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Cyborg intentionality: Rethinking the phenomenology of human–technology relations

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Abstract This article investigates the types of intentionality involved in human–technology relations. It aims to augment Don Ihde's analysis of the relations between human beings and technological artifacts, by analyzing a number of concrete examples at the limits of Ihde's analysis. The article distinguishes and analyzes three types of "cyborg intentionality," which all involve specific blends of the human and the technological. *Technologically mediated intentionality* occurs when human intentionality takes place "through" technological artifacts; *hybrid intentionality* occurs when the technological actually merges with the human; and *composite intentionality* is the addition of human intentionality and the intentionality of technological artifacts.

Keywords Intentionality · Human–technology relations · Cyborg · Posthumanism · Don Ihde

Introduction

The figure of the cyborg has been functioning as a key to understanding what it means to be a human being in a technological culture, ranging from Donna Haraway's farewell to naturalist accounts of the human (Haraway 1991) to Nick Bostrom's utopian plea for transhumanism (Bostrom 2004). A cyborg is a border-blurring entity, uniting both human and nonhuman elements. Humans and nonhumans are often considered to be separated by a deep ontological abyss, the one active and intentional, the second passive and mute (Latour 1993; Heidegger 1977). Conceptualizing entities which merge the human and the technological therefore requires a radical metaphysical step and a thorough recalibration of central philosophical notions. Yet, we have become such entities, as many authors have

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argued in more or less radical degrees (Ihde 1990; Haraway 1991; Latour 1993; Hayles 1999; De Mul 2002; Irrgang 2005). What is more, authors like Bernhard Stiegler argue that we *have always been* cyborgs in a sense, since technology can be seen as constitutive for humanity. For Stiegler, humanity is an invention of technology, rather than the other way round; human beings exist by realizing themselves technologically (cf. Stiegler 1998). We would not have been the "human" beings we are, had we not used the technologies we use – and this goes far beyond the physical interactions we have with technologies. Without writing, for instance, our cultural frameworks of interpretation would have been radically different.

In this article, I will use the figure of the cyborg to reconceptualize a specific phenomenon which has long been considered to be exclusively human: the phenomenon of intentionality. I will do so by investigating various types of relations between humans and technologies. How to understand "cyborg intentionality"? Is it simply a technologically influenced form of human intentionality? Or can blends of human and nonhuman beings have an intentionality of their own? Does something like "technological intentionality" exist, and if so, how is it related to human intentionality? Or can human intentionality simply not be understood without taking into account how it is intertwined with technology, as would follow from Stiegler's perspective of "originary technicity"?

In order to answer these questions I will first briefly introduce the concept of intentionality, as it has developed in phenomenology. After that, I will investigate how to understand this concept of intentionality in the context of human–technology associations. On the basis of the work of Don Ihde, I will elaborate the notion of "mediated intentionality" as a central form of cyborg intentionality. After this, I will augment Ihde's analysis with two other forms of cyborg intentionality, which I will call "hybrid intentionality," in which humans and technology *merge* rather than interact, and "composite intentionality," in which there is an interplay between human intentionality and the intentionalities of technologies themselves.

Intentionality and technology

In the phenomenological tradition, especially in the existential and embodied directions it took in the work of Jaspers, Heidegger, and Merleau-Ponty, intentionality is the core concept to understand the relation between human beings and their world. Rather than separating humans and world, the concept of intentionality makes visible the inextricable connections between them. Because of the intentional structure of human experience, human beings can never be understood in isolation from the reality in which they live. Humans are always directed toward reality. They cannot simply "think," but they always think *something*; they cannot simply "see," but they always see *something*; they cannot simply "feel" but always feel *something*. As experiencing beings, humans cannot but be directed at the entities which constitute their world. Conversely, it does not make much sense to speak of "the world in itself" either. Just like human beings can only be understood from their relation with reality, so can reality only be understood from the relation human beings have with it. The "world in itself" is inaccessible by

definition, since every attempt to grasp it makes it a "world for us," as disclosed in terms of our specific ways of understanding and encountering it (cf. Verbeek 2005).

Don Ihde has introduced a technological dimension in this phenomenological tradition of understanding human–world relations. In our technological culture, many of the relations we have with the world around us are either mediated by or directed at technological devices – ranging from looking through a pair of glasses to reading off a thermometer, from getting money from an ATM to having a telephone conversation, and from hearing the sound of the air conditioner to having an MRI scan made. Ihde's analysis lays bare a first manifestation of cyborg intentionality, which can be called *mediated intentionality*.

