

6 WHEN DOES A COMPUTER SPEAK THE TRUTH? THE PROBLEM OF IT AND VALIDITY CLAIMS

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Abstract

We are frequently confronted with statements that are transmitted or created by computers. The question in this paper is whether the use of computers in these statements affects their truth value. In order to analyze this question, the first part of the paper discusses the theory of truth and validity claims put forward by Habermas. In the second part, the discussion is extended to the role that computers can play in this theory. Computers not only influence our perception of truth, they can also play an important role in transmitting communication which in turn can affect what is regarded as true. The effect of computers in this role on truth claims is highly ambivalent. An even more complex topic is the question whether computers can create true statements. The result of this discussion is that computers lack certain characteristics that would allow them to participate in a Habermasian discourse and that, therefore, they cannot be said to produce valid claims to truth.

1 INTRODUCTION

A conference concerned with global and organizational discourse about IT must deal with the obvious problem that it is unclear what discourse is in the first place. When we speak of discourse do we mean any sort of communication, or are we more specific, referring to a certain theory of discourse? If so, what consequences does that have? What are the important aspects of discourse? Which parts of it must be analyzed? Which ones can be neglected? These questions must be answered if one wants to analyze concrete discourses. In this

paper, I will concentrate on the step before the actual empirical research of discourses in order to develop a sound theoretical foundation.

For this purpose, I will look at the impact of the use of computers and information technology on validity claims in discourse. The underlying theory is the theory of communicative action as developed by Apel and Habermas. This theory holds that every contribution to any discourse implicitly contains three validity claims: the claims to truth, normative rightness, and veracity or authenticity. It is not immediately clear in what way the use of computers will affect these claims. In order to answer this question, in the first part of the paper I will describe the theory of communicative action with a special emphasis on validity claims, especially the claim to truth. In a last part, I will analyze the impact that computers can have on these claims.

2 COMMUNICATIVE ACTION AND VALIDITY CLAIMS

The majority of the discussion in this section refers to Habermas' theory of communicative action (1981a, 1981b) and the conclusion that Habermas and others have drawn from it. The theory of communicative action tries to describe in a broad way how human beings interact. The basic idea is that we share a world where we try to act in a mutually beneficial way. Humans are social beings that need to collaborate to survive and prosper. In order to facilitate the necessary cooperation, humans rely on the medium of speech. The concept of communicative action presupposes language as a medium of processes of understanding. These processes in turn rely on claims of validity which can be accepted or questioned (Habermas 1981a, p. 148). An overview over the types of action and the corresponding formal pragmatic features, including validity claims, is given in Table 1.

Table 1 shows us the most important aspects of communicative action and the corresponding validity claims. Another important aspect is shown in the last column. This refers to the world the speaker lives in. To describe this world Habermas borrows the term *life-world* (*Lebenswelt*) from phenomenology. The life-world is the horizon within which the speaker exists (Gripp 1984, p. 93). Habermas himself calls it this "strange thing that disintegrates in front of our eyes and disappears as soon as we want to look at piece by piece" (1985, p. 186). For him, it is a resource that cannot be criticized or discussed. The life-world, as we can see, is an idiosyncratic totality. It encompasses everything, our entire world, and at the same time it is confined to a particular subject. It is, therefore, the background of all validity claims. At the same time the life-world is formed by communication and thus affected by validity claims.

Table 1. Pure Types of Linguistically Mediated Interaction

Types of Action Formal Pragmatic Features	Characteristic Speech Acts	Functions of Speech	Action Orientation	Validity Claims	World Relations
Strategic Action	Per locutions Imperatives	Influencing one's opposite number	Oriented to success	(Effectiveness)	Objective World
Conversation	Constatives	Representation of states of affair	Oriented to reaching understanding	Truth	Objective World
Normatively Regulated Action	Regulatives	Establishment of interpersonal relations	Oriented to reaching understanding	Rightness	Social World
Dramaturgical Action	Expressives	Self-representation	Oriented to reaching understanding	Truthfulness (Authenticity)	Subjective World

(Source: Adapted from Figure 16 of Habermas (1981a) in the translation by Thomas McCarty, *The Theory of Communicative Action*, London: Heinemann, 1984.)

