

Affordances – a Merleau-Pontian Account

Nina Bonderup Dohn

University of Southern Denmark

nina@sitkom.sdu.dk

ABSTRACT

In this paper, the concept of ‘affordance’ is given an ontological and epistemological explication building on a Merleau-Pontian view of human being as always already being-in-the world in a non-thematized, pre-reflective correspondence of body and world in the concrete activity. A dynamic, agent-centred, cultural-, experience- and skill-relative, but perception-independent, ontology is proposed for affordances. It is argued that this is more in line with the original Gibsonian understanding of the concept than a recent attempt by McGrenere and Ho, because the latter fall back upon the subject-object-dichotomy that Gibson was trying to transcend.

Keywords

Affordance, ontology, epistemology, perception, agency, body, being-in-the-world, representation

INTRODUCTION

Over the last decades the Gibsonian concept of ‘affordances’ (Gibson, 1986) has been widely used in research on human computer interaction, in discussions of the design of ICT systems as well as of their use (Norman, 1989; Gaver, 1991; McGrenere & Ho, 2000). The agent-centred focus of the concept and the interrelatedness of action and perception implied by it at both a theoretical and a practical level make it appropriate for the analysis of the role of artefacts in human practice (Norman, 1989).

However, underneath the seeming common acceptance of the analytical force of the concept lies a disagreement as to the exact ontological nature and epistemological status of an ‘affordance’. McGrenere & Ho, 2000, identify a number of variances in the use of the term and argue for returning to an understanding of the concept more in line with the original Gibsonian one. In agreement with this suggestion, I shall follow McGrenere and Ho in understanding Gibsonian affordances as “relative to the action capabilities of a particular actor” (McGrenere and Ho, 2000, p. 1). It will be argued, however, *pace* McGrenere and Ho, that this understanding implies a dynamic, relational, cultural- and skill-relative interpretation of the concept as opposed to the culture-independent, essentialist conception proposed by them. Furthermore, it will be claimed that an adequate account of ‘action capabilities’ cannot restrict itself to an analysis of “knowledge in the head or in the world” (cf. Norman, 1989, Ch. 3), but must consider the role of the body in determining both. In discussing this role, I shall draw on the phenomenology of Merleau-Ponty, 1962, arguing that his concept of ‘body schema’ is complementary to the concept of ‘affordance’ and illuminative for the sense in which “an affordance is neither an objective property nor a subjective property; or it is both if you like” (Gibson, 1986, p. 129). Examples from ordinary life involving the use of ICT and other artefacts will be discussed as illustrations of the theoretical arguments.

AFFORDANCES AS RELATIVE TO ‘ACTION CAPABILITIES’

Gibson introduces the term ‘affordance’ in the following way: “The *affordances* of the environment are what it *offers* the animal, what it *provides* or *furnishes*, either for good or ill... [The word affordance] implies the complementarity of the animal and the environment.” (Gibson, 1986, p. 127) Confining ourselves to human beings, an affordance is an affordance *for* someone, *i.e.* it only exists *as* an affordance *relative* to an agent. The fact of something being an affordance for someone is, however, according to Gibson, an objective matter, independent of the current needs of that someone and independent also of his/her ability in the concrete situation to perceive the affordance (*ibid*, p. 138f, p. 142f): A chair affords sitting for me regardless of whether I now want to sit or stand, and the computer mouse affords clicking for me regardless of the fact that for the moment it is hidden under the wealth of paper on my desk. The mouse would even afford clicking for me had it been designed to look like something else (*e.g.* a banana) so that I could not right away see that it *was* a computer mouse. On the other hand, it most definitely would *not* afford eating just because I perceived it as a banana.

Interpreting Gibson's emphasis on the perception- and need-independent existence of affordances, McGrenere and Ho propose 2 claims: 1) It is necessary to distinguish as independent the *existence* of an affordance and the *information* specifying it 2) A person's ability to discriminate the information specifying a given affordance may depend on his/her experience and culture, but the existence of the affordance does not (McGrenere & Ho, 2000, p. 2). In other words, on McGrenere and Ho's view, the action possibility exists as an objective feature of the environment irrespective of culture and learning, but it may be necessary to learn to see that it is there.

