied; Lee and Hovorka offer this description of social structure and culture (2015, p. 4922):

A particularly clear form of social structure is kinship structure [which consists of] a durable collection of roles, of the relationships between them, and of “the rules of social life” (Giddens 1984, p. 21) pertaining to roles and relationships throughout the structure. Different rules are associated with different roles, where knowledge of the rules are shared by all members of the kinship structure, and where the shared knowledge forms the core of the group’s culture. Such rules can pertain to, among other things, what a role allows or enables its occupant to do, as well as what two different roles allow or enable their respective occupants . . . to do with respect to each other.

Culture, as such, also refers to the body of shared meanings within the social structure, such as the meanings of routine social actions engaged in by members of different roles as well as the meanings that can be ascribed to certain artifacts (such as a podium or a hammer). A theory about how a technology diffuses throughout a group of people, for instance, would consist of not only a collection of interpreted meanings that the people have for their social actions and technological artifacts, but also propositions built upon these meanings, such as “a necessary condition for the use of a technology to diffuse among the people in this organization is that the people experience no irremediable conflict in the political and organizational-culture context of the technology’s use.” In other words, there is a long distance to be traveled from the point of merely interpreting meaning, which has been the focus of this chapter, to the point of having built and tested a theory.

Third, the hermeneutic interpretations performed by Sarker and Lee, Føllesdal, and Hirsch all constitute proofs by demonstration that hypothetico-deductive logic is compatible with interpretive research. There exists the perception among some that positivist research has a monopoly on logic; however, logic was already in existence long before positivism was even conceived. Furthermore, symbolic logic, which is the home of modus tollens and hypothetico-deductive logic, is a part of the discipline of philosophy, which is one of the humanities. In this sense, interpretive research is not so much appropriating as it is rightfully re-appropriating hypothetico-deductive logic.

Conclusion

The question – what makes interpretive research interpretive? – is important because meaning is problematic. It is not easily observed. Its interpretation is a calculated effort. Just as the observation of numerical data can benefit from the support of instrument development and other methods, the observation of meaning can benefit from the support of interpretive methods, which may include those shared by Casebier, Kuhn, Kanter, and Agar, as well as the support of underlying philosophies, such as those of Husserl, Heidegger, and Schutz.

The question – how is interpretive research valid? – is important because the interpretation of meaning is not arbitrary. Not all interpreted meanings are necessarily good, much less valid. Science, which includes interpretive research, requires the criterion of validity. Hypothetico-deductive logic, through which validity can be demonstrated, is no less applicable in the human sciences than in the natural sciences, as clarified by Hirsch and Føllesdal and as illustrated with the work of Sarker and Lee.
Both questions are especially important for the conduct of research in the information systems discipline because, ultimately, all information systems are systems of meanings. And to proceed, research on systems of meanings requires the meanings to be interpreted and the interpretations to be valid – where these include not only the meanings of technological artifacts, but also the meanings that the technological artifacts can be used to create and convey.

Finally, one may define interpretive research in any way that one wishes, but to live up to its name, interpretive research needs to be interpreting something. In this chapter, I have defined it as research that involves the interpretation of meaning. I look forward to insightful examinations of what else interpretive research may be framed as interpreting, such as action, culture, artifacts, rules, and beliefs.

Note
1 Agar defines action as “the lived experience of the actor at the time of its doing” and act as “a reflectively contemplated action” (1986, pp. 24–25). Using Schutz’s terminology from earlier in this chapter, we may describe an action as the correlate in the outer world and the act as the intentional object.

References