According to this theory, we communicate with one another from within our life-worlds with the aim of cooperating. Sometimes this communication runs into difficulties because one or more of the validity claims are not accepted by all of the members of the communication group. This is where discourse comes in. Discourse is the place where controversial validity claims are discussed. It consists of arguments in which problematic validity claims are discussed and their justification is analyzed (Ilting 1994, p. 39). The idea is that during a discourse reasons are given that influence the participants to accept certain propositions. It can thus be said that discourses only come into play when validity claims become problematic (Ulrich 2001b, p. 71), which in turn only happens when life-worlds diverge. An important feature of discourse is that they have a twofold function. On the one hand, they are the real places where communication is made. On the other hand, they aim at and are modeled according to the ideal discourse which takes place under ideal conditions of free communication. The ideal discourse community consists of everybody who is affected by a given topic and the only constraint on arguments is that the better one wins. The ideal discourse will asymptotically lead to consensus. This consensus then constitutes objective truth and intersubjectively binding norms.

Whenever a speaker makes a statement the three claims are present and, in most cases, are closely interconnected (Ulrich 2001b, p. 72). Most propositions can serve as examples for this model. When I say, "Computers make rational decisions," this includes a multitude of validity claims. I first implicitly argue that it is true, that the objective reality would support the claim. This includes the supposition that it is clear what a computer is, what *rational* and *decision* mean, as well as that the combination of the terms makes sense. Second, there is the assumption of normative rightness, that I am allowed to make the statement, that its content does not violate norms, etc. Finally, I implicitly state that I believe the statement, that I am truthful and authentic when I make it. Each of these claims can be doubted by another participant and I would then have to defend it by using rational argument. A case for doubting the claims will often be grounded in a lack of congruence between the respective life-worlds. My interlocutor may, for example, never have heard of computers and may doubt the sense of the statement. Or she may use different definitions of the terms rational or decision which render the sentence incomprehensible. She can also believe that it is immoral to ascribe a typically human function such as decision making to computers. Finally, she could doubt my sincerity or truthfulness in making the claim. What one should keep in mind is that the entire process aims at achieving a consensus which in turn aims at the successful cooperation, at communicative action.

There are many problems intrinsic to discourse theory. First of all, its formal nature leads to material emptiness (Habermas 1998, p. 19). Then there is the

problem of reliance on consensus, which may not be forthcoming, possible, or even desirable (cf. Apel 1994, p. 388). Other problems hinge on the relationship or ideal and real discourse and the realizability of discourses. Also, there is the question of the final foundation (cf. Apel 1980).

Despite all of this and other possible criticism, one should note that the theory has several strengths that make it hard to avoid. With regard to truth, the claim of primary interest in this paper is that the theory overcomes the traditional dichotomy of empiricism versus idealism.

In order to overcome the wrong alternative of grounding knowledge either in experience or in reason, all contemporary theories of knowledge rely on some discursive procedure as the means by which a synthesis of the two sources of knowledge (or of its justification) is accomplished (Ulrich 2001b, p. 66).

The idea that morality and truth must have something to do with the interpersonal exchange of ideas and thus with learning can be found in the writings of Mill (1859) and, according to Sloterdijk (1983, p. 47), it is the methodological core and moral ideal of enlightenment in general.

If we agree that it makes sense to take the theory seriously, then the next step is to ask what is the impact of computers and IT on discourse and validity claims?

3 COMPUTERS AND VALIDITY CLAIMS

There are several perspectives from which one can address the relationship of computers and validity claims. First, some basic problems having to do with the influence computers have on validity claims and vice versa will be discussed. In a second step, the role of computers and IT as media of communication and thus of validity claims will be discussed. The last part of this section will address the problem of computers as originators of validity claims.