This view is highly problematic, especially when combined with a prior statement of the authors, according to which a fundamental property of an affordance is that it "exists relative to the action capabilities of a particular actor" (*ibid.*, p. 1). The implication is a very unclear notion of 'action possibility for' and 'action capability of' a given person; *i.e.* a notion, in which the 'possibilities' and 'capabilities' of this person is without any reference to what he or she is actually able to do in any concrete situation. For what a person *is* actually able to do is definitely dependent on culture, prior experience and learning. Instead, the 'possibilities' and 'capabilities' of someone seem to have to be defined in relation to some abstract point or logically possible world, in which the person possessed all the capabilities he or she could possibly be conceived to come to acquire in whatever settings necessary. Whatever that means, and however one were to determine what those capabilities would be. Defined in this way, 'affordance' does not seem to be a particularly useful concept. In the context of design, it would seem to lead to designing only for 'potential users' with a total neglect of the actual skills of actual users, predictably with many frustrations of the latter as a consequence.

The problem here is not the relating of 'affordances' to the capabilities of a particular agent. Neither is the problem the emphasis on the distinction between affordances and perceptible information about affordances. Instead, the problem is the failure of McGrenere and Ho to acknowledge that not only do you often have to learn to *see* the use of something; you also in most cases have to actually *learn to use it* for it to present an 'action possibility' for you. And that, therefore, the existence of an affordance *does* depend on culture and experience in the sense of the German *Erfahrung*, though it does *not* depend on actual perception here and now and therefore not on experience in the sense of the German *Erlebnis*. It should be noted that when Gibson speaks of affordances as experience-independent, it is in this latter sense of the word (Gibson, 1986, p. 137 and p. 139-140). When above I emphasised that the chair for me afforded sitting and the computer mouse clicking irrespective of my perception and current needs, the point was that *for me*, with my physiologically, personally, and culturally dependent skills, they provide such affordances. For the 3-month-old baby, the chair does not afford sitting, it affords falling-off-and-hurting-oneself, and the computer mouse does not afford clicking, it affords putting-in-the-mouth. This does not mean that the baby cannot accidentally click the mouse whilst putting it in the mouth, but it means that this accidental click is not an 'action possibility' for the baby because it has not yet acquired the finger coordination skills necessary for making a click. And even if it had these coordination skills, it would still not have acquired the culturally dependent skills necessary for making use of the clicking in the further context of 'using the computer'. At most, the clicking would afford 'making-a-certain-noise' for the baby. Likewise, a chair flung back into the days of Cro Magnon would not afford him sitting; not because he would be physiologically unable to do so, but because culturally it would not present an 'action possibility' for him.

At this point, a comment must be inserted about the possibility of actions being performed towards an agent: Affordances are not only possibilities for action *by* the agent, they can also be possibilities of something acting upon him or her: An owl affords 'being-eaten' for a mouse, an angry parent affords 'being-scolded' for the child, and a webcam affords 'being-seen-by-someone-somewhere-else' for the person in the room with the webcam. This kind of affordances could be termed 'intransitive' affordances, implying that the action in question is not undertaken by the agent, but is happening to him/her. It should be noted, however, that 'intransitive' affordances are also relative to the action capabilities of the agent in question: In the case of the mouse, the owl's affordance for it depends on the relative strengths and fighting capabilities of the two animals. Likewise, it is relative to the personal and social skills of the child that the loud wording of an angry parent can amount to being scolded. On the face of it, the case of the webcam might seem different: a dog present in front of the webcam will be seen by the person receiving the signal, even though the dog has no computer skills. Actually, however, in this case one cannot reasonably say that the webcam 'affords' 'being-seen' for the dog at all, although it does afford 'seeing-the-dog' for the person receiving the signal: It does not afford 'being-seen' for the dog for the same reason that a computer game does not afford 'playing' for the 3-month-old baby, even when the latter is accidentally biting the click-button of the mouse at exactly the rate needed to shoot down the monsters of the game: It simply doesn't make the necessary sense for the dog and the baby, respectively; and it couldn't make the necessary sense for them given the action capabilities that they have.

