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The nature and limits of interactive communication: A philosophical analysis

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Abstract

In many modern study programs, teachers and students communicate via internet and other interactive communicative channels. What is the essential nature of this communication? How does interactive communication differ from ordinary face-to-face communication in the most fundamental sense? The article uses conceptual analysis as a philosophical method to explore the intrinsic nature of the concept interactive communication. The aim of this method is to develop a concept definition that matches shared linguistic beliefs about informative examples from internet based communication and information exchange that is central in electronic teaching courses. The article examines several concept definitions and argues in favor of a philosophical information processing analysis of interactive communication. The significance of this analysis has two dimensions. First, it can give teachers and others who are involved in interactive communication a better understanding of the essential differences between interactive and face-to-face communication. Second, the analysis can stimulate pedagogical and critical reflection on the nature and limits of internet based communication and electronic teaching tools.

Keywords: interactive communication, electronic information exchange, conceptual analysis, information processing systems, philosophy of mind and language, communication and electronic teaching tools.

Introduction

The most fundamental and basic human communication process is ordinary face-to-face communication, but new technology has widened the scope of human information exchange to a radical extent. Nowadays, senders often convey information to audiences through communication channels that are *interactive*.[i]

In one sense we all know what this communication involves. Typical interactive communication channels include e-mail, ordinary phone calls, radio transmitters and well-known internet teaching programs like 'It's Learning' and 'Fronter'.[ii] However, pointing to such paradigm examples does

not give us a more fundamental understanding of the concept *interactive communication*. That is, the different paradigm cases cannot tell us how the general, abstract concept should be defined. If it is possible to formulate a general definition of interactive communication, we can use that definition to achieve more substantial knowledge of the nature and limits of this phenomenon. In short, the definition can help us to understand, in a more philosophical sense, what we are doing when we are involved in interactive communication.

The aim of this article is to use conceptual analysis as an *a priori* philosophical method for evaluating general definitions of interactive communication. The idea will be to formulate hypothesized definitions and then compare these definitions with robust beliefs we have about illuminating 'test cases' (Putnam 1962; Burge 1979, 1986; Harman 1999). Most of the cases will be from electronic and digital communication, and I will especially focus on internet based communication that is central in modern electronic teaching programs. The aim will be to show how reflection on this form of mediated communication can give us a clearer understanding of the abstract meaning we typically attach to the term 'interactive communication'. Conceptual analysis, in a fundamental sense, seeks to clarify a central core of an understanding that is 'hidden' in our common language (Boghossian 1996; Boghossian and Peacocke 2000; Williamson 2005; Peacocke 2006).

The next section explains why a general definition of interactive communication can be fruitful for researchers, teachers and others with a relevant pedagogical interest. The third section presents and clarifies the method of conceptual analysis. The fourth and fifth sections use this method to examine various definitions of interactive communication. I will argue that all the definitions face one of two problems. They either exclude forms of communication that should fall under a proper definition of interactive communication, or they include phenomena that should be excluded from the definition.

The sixth section presents a philosophical information processing analysis that avoids the problems the other definitions face. The basic idea in this analysis is that interactive communication must happen through a mediating information processing system – a system that transforms a sender's message into an internal coded language that is translated back to an audience at the other end of a mediating communication channel. I will conclude that the information processing analysis constitutes a promising starting point for discussing interactive learning and communication, and that it can have an important role in research, critical analyses and public discourse.

Why do we need a general definition of interactive communication?

Why not simply define the concept *interactive communication* as communication that does not involve an ordinary face-to-face encounter between (at least) two communicators? The problem with this definition is that it does not tell us much about the meaning of the concept unless we explain what face-to-face communication is. If we go on to define this as 'communication that is not interactive', the problem re emerges: The explanation becomes circular in the sense that it takes knowledge of the meaning of the expression we are trying to define for granted in the explanation (Quine 1960, 1985; Boghossian 1996; Devitt & Hanley 2006). What we need is an explanation that gives us a more robust understanding of the term 'interactive communication' in the first place.

Many attempts to elucidate conceptual content in a non-circular way have been pursued in philosophy of mind and language (Ludlow 1997; Nordby 2004; Dewitt & Hanley 2006). Ever since Kant and his well known claim that

it is possible to formulate *a priori* meaning definitions like 'A bachelor is an unmarried man' or 'Water is H20', philosophers have attempted to define controversial and disputed concepts to clarify their application conditions (Putnam 1962; Quine 1985; Burge 1979, 1990; Boghossian 1996; Boghossian & Peacocke 2000).[iii]