3.1 Basic Questions of the Relationship of Computers and Validity Claims

Computers affect which validity claims are acceptable and which are not. This is true for all three of the different sorts of claims but it is most obvious for the claims that are at the center of attention: the question of truth. Truth in the Habermasian sense, as we have seen, means ideal consensus, that is consensus

of all of the competent actors under ideal discourse conditions. This consensus is only possible, if at all, given that there is a shared life-world to which arguments can refer. This shared life-world contains the background truths needed to address validity claims. Of course, these fundamental views can also become objects of discourses, but not all at the same time, because that would lead to the impossibility of discourse. Computers have a strong influence on these background truths, on what we perceive to be true and, correspondingly, on what we perceive to be real.

There is a perception that computers as products of science produce exact results. Thus, references to knowledge obtained with the help of computers can take the status of a religious credo (cf. Weizenbaum 1976). The fact that there are known and fundamental limits to what computers can do and to their exactness (cf. Smith and Cantwell 1995) does little to dampen this faith. That means that our pre-discursive perception of the validity claim of truth is already affected by the use of computers. At the same time, this also affects other claims. The proposition that something is arrived at through computers often carries the normative implication that it must be accepted and that it is true and binding.

The problems run even deeper. For a conclusive discussion of computers and their influence on validity claims, a clear definition of computers is needed. Just looking at the technological artifact in the narrow sense, such a definition is easy enough. However, such a narrow technological definition neglects what may be the more important part of computers and information systems: their character as social systems. Typical definitions in the information systems area tend to describe information systems as amalgams of hardware, software, procedures, and activities. Some authors go even further by saying that

Ontologically we perceive information systems as involving a set of human practices which exhibit regularity and impose constraints on people's behavior, but which can also be transformed by knowledgeable social actors (Lyytinen and Hirschheim 1988, p. 20).

For our purposes, that means that the very nature of computers is already social and, therefore, it is impossible to give a clear analytical distinction between (objective) computers and (subjective) validity claims. This means that computers are intrinsically ethical in the same way Apel (1980) shows logic to be ethical. The use of computers presupposes the ideal speech situation and thus the recognition of the other.

The use of computers as means of projecting truth claims by insinuating that they produce objective and scientific results is only one example. One can go further and state that computers influence our perception of reality. Epistemo-

logy and ontology, theory of cognition and theory of reality, are closely related. True propositions tend to state facts about reality and without reality there can be no true claims. Anything that affects our view of reality is bound to affect our view of truth as well. Computers are without a doubt part of the reason why our worldview changes right now. The transition from atoms and the physical world to information and networks might even be called a paradigm shift in Kuhn's (1996) sense. An example for a change of reality caused by computers is the change from traditional commercial exchange to e-commerce (cf. Zerdick et al. 2001). This is not to say that everything is different now that we have computers, but that new realities are evolving which can be the bases for claims to truth. Think, for example, of virtual organizations. One can make true or false claims about them because they have become a generally recognized reality. The same claims would not have been true or false 50 years ago; they would simply have been incomprehensible because there was no corresponding reality.

At the same time, our background and life-world convictions about truth and reality also affect the way computers are seen, are developed, and work. In order to have a functioning information system, we need hardware and software to control the hardware. Software can be seen as a model of reality or as an expression of a model of reality. Computers must, therefore, be based on metaphysical assumptions about reality. Models are always flawed (by definition they must be), but it is telling that we still think that computers can model relevant parts of the world. Clearly computers can only deal with and process information in their own medium or language. This language is mathematical and, therefore, everything that cannot be expressed in mathematical models (in a wide sense of the term) cannot be part of a computer's reality. This leads to a problem of translation. As we have seen, Habermas believes that truth claims are universal. When we say that something is true, then we suppose that it is true independent of the language in which it is said. This is already a problem for the translation from one human language to another. If I translate a statement, that does not mean that I necessarily translate the cultural background or life-world. Without them, the statement may cease to make sense. If translation from one human language to another is already difficult, then it stands to reason that translating from human to computer language is even worse because there cannot even be the assumption of the basic facts of a shared life-world. This is the basis of Dreyfus' (1993) claim that artificial intelligence in its classical form is doomed to failure.