What this boils down to is the fact that affordance is necessarily tied to meaning, and that meaning is ‘meaning for someone’. This is what McGrenere and Ho do not take into account when they claim that the existence of affordance is culture-independent. Or rather, they overlook that meaning is culture- and agent-dependent (though not ‘subjective’ in the sense of ‘constructed by the individual’) and ascribe it an ahistorical, essentialist existence. Therefore, they end up with affirming an essentialist ontology of affordances; in point of fact not returning to a Gibsonian relational perspective, but to the very subject-object-dichotomy that Gibson was trying to transcend in the first place.

‘ACTION CAPABILITIES’ ARE CAPABILITIES OF THE BODY

From the Gibsonian beginning, the concept of ‘affordances’ was meant to elucidate an important aspect of the way an animal lives, perceives, and acts in its environment. Of course, a very basic fact about animals, including humans, is that they have bodies and that they act by using their bodies. Interestingly, this fact has received relatively little attention in the discussion of the concept. Gibson himself had as his primary aim to give an alternative account of visual perception, starting from ecology rather than from the retinal image, and he stresses as essential that animals perceive as they *move around* in their environment, rather than from a still-life perspective (Gibson, 1986, p. 72). In this way, perception is made sense of within the wider context of the behaviour of a bodily being. However, the implications of this wider context remain largely implicit, focus being more on the information available in ‘the ambient light’ than on the role of the body in structuring the information. The concept of ‘affordance’ holds within it the incipience for an analysis of this role, by relating meaning and action capabilities, and by implying agency over and above mere moving around, but since this incipience has not been unfolded it has been largely overlooked in the reception of the term, especially in the HCI community. An interesting exception is Bærentsen & Trettvik, 2002, in which an activity theoretical perspective on affordance is developed. In line with the common activity theoretical trend, however, this paper, though discussing the importance of social practice, understands action as conscious, goal-directed behaviour and so tends to overrate the importance of consciousness and representation in sense-making. The body is not viewed as in itself a resource of meaningful structuring of the environment, and therefore an essential aspect of agency is neglected in this paper as in others.

In striving to remedy this neglect, the fact must be taken seriously that we as human beings are bodily beings, and that ‘action capabilities’, whatever else they are, are capabilities of the body. Taking this fact seriously implies at least posing the question to which degree the body itself can possess knowledge or ‘know how’ and whether it has any role to play in determining the meaning of its actions. Is the body just that ‘thing’ which carries out the orders directed to it by the thinking human being? Are the ‘action capabilities’ of an individual actually the capabilities of his or her mind, which, when practiced, are coupled with the more or less mechanical ‘executions’ of these mental capabilities? This traditional Cartesian understanding of the relationship between mind and body seems to lie behind Norman’s original proposals for better design, building as they do on the proposition that knowledge can be “in the head and in the world” (Norman, 1989, Ch. 3) and that “knowing what to do” (*ibid.*, Ch. 4) involves either constructing a ‘conceptual model’ of the artefact to be used or ‘interpreting information in the world’. Although in a prior chapter Norman has distinguished two kinds of knowledge, *knowledge of* and *knowledge how*, and has discerned the latter to be “difficult or impossible to write down... and best learned through practice” (p. 57f), this does not lead him to question the necessity of mental models in ‘knowing what to do’. Quite to the contrary, ‘knowledge how’ is declared to be largely subconscious (p. 58) and is not mentioned again in the book; and in discussing the skilled typist, Norman asserts that he or she gains speed and accuracy as the information on the keyboard is memorized in the head (p. 56), *i.e.* as the information becomes ‘knowledge of’ for the typist. ‘Knowledge of’ is further asserted to include ‘knowledge of rules’ (p. 57), which, it is later implied, is actually essential to skilful behaviour: “Those of us who study these things believe that guidelines for cultural behavior are represented in the mind by means of schemas, knowledge structures that contain the general rules and information necessary for interpreting situations and for guiding behavior.” (p. 85f)