An attempt to analyse the concept *interactive communication* falls under this general strategy. The aim of an analysis of interactive communication is to develop a definition that gives us a more substantial, general understanding of what the concept applies to. Such an understanding can be important for many reasons, but two should be highlighted. First, the analysis can improve our epistemological, critical and pedagogical perspectives on the phenomenon of interactive communication. Many discussions of the nature and limits of electronic information exchange aim to focus on interactive communication on an abstract level. That is, the discussions are not merely concerned with a particular form of interactive communication, like communication via e-mail or mobile phones. Instead, they attempt to say something about interactive communication in general. But on this general level – when one quantifies over varieties of interactive communication – it is important to have a clear idea of the abstract phenomenon one intends to talk about (Nordby 2006a). A general definition of interactive communication would make it clear what this phenomenon is.[iv]

The second reason why it is important to elucidate the concept of interactive communication is methodological. In theoretical and practical discourse about human relations, people often use words like 'communication' without explaining it. Obviously, if there was good reason to believe that we all understood the concept *interactive communication* in exactly the same way, it would be unnecessary to clarify a general concept that could function as a shared conceptual platform. But 'interactive communication' is not an expression with sharp, explicit boundaries - it is not an expression that speakers will define in exactly the same way. Furthermore, it is not a 'producer-consumer' concept - it is not an expression that has a clear standard 'professional' meaning that laypeople normally are willing to defer to (Putnam 1975; Burge 1979; Nordby 2004, 2008).[v]

In sum, interactive communication is a vague concept that is explained in different ways in various 'language-games' (Wittgenstein 1953), and vague concepts are laden with ideologies, values and idiosyncratic associations (Habermas 1990; Nordby 2006, 2008). Researchers who think they disagree about facts about interactive communication, may in fact talk past each other if they do not associate the term 'interactive communication' with the same meaning. Thus, if there was a shared definition, the probability of misunderstanding in theoretical and practical discourse would be reduced.

One way to develop a definition would be to start out with theories of interactive communication, or of communication in general, and then explore how these theories can shed light on the content of the concept of interactive communication. The obvious problem with this strategy is that theoretical terminology is not necessarily based on a shared understanding that speakers of our language have (Burge 1979; Putnam 1975). In other words, there is a significant risk that a theoretical definition would be too narrow in the sense that it would not match ordinary discourse. It would not be a definition that people would defer to.

This does not mean that the aim of an analysis of interactive communication should be to capture all the various associations that speakers attach to the term 'interactive communication'. The diversity of understanding implies that this aim cannot be achieved. A more promising strategy is to attempt to capture what Peacocke (1998) calls a shared 'implicit conception'. This would be a common element in our ordinary use of the term, an underlying central

core of an understanding that most speakers of our language typically have (Burge 1979, 1991; Davies 2004; Williamson 2005).

The justification for holding that such an analysis of the meaning of *interactive communication* should be used in theoretical and practical discourse is not that it captures a reference to an objective reality. The reason is easy to understand: The way we understand a language expression does not necessarily correspond to the aspect of reality we intend to talk about when we use the expression (Putnam 1962, 1996; Burge 1979, Kripke 1980; Peacocke 2006). Thus, our current conception of 'interactive communication' is not necessarily true. It is always a possibility that further reflection will lead us to revise our ideas of what the term refers to (Boghossian & Peacocke 2000).

However, this does not mean that an analysis of the meaning of 'interactive communication' cannot have normative force. On the contrary, if an analysis is grounded in ordinary language use, then it is *prima face* correct unless good reasons for revising it can be given. Compare an analysis that is grounded in ordinary language with an analysis that elucidates the meaning of 'interactive communication' in the light of a specific theory. The ordinary language analysis would give us a plausible explanation of what the expression really means, as far as we understand it (Putnam 1962, Burge 1979). But if it is argued that the theoretical analysis captures the correct meaning of the term in our common language, then it is necessary to provide further arguments for why this is so. The reason is that theoretical definitions of concepts tend to be disputed, and that many theories explicitly involve narrow, stipulative definitions of controversial concepts (Nordby 2008).

The strategy of elucidating the *general* meaning of 'interactive communication', on the other hand, has direct normative implications. If the strategy can help us to describe an implicit conception that is 'hidden' in our common language, then the description constitutes a plausible starting point in discussions of how the term *should* be used (Burge 1979; Boghossian 2000). In other words, insofar as the aim is to define a meaning of 'interactive communication' that is as theory-neutral as possible, it is natural to ground the definition in ordinary language use. In the next section I will explain how this aim corresponds to 'conceptual analysis' - a philosophical method for arriving at a clearer understanding of the public meaning of abstract concepts.