There are other areas where ideas of truth or reality and computers affect one another. Many realities are evolving because of computer use and the perceptions of these realities then have a feedback on the development of information systems. As an example, one can look at the institution of intellectual property. Intellectual property is not a new idea and it was born before the

advent of computers. However, it has changed considerably during the last decades, mostly because of computer applications (cf. Moor 1985). Completely new questions had to be answered, such as whether software programs can be patented, and the answers then led to new social practices and realities.

The interplay between validity claims and computers becomes even more complex, even at the basic level, if one expands one's view and takes normative claims into consideration. There is a highly complex interaction between computers and human beings that deeply influences how we see humans and consequently our interpretation of right and wrong. Since the emphasis in this article is on the claim of truth, I will leave it with this brief remark and continue by looking at the impact of computers on validity claims when used as media for the transmission of these claims.¹

3.2 Computers as Transmitters of Validity Claims

The application of computers and information technology that affects validity claims most frequently is the transmission of information—communication via technological means. Many technological artefacts are designed expressly for this purpose, such as telephones, faxes, mobile phones, etc., and many others are used more or less frequently for that purpose, most notably computers. Communication using technological support or computer-mediated communication can have an influence on validity claims. A feeling that many users of computers share is that communication via computers is different from face-to-face communication. However, it is not always clear where exactly the differences lie.

Let us take a look at two forms of communication and information that are growing with the Internet: hypertext and e-mail. Hypertext changes the structure of texts and the way texts are approached. It is used for “surfing” the Web and it seems to be intuitively easy to use for most users, even those who do not have a great affinity for computers. This suggests that hypertext is a close representation of the way our thought processes work. Surfing the Web means meandering through different lines of thought, associating one thing with the next, losing a thread of thought only to find a new one. Part of the success of the Internet is due to this very fact, that it allows us to move from one idea to the next, which seems to fulfil our needs quite well. On the other hand, this has serious repercussions for our perception of truth.

¹For a more detailed discussion of these aspects, of the impact of computers on anthropology and consequently on ethics, see Stahl (2002).

[The] hypertextual, ephemeral, and ludic qualities of CMC will directly undermine especially one form of philosophical discourse and argument—namely, the carefully crafted, largely linear accumulations of argument and scholarship closely associated with literacy and print culture. Such discourse is likely to disappear, replaced by the playful and the evanescent (Ess 1996, p. 11).

Hypertext can be seen as a representation of a changing reality (Lévy 1997) which then changes what we see as true.

Another example for computer-mediated communication that changes validity claims is e-mail. There is a clear difference between e-mail and other media of communication such as the letter. An e-mail message is somewhere between a letter and a telephone call. It is written but it moves more quickly than a letter and the form and frequency of use is closer to telephone calls. Apart from difficulties such as whether e-mail messages enjoy the same sort of privacy protection as letters, it is also unclear how much weight claims made in e-mail messages carry.

E-mail messages are easily written and almost everybody has access to a e-mail messaging system. This leads to another problem of validity claims, especially of truth, namely that some of the established institutions for the determination of truth are endangered by new technology. Real discourses are hard to hold and they can be very costly. One institution, which can be interpreted as an approximation of discursive procedures, is that of academic publishing. The idea behind it is that the peer review process will determine which texts are true and valuable for academic advancement and only these are consequently published. In this way, science and academia advance truth. At the same time, this means that in most cases texts that one can read in print have a high claim to truth and are usually considered valid knowledge even though there are also negative connotations of this “paper club” (Lawrence 1996). Despite the many disadvantages of this system, it has led to a high reliability of at least some publications. The Internet can change this system because of the ease with which it allows almost anybody to publish his or her ideas. On the Internet, it is hard for the user to assess the truth content of a text due to a lack of references. At the same time the Internet is increasingly becoming a resource for scientific research. Where this development will lead is not yet clear. What is clear is that some of our background convictions concerning truth can be affected by it.