Passages such as these point readily to an understanding of skilful behaviour as primarily the mind’s work, carried out only secondarily by its mechanical transportation carriage, the body. Such an understanding is fully compatible with the view of affordances advocated by Norman (both the original 1989-and the revised 1999-view) according to which affordances (or “perceived affordances” in the revised view) “result from the mental interpretation of things, based on our past knowledge and experience applied to our perception of the things about us.” (Norman, 1989, p. 219). However, the question is whether this view of the relationship between knowledge and affordance is adequate. Norman himself acknowledges that his account is at variance with many Gibsonian psychologists (*ibid.*), including Gibson himself (Norman, 1999, p. 39). And as Dreyfus has argued

extensively, it is indeed questionable whether 'those of us who study these things' really ought to (that is, are justified if they) believe that skilful behaviour is rule governed (Dreyfus & Dreyfus, 1986; Dreyfus, 1992 and 2001). From an empirical point of view, Norman's claim is dubious, given the problems of cognitive computer scientists in handling the question of relevance and in constructing expert systems performing at the same level of skill as real experts (Dreyfus, 1992; Copeland, 1993). Philosophically, the claim is equally debatable, resting as it does on two problematic assumptions: An ontological essentialist one according to which situations despite their seeming differences fall into disparate classes, each of which is characterized by fundamental features and/or structures. And an epistemological one to the effect that human knowledge of these fundamental features/structures and how to deal with them take the form of mental representations, e.g. as mental models and rule-following 'scripts' (for a critique of these assumptions, cf. Wittgenstein, 1984, Heidegger, 1986, Merleau-Ponty, 1962, Dreyfus, 1992). From a common sensical as well as a phenomenological point of view, Norman's position simply seems to 'miss a link' between world and head: how is the information in the world to get into the head if not through the actions of the agent, a bodily being?

Instead of postulating mental models and rule-governed scripts to account for action, a much simpler and yet phenomenologically more adequate explanation is provided by saying that first and foremost the body is itself acting in accordance with the requirements of the situation. An obvious rejoinder to Norman's description of learning to type well is that acquiring this skill is not a question of getting "knowledge about the keyboard from the world into the head", but into the fingers. A skilled typist will not necessarily be able to say where the keys are placed on the keyboard – until he or she is placed with the fingers on a keyboard (with or without the key labels showing). Once so placed, the typist will, however, be able to use the knowledge of the fingers moving around on the keyboard to reconstruct the arrangement of keys. Just like the rest of us can only remember passwords and pin-codes when standing in front of the machine we need them for. And even then, we do not remember these codes 'in the head', but through the movements of our fingers.

THE MERLEAU-PONTIAN NOTION OF 'BODY SCHEMA'

But what precisely is involved in saying that 'the knowledge is in the fingers'? Looking to the writings of Merleau-Ponty, one finds a non-representationalist view of knowledge and skills. For Merleau-Ponty, we are as bodily beings always already in the world in a pre-reflective, non-thematized (and therefore non-representational) correspondence of body and world in the concrete activity we are engaged in. "Our bodily experience of movement is not a particular case of knowledge; it provides us with a way of access to the world and the object, with a 'praktognosia', which has to be recognized as original and perhaps as primary. My body has its world, or understands its world, without having to make use of my 'symbolic' or 'objectifying function'." (Merleau-Ponty, 1962, p. 140f) The body is "polarised by its tasks", has "*existence towards them*", thereby "collecting [itself] together ... in the pursuit of its aims." (*ibid.*, p. 101). In explicating this pre-reflective correspondence of body and world, Merleau-Ponty introduces the concept *schema corporel*, which confusingly has been rendered "body image" in the English translation. As argued by Gallagher, the translation ought to be *body schema*, leaving the former term to refer to the conscious representation a person may have of his or her body (Gallagher, 1986).

The 'body schema' is the way one has and knows one's body in action, through the demands and possibilities of the situation and the task one is undertaking in it. It is a focusing of the body on the concrete task, but, as a focusing is not a fixation, it is "open on to the world, and correlative to it" (*ibid.*, p. 143), *i.e.* it leaves open the possibility of responding to and being polarized by other tasks (*ibid.* p. 141). As a simple example of this 'knowing oneself through the activity one is undertaking', Merleau-Ponty mentions the activity of smoking a pipe (*ibid.*, p. 100). In so doing, one knows where one's arm is, not in objective terms of coordinates and angles in relation to the trunk of one's body, but through knowing where *the pipe* is because one is enjoying it. The body itself is not thematized at all and therefore one knows it only through living it in the action. Similarly, this 'knowing the body through living it' is the reason why one can be totally unaware of habitually performing a specific gesture, but, when told by others, nonetheless one can recognize it as one's own action by performing it with awareness and feeling the familiarity of it. Importantly, the body schema is not equivalent to the physical body. A dramatic example of a lack of equivalence, discussed by Gallagher, 1995, as well as Merleau-Ponty, is the case of phantom limbs: People who have had a limb amputated often report that they can still feel it and actually *act* as if it were still there, for example by getting up and starting to walk across the room, only to realise as they fall that the leg is not there anymore. Mentally, as part of the body image, such a person will certainly know that the leg has been taken off, but he or she is acting body schematically to the demands of the situation with a body schema that has not yet accommodated to the new state of affairs.