Method

Harman (1999) formulates the basic idea of conceptual analysis in an illuminating way:

> Typically, attempts at philosophical analysis proceed by the formulation of one or more tentative analyses and then the consideration of test cases. If exactly one of the proposed analyses does not conflict with 'intuitions' about any test cases, it is taken to be at least tentatively confirmed. Further research then uncovers new test cases in which intuitions conflict with the analysis. The analysis is then modified or replaced by a completely different one, which is in turn tested against imagined cases, and so on (Harman 1999, p.139).

The idea is as follows: First one might simply formulate a hypothesised definition of interactive communication. Then one turns to a set of real or counterfactual test cases, cases that are either clear (black) positive cases of interactive communication or (white) negative cases of communication that is not interactive. If the definition captures the positive and negative cases in the right way, then it is plausible. If it does not, it has to be rejected or modified to match the test cases.

Here the expression capturing 'in the right way' has two aspects. First, the definition has to state conditions that are sufficient for a communicative process to be interactive. For instance, if the definition says that it is sufficient that an interactive communicative process involves some property X, then a counterexample to the definition would be a case of interactive communication that does not have property X. The sufficiency part of the definition is secured by using the conditional 'if' in the form 'Event E involves interactive communication if X', where X states the proposed concept explanation.

Secondly, a proper definition has to state necessary conditions for communication to be interactive. If the definition says that it is necessary that the communicative process involves Y, then a counterexample - an example that is not captured by the definition – would be a clear case of interactive communication that does not involve Y. This necessity part of the definition is secured by adding an extra clause to the definition, of the form 'Communication is interactive communication if and only if Y.' By using 'if and only if', the definition makes it clear that there are no other ways interactive communication can happen, than the way specified by the description Y.

It should be emphasised that this requirement about necessary and sufficient conditions is consistent with different ways of conceiving of the general nature of definitions. For instance, the requirement does not imply that the definition has to be essentialistic, that it has to capture an intrinsic essence of a state, object or event (Kripke 1980; Putnam 1996). The reason is easy to understand: All definitions attempt to state necessary and sufficient conditions for something to fall under a defining description. But it would be unreasonable to hold that this means that all definitions have to be essentialistic.

A further methodological point that should be mentioned is that a definition that captures a set of test cases is not necessarily correct. Comparing a concept definition to new cases is a dynamic, holistic process (Boghossian 1996, Boghossian and Peacocke 2000; Williamson 2005; Nordby 2007). The idea is similar to the basic assumption in hypothetical deductive method. A hypothesis is strengthened when it is support by a limited number of observations. But a limited set of observations can never verify a general hypothesis. The clue to acknowledging this logical fact is to make a distinction between justification and truth. A definition of interactive communication is justified when we have not (so far) been able to falsify it, just as many observations of white swans justify the hypothesis that all swans are white. However, we can never be certain that we have excluded all possible counterexamples.[vi] But as Popper famously emphasised, justification is a valuable epistemic notion even though it is no guarantee for truth (Popper 1972; Chalmers 1999).

This is an important point, since some think that there is something dubious about *a priori* philosophical methods like conceptual analysis (Harman 1999). But this would be to misunderstand the nature of philosophical 'armchair' methodology (Davies 2004; Williamson 2005). Conceptual analysis is not a safe test, but an ongoing process in which we use our imagination and empirical knowledge to look for real or possible counterexamples to a formulated concept definition (Boghossian 1996; Williamson 2005). If a counterexample undermines a proposed definition, we should simply attempt to develop a new and improved definition.

Furthermore, the aim of conceptual analysis is not to uncover an aspect of a language-independent reality. The method is restricted to the 'level of language' - the aim is to capture the meaning of words we use to talk about the world around us. Epistemic questions about our access to a reality

'beyond language' fall outside the scope of conceptual analysis (Nordby 2006b). This means that the method is consistent with classical realism – the idea that there exists an external world that is independent of our beliefs about it (Boghossian 2007). But it is also consistent with anti-realism – the view that we do not have access to a world that exists independently of the human mind (Boghossian 2007).

In a similar way, the method of conceptual analysis is consistent with different theories of the nature of language. Is a language a fixed structure with clear boundaries? Or is it much more fluent and dynamic, a system of what Wittgenstein would call different 'language games' with a 'family resemblance'? These questions are relevant for deciding how speakers qualify as 'speakers of a language', and thus for deciding how a concept definition should attempt to capture a variety of linguistic beliefs (Peacocke 1998; Peacocke 2006). However, it would involve a misunderstanding to argue that the method of conceptual analysis needs to provide final answers to these questions. The method can rely on an intuitive conception of what it takes to master a common language. Insofar as the aim is to capture an understanding that many speakers have, the method can adapt itself to different views about 'borderline' cases and what it takes to qualify as a speaker of a language (Burge 1979; Putnam 1996). The aim is to capture a set of widely shared judgements, and specific theories of language mastery are not needed to determine whether this condition is met.