Mediated intentionality

Ihde (1990) discerns several relationships human beings can have with technological artifacts. Firstly, technologies can be *embodied* by their users, establishing a relationship between humans and their world. When looking through a pair of glasses, the glasses are not noticed explicitly but are "incorporated"; they become extensions of the human body. Secondly, technologies can be the *terminus* of our experience. In this "alterity relation," human beings *interact* with a device, as is the case when taking money from an ATM. A third human–technology relation is the "hermeneutic relation." In this relation, technologies provide representations of reality, which need interpretation in order to constitute a "perception" – like a thermometer, which does not produce an actual experience of heat or cold, but delivers a value which needs to be "read" in order to tell something about temperature. The fourth human–technology relation Ihde distinguishes, is the *background* relation, where technologies are not experienced directly, but rather create a context for our perceptions, like the humming of the air conditioning, or the automatic switching on and off of the refrigerator, et cetera. These four human–technology relationships, on the basis of which technologies play their mediating roles, are indicated schematically in Fig. 1.

In this figure, the arrow indicates human intentionality. As the figure makes visible, there are interesting relations between intentionality and technology. Intentionality can work *through* technological artifacts, it can be directed *at* artifacts and it can even take place against the *background* of them. In all of these cases, except the alterity relation, human intentionality is *mediated* by a technological device. Humans do not experience the world *directly* here, but always *via* a mediating artifact which helps to shape a specific relation between humans and world. Binoculars, thermometers, and air conditioners help to shape new experiences, either by procuring new ways of accessing reality or by creating new

Fig. 1 Human–technology relationships (Ihde 1990)

embodiment relation	(human – technology) ➔ world
hermeneutic relation	human ➔ (technology – world)
alterity relation	human ➔ technology (- world)
background relation	human (– technology – world)

contexts for experience. These mediated experiences are not entirely "human" – human beings simply could not have such experiences without these mediating devices. Experiences like reading off a thermometer and having a telephone conversation, therefore, involve "cyborg intentionality" – intentionality that is partly constituted by technology.

Intentionality beyond mediation

Yet, more radical elaborations of cyborg intentionality need to be developed. Beside mediated intentionality, I would like to distinguish two other forms of intentionality related to human–technology associations. First, I would like to introduce the concept of *hybrid intentionality*, indicating the intentionality of human–technology hybrids, in which the human and the technological are *merged* into a new entity, rather than interrelated, as in Ihde's human–technology relations. And second, I will develop the notion of *composite intentionality* to indicate situations in which not only human beings have intentionality, but also the technological artifacts they are using.

These additional forms of cyborg intentionality should be seen as radicalizations of two of Ihde's human–technology relations, which become visible when these relations are explicitly approached from the point of view of intentionality. Because Ihde's primary focus is on the *relations* between humans and technologies rather than the intentionalities involved, his analysis tends to blackbox the various forms of *intentionality* involved in these relations. Drawing attention to these intentionalities makes it possible to substantially augment his analysis.

Ihde's schematic representations of human–technology relations do not only contain arrows, indicating intentionality, but also dashes, indicating a relation between entities which is not specified further. If we limit ourselves to the embodiment relation and the hermeneutic relation – which are the most relevant relations in the context of intentionality since they ultimately involve relations with the *world* – these dashes indicate a relation between humans and technology or between technology and world. It is precisely by investigating the nature of these dashes that a closer characterization can be developed of what can be called "cyborg intentionality." First, the dash between humans and technology in the embodiment relation (human–technology) → world blackboxes the specific nature of the various relations that can exist here between humans and technology, and which are extremely relevant in the context of cyborg intentionality. Second, the dash between technology and world in the hermeneutic relation human → (technology–world) blackboxes the specific relations that can exist between mediating technologies and the world. More specifically, it does not create enough space to take into account the existence of nonhuman or technological intentionality, which are highly relevant too in the context of a discussion about cyborg intentionality. In the following sections, therefore, I will augment Ihde's understanding of both the embodiment relation and the hermeneutic relation.

Hybrid intentionality

Analyzing the nature of the relations between the human and the technological in the embodiment relation makes clear that, in fact, a fifth variant could be added to Ihde's

overview of human–technology relations. In Ihde's range of human–technology relations, technology moves ever further away from the human – from being "embodied" to being "read," to being "interacted with" and even being merely "background." Yet, prior to the embodiment relation there are human–technology relations in which the human and the technological actually *merge* rather than "merely" being embodied. These human–technology relations are the ones usually associated with "bionic" beings, or cyborgs, being half organic, half technological. When microchips are implanted to enhance the vision of visually impaired people, when antidepressants help to change people's mood, or when artificial valves and pacemakers help to make people's heart beat, there is no embodiment relation anymore – at least, not a relation which could compare to wearing eyeglasses or using a telephone. True, in both cases it is an association of a human being and a technological artifact that experiences reality, but in the "bionic" or "cyborg" association there actually is no association of a human and a technology anymore. Rather, a *new* entity comes about. Instead of organizing an interplay between a human and a nonhuman entity, this association physically alters the human. The resulting "cyborg relation" can be indicated as:

Cyborg relation	(human/technology) → world

This fifth human–technology relation is the basis for what can be called *hybrid* intentionality. Rather than being a technologically mediated form of human intentionality, this form of intentionality is "beyond the human." Just like the "being" which experiences reality under the influence of drugs, or which sees things with the help of an implanted microchip, is not entirely human, so is the intentionality involved here. To be sure, the intentionality involved in the embodiment relation is not entirely human either: the specific ways in which humans are directed at each other through a mobile phone, or hear through a hearing aid, can only exist by virtue of an intimate human–technology association. But in these embodiment relations, a distinction can still be made between the human and the technological "share" in the mediated experience, while this is not possible in cyborg relations, where humans and technology form a new experiencing entity.

In order to articulate the difference between these two forms of cyborg intentionality, or being a cyborg, it is helpful to distinguish two distinct ways of moving beyond the human. First of all, a "posthumanist" approach can be taken, in which the analysis of human–technology relations urges us to move beyond *humanism* as a very specific – and all-too-human – approach of what it means to be a human being; in order to understand what it means to be a human being, we need to take into account how the human and the technological co-constitute each other. Stiegler's thesis of originary technicity, which I mentioned before, can be seen as representative of this approach. Second, there is a "transhumanist" approach, which does not see human–technology relations in terms of constitution but in terms of an actual, physical fusion. Here, we do not move beyond *humanism* but beyond the *human*; humans and technologies merge into a new entity, which is sometimes even considered to be the successor of *Homo sapiens*.

This distinction actually reflects Peter Sloterdijk's analysis of "anthropotechnologies" in his infamous lecture but fascinating lecture "Rules for the anthropic

garden" (Sloterdijk 1999). This lecture is a reply to Martin Heidegger's *Brief über den Humanismus*, in which Heidegger explained why the popular associations of his work with humanism were entirely wrong. Humanism, according to Heidegger, approaches the human being from the perspective of the animal: as *zoon logon echon* or *animal rationale* – an animal with speech and reason. This continuity between human and animal, Heidegger says, ignores the radical difference between them, which he locates in the human capacity to think the "being" of beings. Sloterdijk, however, reversed Heidegger's argument. He, too, wants to move beyond humanism, but for entirely different reasons. The humanist tradition, he says, has always tried to "cultivate" the human being; to "tame" it with the help of texts – and in that sense, Heidegger was a humanist too. But technological developments have now made it possible to cultivate human beings in quite a different way: by literally "breeding" or "growing" them. And rather than shying away from the technological possibility to alter the biological constitution of the human being, Sloterdijk urges that we should take responsibility for the powers we have developed. We should get beyond the humanist preoccupation with texts, and start thinking about moral guidelines for how to use the new "anthropotechnologies."

Both of these readings of the cyborg have implications for our understanding of cyborg intentionality. Ihde's approach revolves around technologically mediated intentionality, in which both (mediated) human beings and (multistable) technological artifacts are constituted. But the cyborg notion behind the concept of "hybrid intentionality," as I elaborate it here, articulates how human–technology relations can also get a physical character, forming an actual amalgam of the human and the technological, as is the case when pieces of technology are actually merged with the human body. Technologies *used*, like telescopes and hearing aids, help to constitute us as different human beings, whereas technologies *incorporated* constitute a new, hybrid being – which could, in principle, also use technologies which help to constitute as different "transhumans."

Composite intentionality[1]

A third form of cyborg intentionality that deserves a closer analysis, beside its mediated and hybrid variants, can be called *composite intentionality*. In this case, the intentionalities of technological artifacts themselves play a central role, in cooperation with the intentionalities of the human beings using these artifacts. "Technological intentionality" here needs to be understood as the specific ways in which specific technologies can be directed at specific aspects of reality. In this context, for instance, Don Ihde elaborated the example of the sound recorder as having a different intentionality for sound than human beings have, recording background noises at a louder volume than perceived by human beings who only focus on the sounds that are meaningful to them in that specific situation (Ihde 1979: 77–78; Ihde 1983: 56; Ihde 1990: 102–103). When this "directedness" of

[1] Parts of this section incorporate reworked fragments from P.P. Verbeek, 'Beyond the Human Eye: Mediated Vision and Posthumanity', in: P.J.H. Kockelkoren (ed.), *Proceedings of AIAS Conference.* Published online at: http://www.aias-artdesign.org/mediatedvision.

technological devices is added to human intentionality, *composite intentionality* comes about: a form of intentionality which results from adding technological intentionality and human intentionality.