The lack of equivalence between body schema and physical body is, however, also the reason why a person can learn to use a prosthetic device as a substitute for an amputated limb, and, in general, why we can learn to use artefacts to probe and manipulate our surroundings. The blind person senses the world directly at the tip of his/her cane, not indirectly through an interpretation of the movements caused in the hand. Likewise the sports fisherman senses the fish at the tip of his fishing rod, and experienced bicyclists or drivers sense the road through the wheels of their bike or car. In using an artefact, one is incorporating it into one's body schema and acting *from* it as part of the phenomenal body, not through it from the borders of the physical body. This phenomenon has been discussed extensively within phenomenology (Merleau-Ponty, 1962, Gallagher, 1986 and 1995, Polanyi, 1966, Leder, 1990). Recently it has been discussed also by Kaptelinin, who has given it an activity theoretical interpretation under the heading of 'functional organs' (Kaptelinin, 1996). Coming back now to the sense in which the skilled typist has 'knowledge in the fingers', this is precisely in the body-schematic sense: In typing, the keyboard is incorporated into the body scheme of the typist and therefore he/she is meeting the demands of the situation by acting from the keyboard as part of the body. As Merleau-Ponty says, actually also discussing type-writing: "To know how to type is not, then, to know the place of each letter among the keys [*pace* Norman, my comment, NBD], nor even to have acquired a conditioned reflex for each one, which is set in motion by the letter as it comes before our eye... It is knowledge in the hands, which is forthcoming only when bodily effort is made, and cannot be formulated in detachment from that effort... When I sit at my typewriter, a motor space opens up beneath my hands, in which I am about to 'play' what I have read." (*ibid.*, p. 144). In sum, action capabilities are capabilities neither of a Cartesian mind, nor of a Cartesian pure mechanical body (therefore a skill is not a conditioned reflex). Rather, the Cartesian mind-body-dichotomy must be transcended by a concept of agency as the acting of a bodily being where the latter is seen to imply concepts traditionally viewed as 'mental', such as 'intentionality', 'meaning' and 'knowledge'. And where, conversely, 'knowledge and meanings in the head' depend greatly on 'knowledge and meanings of the body'. 'Being a body' involves 'having a world' and action capabilities are capabilities of the agent as a bodily being.

A MERLEAU-PONTIAN ACCOUNT OF AFFORDANCES

Returning to the concept of 'affordances' with the Merleau-Pontian notion of 'body schema', the two concepts emerge as complementary ways of referring to the fact that concrete situations are, *objectively* seen, meaningfully structured *relative* to the actual skills of a particular agent. Thus, 'affordance' signifies that meaning is in the world, *not* in the head, and 'body schema' signifies that the world is meaningful because of what we can *do* in it. Together, they reciprocally signify that we as human beings live in a world not of our own mentalistic making, the meaning of which nonetheless transforms in accordance with what we learn to do. Even more importantly, the complementarity of the two concepts implies an interdependency of body and world, which is experientially, epistemologically, and, in respect of meaning at least, also ontologically primary. Finally, the dual notions of 'body schema' and 'affordance' suggest an understanding of agency as an immediate 'doing of what the situation calls for', *i.e.* an 'attuning of the body to the demands and possibilities of the situation' that does not rely on representation of these demands and possibilities. In the following two subsections, I shall draw on this basic reciprocity in giving a Merleau-Pontian account of affordances, focusing on the ontological nature and epistemological status of the latter.