It is important to remember that a definition of interactive communication that is grounded in a set of shared judgements is more valuable in public discourse than a narrow stipulative definition, designed to match an idiosyncratic, contextual understanding. The aim should therefore be to develop a concept definition that captures a common, ordinary usage of the term 'interactive communication' – a definition that is *prima facie* plausible until the opposite is shown. Burge formulates the general point in an illuminating way: "Of course, ordinary usage of language is not sacred if good reasons for revising it can be given. But [in the case of conceptual analysis] none have been" (Burge 1979, p 102). Insofar as we are searching for the meaning of our common language, we have no choice but to focus on ordinary language use (Nordby 2007). [vii]

This does not mean that ordinary judgements of how the term 'interactive communication' applies are not shaped by theory. On the contrary, theoretical considerations often underlie linguistic intuition (Quine 1985; Boghossian 1996; Harman 1999). Of course, if speakers' theoretical perspectives are very different, then this will influence particular judgements, and divergent judgements cannot be used to support a general meaning definition. In the literature, disputed concept applications shaped by different theories are often called 'grey' applications (Worhall & Worhall 2001; Nordby 2006).[viii] Grey cases cannot be used to reject or confirm a general definition.[ix] The method of conceptual analysis presupposes that there is a sufficient degree of agreement among competent speakers of our language (Burge 1979; Nordby 2007). In our discussion here, the aim is to see how far shared beliefs about particular applications of 'interactive communication' can help us to evaluate definitions. In the next sections I will argue that they can help us a long way.

Preliminary definitions

We can begin by considering a simple definition of interactive communication, just to illustrate the method of conceptual analysis.

> Definition (i). Two people are involved in interactive communication if, and only if, they do not see each other when they communicate.

Face-to face communication would then be defined negatively, as communication involving communicators that actually see each other when they communicative. All the definitions of interactive communication I will discuss in this article have a face-to-face version – a negation of the (positive) definition of interactive communication.

Definition (i) might fit many cases we have robust positive intuitions about, but it is not difficult to find problematic test cases that undermine it. Consider the following example: Two persons are standing on two mountain tops about three kilometres away from each other. Each is merely a black spot to the other. They can, however, see each other, and they are talking via mobile phones.

Remember that the method of conceptual analysis requires that we do not find a counterexample to a proposed definition. The mountain top scenario is a counterexample to Definition (i). This is definitely a case of interactive communication since the communicators are communicating via mobile phones. However, they can see each other, and this means that Definition (i) has the unreasonable consequence that the mountain top case is not a case of interactive communication. The problem with Definition (i) is that the clause about necessary and sufficient conditions - the 'if and only if' clause as explained above - implies that two persons can never observe each other when are involved in interactive communication.

We need to refine Definition (i) to avoid the mountain top case and other possible counterexamples. So what if the definition claims that it is lack of observations of body language that is crucial?

> Definition (ii). Two persons who are communicating are involved in interactive communication if, and only if, they do not see the body language of the other person.

This avoids the problem that Definition (i) faced. The mountain top case now becomes, as it should become, a case of interactive communication since the two persons are unable to observe body language. But there are other problematic test cases. According to Definition (ii), communication between blind people is necessarily interactive, but this consequence is unreasonable. Two blind persons who are standing face-to-face and use ordinary verbal language to convey information are definitely not communicating interactively. As long as they can hear each other, this is face-to-face communication even though the communicators are blind.

Furthermore, there are clear cases of interactive communication that is not captured by Definition (ii). Consider internet based chat programs like MSN in which two persons who are sitting far away from each other can see each other via web cameras.[x] This is interactive communication in a very intuitive sense. The communication happens via internet, but the communicators can nevertheless see each other very clearly. They are, notably, able to see facial expressions and other bodily movements if the body of the other person is within the frame of the camera.

In other words, interactive communication can sometimes involve visual observation of body language. In some forms of interactive communication it is possible to use recording equipment to capture much more than the words that are used. Therefore, using the idea of lack of detailed observation to define the concept of interactive communication is a dead end – a strategy that cannot succeed.

What if we attempt to pin down the nature of interactive communication from another perspective? Some might suggest that it is the lack of physical closeness between communicators that defines interactive communication.

After all, in ordinary face-to-face communication people are normally close to each other, so this strategy might seem more promising. Furthermore, the initial 'mountain top' case and the 'web camera' case now fall down on the correct side of the analysis. Both become, as they should be, cases of interactive communication since the communicators are far away from each other. So consider the following:

> Definition (iii). Two persons are involved in interactive communication if, and only if, they are not physically close to each other when they communicate.