Some of the changes brought about by the use of IT in communication are clearly positive from the point of view of a Habermasian theory of validity claims. The different rhythm of communication using e-mail when compared to letters or traditional academic publications, for example, can help the discussion

of validity claims. If a contentious claim is made in an academic journal, the response might be put forward in the next available edition, the explanation in the next one, and so forth. Given that publication cycles are often measured in years, this means that the discourse is dispersed over a long time and that the validity claims may change faster than the discourse can reflect. Using e-mail or Internet publications, one can react directly to claims and different angles of positions are examined quickly. "This makes e-mail a good medium for the kind of dialogue that Habermas speaks of, which demands justification for each speech act and inquires into the validity and sincerity of claims" (Kolb 1996, p. 16). Another change is that discourses can be initiated by interested parties independent of geographical restrictions or membership in certain groups. That means that the topics of discourse are more evenly spread and the result of factual discourses can be of a better quality than discourses limited to a specific group. In essence, it can be argued that the use of IT improves the setting of the discourse and moves real discourses closer to the ideal discourse. This is done by allowing more people access to discourses and by creating a more level playing field. As we have seen, the ideal speech situation demands that everybody who is affected can make their opinions known and that the interchange of ideas is not hampered by inequality or power differences. The use of computers and IT goes some way in that direction. One can, therefore, draw the conclusion that IT has emancipatory effects which, first, make discourses more symmetrical and, second, by doing so, can trigger new interpretations and new questions which in turn will lead to a greater validity of claims. For these reasons, Lyytinen and Hirschheim (1988, p. 27) conclude that "IS can be used in rational discourse."

While IT can be seen as a means for the improvement of discourses with a resulting improvement of the validity of claims, it also produces problems for discourses. There are several reasons for this. On a basic level, the advantages of IT for discourse only apply to those who have access to it. That 90 percent of humanity that, for whatever reason, does not have access to computers or the Internet are cut off from the new forms of discourse. Therefore, all discourses concerning these people cannot claim validity because not all of the relevant opinions can be heard. That means that, for example, discourses concerning global distribution and poverty cannot claim to enhance the validity of statements because the objects of the discourse are excluded from it.

Another negative side is the structuring of discourses necessary for the use of IT. Lyytinen and Hirschheim identify several aspects of communication via information systems that hinder discourses, among them the institutionalization of IS that precludes full symmetry in participation and the fact that IS often do not test opinions but use them as a basis for action without the check of validity. While these points refer to commercially used information systems rather than the less structured application of e-mail or hypertext, it is still true that there are

some claims which are “frozen” in IT in general. The use of multimedia in computer-mediated communication may change this over time but so far most non-verbal parts of communication do not form a part of discourses.

Yet another problem for computer-mediated discourses is information overload. There is a virtual infinity of validity claims to whose discussion every one of us could contribute. Limited knowledge, awareness, and lifetime force the concentration on just a few of these. However, it is not clear according to what rules the participants ought to decide in which discourses to participate. Normal Internet users today would quickly reach their limits just trying to determine discourses of interest that are being conducted on the Web. In this situation, it is obvious that most discourses will not lead to a consensus even of the recognized experts in a field because most of the experts may not be aware of a discourse going on at a particular time, and even if they did know, they would not be able to participate.