Perceiving Affordances – the Epistemological Question

Fundamental to the Merleau-Pontian understanding of perception is its interwovenness and dependency on agency. Though of course we sometimes represent and consciously think about what we perceive, perception of something does not imply representing it. Instead, it implies that the situation presents itself to us as bodily agents with a certain figure to-be-acted-upon. Perception is first and foremost *presentation*-in-action to the agent (not solely to the mind) of meaning in the world, not a *representation* in the head of this meaning. Accordingly, perceiving the affordances of a given situation does not necessarily mean being consciously or sub-consciously representationally aware of them; rather it means body-schematically acting upon them in an attuning to the possibilities that they pose. When a standing conversation becomes tiring for the legs, one responds to the affordance of a chair by sitting down, often without being representationally aware neither of the act nor of the chair itself, awareness being only on the conversation held. Likewise, when the long-sought-for words for a passage in a research paper finally come to mind, the mouse is grabbed, pushed and clicked, and the keys of the keyboard struck, without any representation of these operations being involved, awareness being fully absorbed 'out there' in the words presenting themselves on the screen of the computer.

Importantly, perception always has a figure-background structure. This point is often illustrated with 'gestalt-switch pictures' where a picture can be seen in two different ways, as non-simultaneously representing two

gestalts, where the background of one gestalt is the gestalt of the other and vice versa. An example is Rubin's famous Peter-Paul Goblet (Dreyfus, 1992). However, the point is more general than the discussion of such rather special pictures might lead to expect: Quite generally, the background of a picture determines its figure as much as the figure itself, both banally in establishing the outline of the figure, and more significantly in deciding its meaning. A smiling face means something very different when portrayed on the background of a flowery meadow and on the background of starving children. And of course, the meaning of the picture is perceived by the observer on the background of his or her knowledge and experience (in the sense of the German *Erfahrung*); part of which will be representational and part of which will be bodily incorporated as ways the world make actionable meaning.

These observations about the perception of pictures apply similarly to the question of perceiving affordances. Concrete situations present themselves with the figure of action possibilities relative to the task currently undertaken by the agent. Given the openness of the body schema to being polarized by other tasks, the current one does not preclude noticing affordances unrelated to it, but, depending on one's degree of immersion in the given activity, one may very well actually fail to take regard of other affordances, unless these are in other ways very important. When fully engrossed in writing a paper, the chilliness of the room may not be noticed, though it does afford being cold. Typically, in such a situation, one's first reactions to the non-task-related affordance are body-schematic and non-representational, e.g. one may without thinking about it shuffle one's feet, rub one's legs or maybe even get up and close the window. Only if the chilliness persists does one become aware of it and of being cold. Again, the perception of this affordance takes place on the background of the knowledge and experience of the agent. Though feeling cold is not dependent on experience and culture, what one does in acting upon the feeling is, at least to some extent. A three-month-old will cry, a grown-up Viking anno 1000 might have put on an extra garment or lit a fire, a grown-up Dane of today probably adds a sweater, closes the window, or turns up the central heating. Importantly, the affordance of the chilliness presents itself 'with a handle on it'; not just as a state of affairs to be contemplated, but directly as demanding certain actions in response. Our bodily existence, with the physiological, personal, cultural needs and skills each of us possesses, is the background upon which we perceive and act in the situations we come in.

In regard to the epistemological status of affordances, a Merleau-Pontian account therefore holds: First, we do not always perceive all the affordances of the environment; quite the contrary, we first and foremost perceive the ones relevant for the task we are undertaking. Second, perceiving affordances is not primarily a question of representations and mental models; rather, in perception, situations present themselves directly as body-schematically to-be-acted-upon. Third, we are body-schematically able to take account of or attune to affordances of the situation without being representationally aware of doing so. Fourth, the meaning a situation has for us and specifically the affordances it offers us stand out as a figure on a background, where the latter has a decisive role to play in determining the former. Fifth, the figure-background structure of the situation is perceived on the background of our physiologically and culturally dependent bodily existence, with the skills, experience, and knowledge incorporated herein.

Illustrative of these points is the phenomenological consideration of the introduction of a webcam into a synchronous oral or written ICT-learning situation. Participants in such situations often claim that after a while they neglect the webcam and concentrate on the words said or written; a claim which is backed by the fact that they actually seem only rarely to look at it. However, though it may be that the participants do not make direct positive use of the affordance of the webcam in their communication, its affordance plays a large role in the structuring of the meaning of the situation, changing the figure of it to one in which participants 'can be seen'. Though they may not be representationally aware of the webcam at all, it is part of the background of the situation, posing demands for and setting restrictions on appropriate action in the situation. And these demands and restrictions are taken into account in the participants' body-schematic non-representational attuning to the situation. In consequence, participants change their behaviour as compared to ICT-learning situations without webcams, though they may not be aware that they do. Without a webcam, participants may (and many say they do) fetch coffee, skim through a letter or talk with other people in the room (if sound is not automatically transmitted). Such actions will not be undertaken with a webcam, or, if an interruption is absolutely necessary, it will not be undertaken without apologizing first.