Definition (iii) avoids the problems we have identified so far. In includes, in particular, interactive communication in which observations over a distance are mediated through modern electronic technology. But there are two other problems with Definition (iii). First, two persons might sit close to each other but nevertheless communicate interactively by sending text messages or using the internet. Indeed, nowadays this is a quite widespread phenomenon. Using interactive communication channels can be a way of conveying information to a particular person without sharing it with other persons who are present physically.

Secondly, it is not clear that all communication over a distance necessarily is interactive. Two persons might be yelling to each other and exchanging information without using any kind of technology. Of course, one might attempt to exclude such cases by specifying that the distance between the communicators has to be very long, but this, at least, shows that Definition (iii) is inadequate as stated. It is necessary to say something more about what a sufficiently long distance is.

At this stage some might suggest that communicators are sufficiently far away from each other if they are unable to see each other face-to-face, but now we are once more begging the question. Our task is to explain what interactive communication is – granted that it is the negation of face-to-face communication. So we cannot take a short cut by assuming that we know what the meaning of the expression 'face-to-face communication' is. Such an analysis cannot yield a non-circular meaning explanation.

A better candidate?

The three definitions we have considered were preliminary analyses. The main aim has not been to arrive at plausible , substantial analyses of interactive communication, but to introduce the reader to the method of conceptual analysis. Hopefully, the discussion of the preliminary cases has illustrated how the method can help us to clarify our conception of the concept. This can be done on an individual level – it is possible for a person to formulate definitions and then compare them to what he regards as 'black' or 'white' test cases. But the method can also be used in collective practices – within a group of persons that seek to uncover a shared understanding.

The discussion so far has also shown that defining interactive communication is not as straightforward as we might think. We need to develop more subtle definitions to avoid counterexamples of the above kind. So what about this suggestion?

> Definition (iv). Two persons are involved in interactive communication if, and only if, they are communicating, but merely indirectly observable to each other.

Here 'indirectly' would mean that the observations are *mediated* through an information channel between the communicators. Remember also that

'observation' is a wide term. The indirect communication does not necessarily have to involve visual sense impressions.

The idea behind Definition (iv) is perhaps easier to grasp if we consider its negation – the definition of face-to-face communication that we now get. This definition says that face-to-face communication always happens directly; the language that a sender uses is accessible to an audience in an immediate, 'open' way. As already emphasised, this does not necessarily have to involve the use of verbal language or visual sense impressions. An audience can hear a sender, or even feel bodily movements directly.

Definition (iv) is more promising than the other definitions we have considered, but it is not satisfactory. An obvious challenge is to explain in more detail what 'indirectly' is supposed to mean. I said that the information must be *mediated*. A related concept is *lack of transparency* (Boghossian 1994; Nordby 2003). The idea would be that a sender's communicative behaviour cannot be transparent to an audience. This, I think, gives us some grasp of the essential nature of interactive communication. But it cannot be a sufficient understanding. If the crucial explanation of interactive communication turns on the use of the word 'mediated', we have not got very much further unless we explain what this word means. And it is by no means obvious what the relevant explanation should be. Consider sense impressions that are 'mediated' through ordinary spectacles or magnifying glasses. This kind of information processing has got nothing to do with interactive communication. It is therefore necessary to say something more about the meaning of 'mediated', in order to shed light on interactive communication as a narrow and specific form of communication.

Another way to put the same point is to say that 'mediated' needs to be explained in everyday terms, in a way that matches the meaning of 'interactive communication'. But there is good reason to assume that it is not easier to define 'mediated' than 'interactive'. The reason is straightforward: If these two words are synonyms – if they have the same meaning - then the task of explaining 'mediated' is, in effect, the same as the task of explaining 'interactive'. In general, two words with the same meaning must be explained in the same way (Quine 1953, 1985; Burge 1979; Boghossian 1996; Harman 1999). But then it becomes just as difficult to define 'mediated' as it was to define 'interactive'. We might therefore attempt to explain 'interactive' in self-explanatory terms right away. Using expressions that are supposed to be synonyms with 'interactive' to define 'interactive' simply shifts the problem as long as these other expressions must be explained.

Furthermore, it would not help to introduce theoretical terms like 'digital' interactive communication. The obvious reason is that it is far from clear that interactive communication has to be digital. Old fashioned telephone communication involve analogue signals, but it is nevertheless an intuitive form of interactive communication.

In sum, instead of focusing on other theoretical or technical terms that do not have clear everyday meanings that cover the phenomena we are interested in, we might just as well attempt to derive the definition of *interactive communication* directly from our understanding of the term 'interactive communication'. Focusing on other expressions that are supposed to mean the same does not help as long as these expressions are equally vague.