A last and even more fundamental problem is the limitation of discourses in general. We have seen that even in the ideal speech situation, it is far from certain that discourses would lead to the desired consensus concerning the validity claims in question. In the case of real discourses, this will in many cases be simply impossible, and even if a consensus is reached, one will often be able to make the claim that it is not legitimate because of a lack of fulfilment of the conditions of the ideal situation. There are different ways one can react to this. Ulrich (2001a, p. 90), argues for a pragmatization of discourses, which would render them as “a means of critique only” instead of a device aiming at validation. While this may solve some of the problems discussed above the question is: what is left of the idea of discourse? Returning to the topic of the paper, the question is: what does this do to the claim of truth? A tentative answer might be that IT as a medium of communication will improve the validity of truth claims in those cases where it changes the discourse toward a greater semblance with the ideal speech situation. At the same time, it can also have the opposite effect when it influences the discourses in such a way that they move away from the ideal situation.

3.3 Computers as Originators of Validity Claims

As we have just seen, the use of computers as media for the transmission of validity claims is at best ambiguous. The situation becomes even more difficult when we look at validity claims created by computers. First of all, one would have to ask the question whether it is possible at all for computers to generate validity claims. Some philosophers would probably argue that this is by definition impossible and that the claims always originate from some person who laid the groundwork, who created the computer or the program that controls

it. On the other hand, there is the everyday experience that computers give us information and that that information has an implicit claim to truth. If the ATM tells me that my account is empty, then there is the implication that this is true. The attempt to trace this information back to a human source may fail. Let us suppose that the information is wrong and I want to question it. Whom should I approach? The hardware vendor? The programmer? The CEO of the bank? This sort of responsibility in computers is difficult to track down because of what Johnson (2001, p. 188) calls the problem of the “many hands,” meaning that it is often impossible to attribute given results to a specific person. For all practical purposes, one can talk of computers as generating validity claims.

This use of the concept of validity claims runs into many problems. Whether a person claims that something is true or a computer does the same, there seems to be a fundamental difference. The reason for that difference to me seems to be the capacity for reflective thought and self-control. Human beings can evaluate their own claims in the light of a discourse in a sense that computers, at least the garden variety that we use on a daily basis, cannot. But why would this reflective capacity be of such importance? There are several reasons.

The first reason is that humans are aware or at least can be made aware of the implicit claims their communication carries, something of which a computer is incapable. Human beings as well as computers need abstract models in order to interact with the world and with one another. One important difference is that human beings develop these models through experience whereas computers are given their models through programming. It could be argued that, increasingly, there are learning programs available, but they still need a lot of basic human input to determine their learning abilities. Human beings, on the other hand, learn from an early age and they learn that the models they use are fallible, something that computers generally do not experience. This leads us back to Habermas’ idea of a life-world. All human beings have a life-world and they can be made aware of this fact. The experience of our fallibility teaches us that the life-world is nothing but a provisional interpretation of reality. Computers, on the other hand, exist in a clear and logical objective world determined by their programs and data.

Another point where we differ is our experience of being a psycho-physical system that interacts with others of the same kind. This is where existentialist philosophies enter into the equation. Human beings experience themselves as living beings who are aware of their own mortality and who are seeking a meaning for their existence. This search takes place in the community of other beings who are recognized as similar in their wants and needs. Validity claims of normative rightness only make sense before the background of these existential facts. A computer, on the other hand, does not share these experiences. It knows neither about its physical existence nor about others (computers or humans) as equal. It knows no pain, no fear, and no empathy.

While these wants of computers point in the direction of normative claims rather than objective ones, one must remember that the different types of validity claims always coincide. That means that whenever a human claims that something is true, she claims at the same time that it is admissible to make that claim. Computers are not aware of this due to their lack of reflexivity.

The idea of a consensual end to a discourse requires several abilities from participants. Participants must be able to understand the arguments, to weigh them, and they must possess the willingness to give up their own position if they come across good arguments against it (Priddat 1994, p. 290). This requires several personal characteristics such as intelligence, a certain degree of humility, and the willingness to accept the other participants as equal. Furthermore, it requires the capacity of judgement. One must be able to judge the merits of different approaches, to set them in a context, to interpret their meaning in other life-worlds about which one can only guess. A computer does not possess any of these requirements. It does not have judgement, it cannot assess the value of ideas outside of its programs, and it is unable to change the fundamental assumptions of its programs.