As the last point, it must be emphasized that we of course sometimes fail to perceive something or misperceive it for what it is not, for which reason we sometimes fail to act on an affordance which it might have been advantageous to have taken into account, or alternatively act as if the environment offered an affordance for us which it does not. The webcam may be hidden to us, or we may misperceive it for an audio recorder or a beamer and so not act appropriately. This possibility of erroneous perception leads on to the next section, which treats

the ontological question of the nature of affordance and more specifically asks, to which degree affordances are agent-dependent.

The Existence of Affordances – the Ontological Question

The ontological nature of affordances is a dynamic, relational, cultural-, experience- and skill-relative one. Affordances are the actionable meanings of objects for a particular agent and as such their existence must be determined relative to the body-schematic space of possible actions of that agent. And as this body-schematic space of possible actions changes over time as the agent incorporates new experience, knowledge, and/or skills into his body schema – or, more negatively, as he or she forgets/loses skills etc. formerly possessed – what an object affords a specific person is in most cases transformed more than once throughout his or her life.

Claiming that the existence of affordances is to be seen as relative to the body schematic space of possible actions of a particular agent, however, is not equivalent to postulating a relativistic, subjectivist ontology of affordances. The objects in the environment exist independently of the agent, and they have actionable meaning for the agent, independently of his or her current needs and actual perception. As Gibson maintained, meaning is objectively there in the world, only, as it has already been emphasized, meaning is necessarily meaning for someone. *Not* in the sense that this ‘someone’ must necessarily be *aware* of the meaning here and now, but in the sense that it has meaning *in relation to* what he/she is body-schematically able to do. From a Merleau-Pontian point of view, it is in this fundamental relating of meaning-in-the-world to bodily doing-in-the-world that the Gibsonian transcendence of the subject-object-dichotomy consists.

Clarifying this relational, yet not relativistic, ontological nature of affordances further, not only does an object’s affordance for someone not depend on his/her perception thereof; neither does it depend on whether anyone ever perceives *this particular* object to have this affordance for him or her. It makes sense to say that the computer mouse hidden under the paper heaps on my bookshelf affords clicking for me and my colleagues, though it actually has never been clicked (because I misplaced it there right after I got it) and never will be clicked, because it eventually will be thrown out by mistake together with the unsorted paper heaps. But it *only* makes sense to say this, because my colleagues and I are able to use that *kind* of device. And ‘are able to’, it should be noted, means that we in point of fact exercise this action capability with *other* computer mice in concrete situations. Affordance is therefore relative to action capabilities understood as body-schematic possibilities of actions, (*i.e.* actions actually sometimes exercised) with or in relation to objects qualitatively identical or at least sufficiently similar with the one in question, but not necessarily numerically identical with this *particular exemplar*.

A last comment on the ontological nature of affordances: As McGrenere and Ho note (McGrenere and Ho, 2000), referring to Warren, 1995, ‘affordance’ is not a binary concept, though it has often been used as if it were. Chairs afford sitting for modern agents above a certain age, but, relative to a particular one of these agents, some chairs afford the activity better than others. Most (but not all) chairs for 3-year old children afford sitting on for grown-ups, too, but not nearly as well as chairs designed for grown-ups. Again, the relative degree of affordance of an object for a given person is relative to his/her body-schematic space of possible actions, as this is determined by his/her physiology, experience, knowledge, and skill, acquired in the socio-cultural settings he/she has partaken in.

CONCLUDING REMARKS – WHY CARE?