The information processing analysis

The problems we have located are twofold. Extensional problems are problems of getting the extension of the definition right – of including cases of interactive communication within the definition and excluding other forms of communication. For instance, Definition (i) faced an extensional problem

in the sense that the initial mountain top example became a case of face-to-face communication.

The other problems we located are intentional. These problems arise when it is unclear what the expressions in a concept definition mean (Burge 1979; Quine 1985; Harman 1999). We have not achieved conceptual clarification if the terms in the definition are just as vague as the target concept we are trying to define (Quine 1953). In my view, this is a problem that beset many explanations of theoretical and technical concepts in scientific discourse: The explanations are not easier to grasp than the concepts the explanations are supposed to clarify.

In our discussion here, definitions (i) - (iii) had obvious extensional weaknesses. Definition (iv) did not suffer from similar defects, but that was precisely because it faced intentional problems. The fact that the term 'indirect' did not have a clear relevant meaning, implied that Definition (iv) had no clear boundaries that we could compare test cases against. However, the idea of an indirect and mediating communication channel did not seem to be wrong in principle. If we can elucidate this idea so that it becomes clearer, it should be possible to arrive at a satisfactory definition of interactive communication.

I suggest that we can do this by making the analysis a bit more complex. Instead of talking about 'mediated information', we should focus on the idea of an information processing *system* (Putnam 1960; Davies 1994; Smolensky 1994, Cummins 1995). Spectacles or written messages on a piece of paper are not information processing systems. They do not systematically interpret and transform a sender's communicative actions into a set of internal signals that are translated back to an audience in the other end.

However, all the various forms of interactive communication tools involve this kind of interpretation and translation. Phones, computers and radios are systems with a digital or analogical language that matches the language that is sent in and sent out. The inputs are patterns of voices or punches that are broken down into signals that have their own processing codes as an 'internal language'. These signals are then translated back in the other end as 'output', in a language that the audience is supposed to understand. So the input is not only transmitted. It is processed in the sense that it is systematically *computed* within the system (Smolensky 1994; Fodor 1978, 1998).

In fact, an information processing system can be understood as a similar to a cognitive model of mental representation in humans (Davies 1994; Smolensky 1994). In the most basic form, the classical idea is that the mind is a system that involves a perceptual 'input' that is systematically processed in a way that yields a concept in the other hand (Guttenplan 1994). This idea goes back to philosophers like Locke and Descartes, and it continues to shape theories within philosophy of mind and cognitive science (Guttenplan 1994; Lycan 1999). To illustrate how the traditional model works, Cummins (1999) uses the idea of a TV-camera as a metaphor for visual perception:

> When the TV-camera is pointed at something, a percept is produced. Percepts are fed into a sorter, which compares them with a stack of master cards called abstract ideas or concepts. When a percept matches a concept ... [the system] ... displays the term written on the back of the concept. Any word can be written on the back of any concept; that is a matter of convention. But once the words are printed on the concepts, everything else is a matter of physics. Concepts, of course, can have control functions other than the one just described, and percepts needn't be visual (Cummins 1999, p.37).

For instance, if my attention is directed towards a cat, then a cat percept is normally produced. The idea is then that this percept will be processed and eventually match the specific concept that prints out the word 'cat' in the

other end.[xi] In other words, what makes a given concept the cat-concept is the fact that it is the concept that is picked out just by percepts of cats. And in the first place, "what makes something a percept of a cat is just that it has some features (some pattern of punches) that percepts come to have in the information processing system when, only when, and because the system is in perceptual contact with a cat" (Cummins 1999, p.37).

The same idea can be applied in an information processing analysis of interactive communication. Thus, I suggest that the characteristic nature of interactive communication is as follows:

> Definition (v). A communicative process is interactive if, and only if, it involves an information processing system between a sender and an audience.

The key difference between Definition (v) and an information processing analysis of human mental representation is that Definition (v) focuses on interpersonal communicative relations. Generally, for an interpersonal relational process to involve communication it has to involve someone who has the *intention* of conveying a message to someone else. This is the crucial idea in Definition (v): The information processing system has to lie *between* the communicators.

Implications

Interactive communication, as described in Definition (v), can happen in two ways. In *immediate* information exchange, information goes directly from a sender to an audience without any significant time delay. That is, the sender has the attention of the audience there and then, and there is no significant time span between the moment the sender expresses his message in some form of language, and the moment the audience receives it. Phone calls and internet based chat programs are paradigm example of immediate, interactive communication.

Delayed interactive communication, on the other hand, involves information that is stored for a certain amount of time before it reaches the consciousness of an audience. In this kind of interactive communication senders enter messages that in some way or other is saved in the information processing system, and then transmitted to the audiences when they gain access to the informational content. E-mail is the paradigm example of this kind of communication. We often read our electronic mail some time after it has been sent.