The provisional conclusion is that one cannot speak of validity claims generated by computers. Even though computer information implies that there is a truth value to it, this is not a validity claim, basically because it cannot be subjected to a discourse.

An interesting question is whether that is necessarily so or whether it is caused by the current state of computer development and may be overcome with further development. One clear prerequisite for real validity claims in computers would be their ability to learn. The field of artificial intelligence researches that question. However, it is open to doubt whether we really know what human intelligence is in the first place and consequently whether we can emulate it in computers. Another prerequisite of validity claims would be a reflective capacity of computers and physical experiences as well as emotions such as empathy. I do not know whether these are possible in computers, but I guess that even if they are, it will be a while before we have such moral computers as Star Trek's android Data around.

4 CONCLUSION

The purpose of this paper was to analyze the impact of computers on validity claims, especially the claim to truth, as we know them from Habermas theory of communicative action. Throughout the paper, it became clear that there is a multitude of different possible relationships between claims to truth and computers. However, there is no clear line, no unequivocal thought that could combine all of these relationships.

Two sorts of roles of computers in validity claims were analyzed more closely: computers as media of claims and computers as originators. In the first case, it became clear that the role of computers is ambiguous. Depending on use and circumstances, computers can improve communication and move discourses closer to the ideal speech situation, which improves the validity of claims to truth. Computers can also become an impediment of communication through their formal nature, the question of access, or problems of information overload. In these cases, they are prone to hurt validity claims.

The computer in the role of originator of validity claims does not appear to be a very useful idea. Even though we are confronted with claims to truth that are created by computers on an increasingly frequent basis, these claims do not have a foundation in a discourse theory such as the one put forth by Habermas. Computers lack a many of the conditions which would make them candidates for discourse participation. Therefore, one can now answer the question in the title: when does a computer speak the truth? The answer is: never. A computer cannot speak the truth because it has no notion of what truth might be.

This answer to the central question of the paper leads to further conclusions. When communicating with a computer, the user should be able to ascertain the basis as well as possible contortions of truth claims. Otherwise the idea of truth is reduced to the mere assertion of propositions. However, this would lead to practical problems of great dimensions. What is necessary, first of all, are institutions that would allow the ascription of truth claims to discourse subjects. That means that, if a truth claim is transmitted or produced by a computer, procedures must be in place to question the claim and to have someone consider these questions. Looking at our societies and organizations, the trend seems to go in the directly opposite direction, toward more computer generated claims that cannot be discussed. It seems clear that this question of producing accountability for truth claims can itself be an extensive area of research.

However, the problems do not end here. As we have seen, the different validity claims tend to be discussed together. When talking about truth, one must always also talk about norms. Since normative validity claims run into the same problems as objective claims, the use of computers in discourses also leads to a moral challenge. It is at this point unclear to me how we can meet this challenge. I would guess that it is one of the many tasks of computer or information ethics to think about the moral implications that the mere use of computers in communication can have.

The theory of communicative action offers one hint as to how problems of validity claims can be approached. Despite the material emptiness of discourse theory, it may be possible to draw practical conclusions from it. The heavy reliance on discourse and the basic assumption that discourses are only valid in so far as they resemble the ideal discourse could serve as a direction. That means that in order to check validity claims regarding computers, discourses must first

be instituted and, secondly, they must be as close as possible to the ideal discourse. It follows that all distortions of discourses must be eliminated or at least labeled as such. One can understand this paper as part of this effort. I have tried to show where computers lead to biases in discourses and where we take them for granted in a basic way. Another step would be to realize the impediments that computers as transmitters of validity claims can pose as well as their advantages in the same area. Finally, it must be recognized where computers generate claims and institutions should be built that allow discourses about these claims. In all of these cases, discourse theory can be helpful because it shows us what the ideal discourse community should look like and consequentially offers guidance for instituting change.

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