Composite intentionality plays a role in what Ihde calls the hermeneutic relation. After all, hermeneutic relations always involve a technologically generated representation of the world, which inevitably is the product of a specific technological directedness at the world: thermometers focus on temperature, spectrographs on light frequencies, sonograms on how material objects reflect ultrasound. Yet, this *representing* intentionality of "nonhuman" perceivers is only one form of composite intentionality. Not all technological intentionalities are directed at actually representing a phenomenon in the world – some of them, e.g., rather construct reality, like radio telescopes that produce a visible image of a star on the basis of "seeing" radiation which is not visible to the human eye. In this case, one could say the composition of human intentionality and technological intentionality is directed at making accessible ways in which technologies "experience" the world.

The concept of composite intentionality, therefore, urges us to augment Ihde's analysis of the hermeneutic relation. There is a double intentionality involved here; one of technology toward "its" world, and one of human beings toward the result of this technological intentionality. In other words: humans are directed here at the ways in which a technology is directed at the world. This implies that, to conceptualize the basis for composite intentionality, the dash in Ihde's schematic depiction of the hermeneutic relation human → (technology–world) should be replaced with an arrow. This gives the following scheme:

composite relation	human → (technology → world)

A good source to investigate such composite intentionalities is art. In what follows, I would like to elaborate the phenomenon of composite intentionality by briefly discussing the ways in which two Dutch artists explore new regimes of perception with the help of technologies. The artworks I will discuss explicitly explore and demonstrate the intentionalities of technological artifacts in relation to human intentionality.[2] But rather than putting these intentionalities in the service of human relations to the world – as is the case in Ihde's hermeneutic relations – they explore technological intentionalities as relevant *in themselves*. They aim to reveal a reality that can only be experienced by technologies, by making accessible technological intentionalities to human intentionality.

Augmented intentionality

The night photographs of Wouter Hooijmans embody the "mildest" form of composite intentionality. Hooijmans makes landscape photographs using shutter times of several hours. This allows him to make use of starlight for exposing his pictures, which has stunning effects. All short incidents, like animals walking through the image, movements of the leaves on a tree, ripplings of the water in a

[2] Some works of the artists discussed can be viewed at http://www.aias-artdesign.org/mediatedvision.

lake, become irrelevant. Only things that last make it to the picture. Hooijmans's photographs reveal the world as it would look if we would not need to blink our eyes. In a sense, his pictures can be seen as the embodiment of Husserl's method of "essential intuition." By imaginatively transforming a phenomenon in various ways, Husserl wanted to determine which aspects are essential to it and which are not. Hooijmans's images seem to accomplish this not in the realm of ideas but in the materiality of a printed photograph.

Hooijmans's photographs embody an extreme mechanical makeover of the intentionality of the human vision. Contrary to the most common use of the photo camera, Hooijmans does not create instantaneous exposures, but rather "sustained exposures." His photographs blend together an infinite number of visual impressions into one single representation of the world, which the human eye could never produce itself. We could call this form of composite intentionality "augmented intentionality," since it consists in making accessible to the human eye an artificially expanded form of human intentionality.

Constructive intentionality

The stereophotographic work of *De Realisten* ("The Realists") embodies a second form of composite intentionality. As a part of their work, *De Realisten* have been making stereographic photographs of several sets of identically shaped objects, made out of different and non-amalgamating materials, like wood and bronze. Looking at these photographs with the help of 3d equipment, one is confronted with highly realistic, three-dimensional representations of a reality which cannot exist in everyday experience.

These photographs do not aim to represent reality in any sense, but to generate a new reality which can only exist for human intentionality when it is complemented with technological intentionality. The resulting three-dimensional, photorealistic amalgams have no "original" counterpart in everyday reality. The "intentionality" that *De Realisten* gave to their stereographic camera is not directed at making visible an existing reality but at constructing a *new* reality. For this reason, the intentionality involved here can be called "constructive intentionality."

Conclusion

Technological development has reached a stage in which technology has started to interfere explicitly with the nature of human beings. Intentionality used to be one of these concepts which belonged to the realm of the exclusively human, but by now it has become clear that it needs to be extended to the realm of technology – and to the realm of human–technology amalgams. When Friedrich Nietzsche (1969/1883) wrote the famous words that "Man is a rope, stretched between the animal and the Übermensch", he could not possibly foresee that they were prophetic in a very concrete and material sense. By re-articulating phenomenological and philosophical–anthropological concepts philosophers can contribute to a better understanding of the "posthuman" or perhaps even "transhuiman" beings we are becoming – and to the development of a better sense of the limits of humanity.

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