Communication conditions are basic conditions for successful communication (Nordby 2006a). Many of the same fundamental communication conditions are relevant in immediate and delayed interactive communication. It is for instance necessary that the message that a sender intends to convey to an audience actually reaches the consciousness of the audience (Nordby 2006a).[xii] This communication condition about *attention* can be met in two ways. The sender can have the attention of the audience there and then, but the message that is expressed can also reach the consciousness of the audience after some time.

In other words, it is not the time it takes to communicate a message that matters. The crucial condition is whether the audience gets the message within the time the sender intends it to be received and understood. If I send an e-mail late at night I will not, normally, expect my audience to read it before the next day. But if the e-mail is not read at all, then the communication condition about attention is not met. Similarly, if my audience reads my e-mail after a week, and if I assume that it is read within one or two days, then my communicative intentions are not fulfilled.[xiii]

The fact that Definition (v) analyses interactive communication in a way that makes fundamental communication conditions relevant for determining whether the communication is successful, is a virtue of the information processing analysis. Another virtue of the analysis is that it is neutral with respect to how the philosophical concept of information should be understood. To see this, consider two very different and influential models of informational content. One is the causal network model, inspired by traditions with functionalistic psychology (Lycan 1999; Fodor 1998). According to this model, information is events in causal networks that are defined by their function. In short, if an event has a certain function of transmitting information, then it has informational content that corresponds to that function (Davies 1994; Cummins 1999). The idea that it is causal role that determines informational content in computers and other information processing systems has traditionally been called 'machine functionalism' (Putnam 1960; Guttenplan 1994).[xiv]

Quite another model of information is the atomistic model of informational content according to which conceptual content is defined by extension (Fodor 1998). The central idea here is that the information a concept carries is determined by what it refers to in the world. For instance, the concept *dog* is not defined by its function but by its reference – it is the concept *dog* in virtue of referring to nothing but dogs. Concept identity becomes a 'vertical' relation between mind and world that exists independently of the concept's relation to other concepts. This means that "satisfying the necessary conditions for having one concept never requires satisfying the metaphysically necessary conditions for having any other concept (Fodor 1998, p.13-14).[xv] An atomist is opposed to Wittgenstein's holistic idea that the concept that a word expresses is determined 'horizontally' on the level of thought, that "the meaning of a word it its use in language" (Wittgenstein 1953, p. 20).

It would fall outside the limits here to discuss these positions in detail.[xvi] The important point is that Definition (v) is compatible with different theories about the nature of informational content. It is neutral with respect to how the concept of information processing should be understood, so it does not matter that philosophers and cognitive scientists have understood this concept in different ways. For the purposes of formulating a practical definition of interactive communication, these theoretical distinctions are not crucial.

In sum, Definition (v) gives us something robust to focus on. It is not easy for those who are engaged in interactive communication as teachers, researchers or simply practitioners to understand what this phenomenon really is. The information processing account can make it clearer to us what we are doing when we are involved in interactive communication. The method of conceptual analysis gives us a methodology for critical reflection, and I have argued that the information processing account constitutes a plausible starting point for further discussion.

In these discussions, the most important aspects of conceptual analysis should be remembered. First, insofar as the aim of conceptual analysis is to capture the meaning of language, questions about knowledge, justification and our cognitive access to a language-independent reality are not directly relevant. Issues of communication and understanding are first and foremost semantic, not epistemic.

Second, I have emphasised that the method of conceptual analysis does not have to presuppose universal agreement about the application-conditions of the concept that 'interactive communication' refers to. The process of elucidating the nature of the concept is an ongoing, dynamic process grounded in linguistic intuitions among competent speakers. Of course,

questions about 'grey case', linguistic competence and the limits of language can sometimes arise. But this cannot undermine the main idea: *Prima facie*, a meaning definition that is accepted by persons who clearly qualify as speakers of our language should be regarded as a plausible definition. Further reflection and intuitions of other speakers might lead us to revise the definition, but that is simply part of the whole process.

Third, it would involve a misunderstanding to criticize the method of conceptual analysis for not giving us a critical perspective on interactive communication. The aim of the method is not to give us a detached, critical perspective, but to elucidate what we mean. Of course, we might ask critical questions about a meaning definition, but that would be further questions. Conceptual analysis focuses on the first and most fundamental stage – what we mean to talk about in the first place. We need to know this, even when our goal is critical.

Finally, the aim of the analysis is to find a shared meaning that can be used in theoretical and practical discourse. This means that it would be wrong to start out with a narrow theoretical definition of interactive communication. If the starting point is a theory, it is necessary to provide further arguments for why the theory captures a common understanding. In other words, it is necessary to show that the definition matches a widely shared understanding. Again, what one needs is a conceptual analysis in the first place.