In this paper I have presented a theoretical elaboration of the ontological nature and epistemological status of the concept of ‘affordances’, based on a Merleau-Pontian understanding of human beings as always already in the world in a non-thematized, pre-reflective correspondence of body and world in the concrete activity. But why care? Why should such ontological and epistemological considerations matter at all for the design and use of ICT in network learning? My claim is that they do matter. The concept of ‘affordance’ is an important one, because its fundamental ecological focus on meaning as an aspect of the interaction of agent and environment can elucidate notions of use, usefulness and usability theoretically, and can guide the design for these notions practically. However, since the force of the concept lies in its ability to transcend the subject-object-dichotomy, it is essential to be clear about ontological and epistemological issues. Otherwise, chances are that the implicit understanding of the concept will unwittingly draw on precisely this dichotomy, leading to the well-known philosophical positions of essentialism (e.g. McGrenere and Ho, 2000) and phenomenism (e.g. Norman, 1989), respectively, only clothed in a new wording. The consequence for design are very unhelpful concepts: As noted, the essentialist interpretation of ‘affordances’ as related to ‘action capabilities’ understood without reference to experience, knowledge, and culture, would lead one to design for mysterious ‘potential users’

instead of actual ones. On the other hand, the phenomenalist position that affordances exist exactly as they are perceived makes misperception and mistakes inexplicable and ultimately denies the possibility of bad design. Only with a relational, dynamic, agent-centred, and skill-relative conception of affordances can one design real objects for real users whose skills develop and possibilities increase as their experience gains. And only if one understands perception as interwoven with body-schematic being-in-the-world will one be able to focus one's design process on creating the best possible design: the one that does not break the primary correspondence of body and world by making reflection necessary. Designing is not about making mental representations easy to construct, it is about making representation unnecessary.

REFERENCES

- Baerentsen, K. and Trettvik, J. (2002) An activity theory approach to affordance. *Proceedings of the Second Nordic Conference on Human-Computer Interaction* (Aarhus, October 2002) ACM Press, 51-60.
- Copeland, J. (1993) *Artificial Intelligence*. Blackwell, Oxford.
- Dreyfus, H. & Dreyfus, S. (1986) *Mind over Machine*. The Free Press, New York.
- Dreyfus, H. (1992) *What Computers Still Can't Do*. Harper & Row, New York.
- Dreyfus, H. (2001) Phenomenological Description versus Rational Reconstruction. *Revue internationale de philosophie*, **55**, 216, 181-196.
- Gallagher, S. (1986) Body Image and Body Schema. A Conceptual Clarification. *Journal of Mind and Behavior*, **7**, 4, 541-554.
- Gallagher, S. (1995) Body Schema and Intentionality. Bermudez, J. et al. (Eds.) *The Body and the Self*, MIT Press, Cambridge, Massachusetts, 225-244.
- Gaver, W. (1991) Technology affordances *CHI'91 Conference Proceedings* (New Orleans, Louisiana, April-May 1991), ACM Press, 79-84
- Gibson, J.J. (1986) *The Ecological Approach to Visual Perception*. Lawrence Erlbaum Associates, Hillsdale, New Jersey.
- Heidegger, M. (1986) *Sein und Zeit*. Max Niemeyer Verlag, Tübingen.
- Kaptelinin, V. (1996) Computer-Mediated Activity: Functional Organs in Social and Developmental Contexts. Nardi, B. (Ed.) *Context and Consciousness*, MIT Press, Cambridge, Massachusetts, 45-68.
- Leder, D. (1990) *The Absent Body*. University of Chicago Press, Chicago.
- McGrenere, J. & Ho, W. (2000) Affordances: Clarifying and Evolving a Concept. *Proceedings of Graphics Interface 2000* (Montreal, May 2000), A K Peters, 179-186.
- Merleau-Ponty, M. (1962) *Phenomenology of Perception*. Routledge and Kegan, London.
- Norman, D. (1989) *The Design of Everyday Things*. Basic Books, New York.
- Norman, D. (1999) Affordance, Conventions and Design. *Interactions*, **6**, 3, 38-43.
- Polanyi, M. (1966) *The Tacit Dimension*. Doubleday & Co., New York.
- Salomon, G. (Ed.) (1993) *Distributed cognitions – Psychological and educational considerations*. Cambridge University Press, Cambridge, England.
- Warren (1995) Constructing an econiche. Flach, J. et al. (Eds.): *Global Perspectives on the Ecology of Human-Machine Systems*. Lawrence Erlbaum Associates, Hillsdale, New Jersey, 210-237.
- Wittgenstein, L. (1984) *Philosophische Untersuchungen*. Suhrkamp, Frankfurt am Main.