Conclusion

The aim of this article has been to introduce the reader to the philosophical method of conceptual analysis and to use this method to develop a definition of interactive communication. This has been done in a dialectic manner. By examining different definitions and identifying their weaknesses we ended up with an information processing analysis. The basic idea in this definition is that messages have to be processed in information processing systems, located between senders and audiences in communicative relations.

As emphasised in the methodology section, correspondence between a concept definition and a set of test cases does not prove that the definition is true. So we have no guarantee that it is impossible to find further test cases that undermines the information processing account. However, claiming that this fact deflates the significance of the definition involves a misinterpretation of the method of conceptual analysis. It is not a safe guarantee for truth, but a method that can broaden our horizons and yield semantic insight in a holistic, dynamic manner.

It would also be a misunderstanding to criticize conceptual analysis for not being based on objective 'data'. Conceptual analysis is not a natural science method, but a conceptual tool that can be used to develop and gradually improve a dynamic and hermeneutical understanding in individual and collective practices. It therefore provides a useful tool for trying to understand what we all aim to talk about in discourse about interactive communication.

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[i] In this article I will, for the sake of simplicity, often focus on the communicative relation between one sender and his audience. It will be easy to understand how the arguments generalize to relations involving several senders and audiences made up of more than one person. It should also be emphasized that I do not mean to focus merely on 'one way' communication. I will assume that senders become audiences when audiences become senders and attempt to communicative something in return. In other words, the analyses I will develop apply to authentic 'two way' communication.

[ii] See http://www.itslearning.com and http://www.fronter.com

[iii] For an illuminating discussion of Kant's original arguments, see Harman (1999).

[iv] Of course, one might attempt to rely on an intuitive conception of interactive communication, and this will surely do for many purposes. But if the boundaries of the concept are defined, the clarity of the discussions will be improved. This point is valid not only in written academic discourse, but also in more or less informal and public discussions.

[v] Two kinds of typical 'producer-consumer' concepts are natural kind concepts and basic medical concepts like 'cancer', and 'inflammation'. When confronted with 'specialists' who have a very good understanding, laypeople will normally defer to the explanations they get (Nordby 2004, 2008).

[vi] A limited set of observations of white swans cannot verify the hypothesis that all swans are white. Believing that verification is possible involves a logical mistake

[vii] It should for the same reason be emphasized that conceptual analysis does not presuppose a sharp distinction between empirical questions and robust .meaning correlations (Boghossian 1996). Empirical facts about the term 'interactive communication' that is used in different ways – even new ways - can perfectly well be part of the basis for a definition.

[viii] This terminology is often used in conceptual analyses of controversial basic health concepts like the concept *disease*. Multiple sclerosis, fibromyalgia and chronic fatigue syndrome are often conceived of as grey cases of disease (Nordby 2006b).

[ix] But grey cases can support an analysis in a more indirect way. If a grey case really is vague – if it should be vague - then a plausible concept definition should leave it vague. In this more subtle sense concept definitions may sometimes be tested against grey cases.

[x] See http://www.msn.com

[xi] If the language I use to think about cats is Norwegian, the word will be 'katt'. In other words, the linguistic structure of the word that is 'printed out' will depend on the language that the thinker possesses.

[xii] Another crucial communication condition is that senders and audiences must have acquired the same concepts. Successful communication presupposes a platform of a shared language (Nordby 2006a).

[xiii] This example illustrates a point that has not received sufficient attention in theoretical analyses of interactive communication. Successful communication does not merely presuppose that a message reaches the consciousness of an audience. It also has

to reach the audience within a period of time that corresponds to the sender's intentions about time. We can think of such time-relative intentions as second order communicative intentions. First order communicative intentions are basic intentions that messages will be received and understood.

[xiv] The idea is that a computer program can be realized by any of a number of physically different hardware configurations. This software-hardware distinction can then be generalised to human mental representation: A psychological program can be realized by different organisms of various physiochemical composition.

[xv] An atomist is committed to accepting that two concepts with the same reference must have the same content. He therefore faces the problem of explaining why coextensional concepts like *water* and *H20* are different. Fodor suggests that the solution to this problem is to distinguish content individuation from concept individuation: "[As an atomist] I can't afford to agree that the content of the concept *H20* is different from the content of *water*. But I am entirely prepared to agree that they are different concepts..., that content individuation can't be all there is to concept individuation" (Fodor 1998, p.15).

[xvi] The deeper differences between functionalism and atomism are subtle. The most fundamental differences concern levels of explanations. A functionalist will claim that a concept's extension (what it refers to in the world) must be derived from an explanation of the function it has. An atomist will claim that the order of priory goes the other way: A concept has the function it has in virtue of having a certain extension.