Bodily intentionality and social affordances in context

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There are important structural similarities in the way that animals and humans engage in unreflective activities, including unreflective social interactions in the case of higher animals. Firstly, it is a form of unreflective *embodied* intelligence that is 'motivated' by the situation. Secondly, both humans and non-human animals are responsive to 'affordances' (Gibson 1979); to possibilities for action offered by an environment. Thirdly, both humans and animals are selectively responsive to one affordance rather than another. Social affordances are a subcategory of affordances, namely possibilities for social interaction offered by an environment: a friend's sad face invites comforting behavior, a person waiting for a coffee machine can afford a conversation, and an extended hand affords a handshake. I will review recent insights in the nature of the bodily intentionality characteristic of unreflective action. Such 'motor intentionality' can be characterized as "our direct bodily inclination to act in a situated, environmental context" (Kelly 2005, p. 106). Standard interpretations of bodily intentionality see grasping an object as the paradigmatic example of motor intentionality. I will discuss the implications of another, novel perspective that emphasizes the importance of unreflective switches from one activity to another (Rietveld 2004) and understands bodily intentionality in terms of adequate responsiveness to a *field* of relevant affordances. In the final section I will discuss some implications for cognitive neuroscientists who use empirical findings related to the 'mirror neuron system' as a starting point for a theory of motor intentionality and social cognition.

Keywords: embodied cognition; enaction; motor intentionality; affective cognition; field of affordances

1. Introduction

There are important structural similarities in the way that higher animals and humans engage in unreflective activities, including unreflective social interactions. Firstly, it is a form of unreflective *embodied* intelligence that is 'motivated' by the situation (cf., Merleau-Ponty 1945/2002). Secondly, both humans and non-human animals

(henceforth 'animals') are responsive to 'affordances'; i.e. to possibilities for action offered by an environment (Gibson 1979; Michaels 2003; Chemero 2003). John McDowell, for instance, recently wrote: "[R]esponsiveness to affordances, necessarily bound up with embodied coping skills, is something we share with other animals" (McDowell 2007, p. 344).

Thirdly, both humans and animals are selectively responsive to one affordance rather than another, in a way that is related to the individual's dynamically changing needs. This phenomenon of adequate responsiveness to *relevant* affordances in context is crucial and can even be seen as a paradigmatic form of unreflective action. Relevant affordances are alluring and bodily activating possibilities for action. This responsiveness has a basic normative aspect that cannot be reduced to mechanistic causal explanation.

Unreflective actions are performed without mediation of explicit deliberation or reflection. Of course not all of our life is spent in a state of unreflective action. Sometimes we lack the relevant skills, things go very wrong, or situations are too complex, thus forcing us to reflect or deliberate explicitly. However, here I will restrict myself as much as possible to investigating those episodes where the activities of a skillful individual unfold without reflection on his or her part. Discussion of the many interesting issues related to the interactions between reflective action and unreflective action will have to be postponed to another occasion.

Social affordances are a subcategory of affordances, namely possibilities for social interaction offered by an environment: a friend's sad face invites comforting behavior, a person waiting for a coffee machine or smiling can afford a conversation, and an extended hand affords a handshake. Notwithstanding its immediacy and unreflectiveness, human responsiveness to social affordances can take both first-person experience and the broad socio-cultural context into account (Rietveld 2008c).

We can distinguish 'social affordances' from 'object affordances', although as we will see, in my opinion the similarities between these two types of affordances are far more important than the differences. An example of an object affordance is a cup that affords grasping. Object affordances are a subcategory of affordances too. In concrete situations object affordances make up an important part of the context of social affordances, and vice versa.

It is important to see that this integration of both types of affordances in one field of relevant affordances suggests that our responsiveness to object affordances is not independent of the social. Generally, the context of an object affordance contains both other object affordances and social affordances. Moreover, also responsiveness to object affordances normally partakes within socio-cultural practices. In the case of humans, on which I will primarily focus here, is in these practices that we acquire the abilities and concerns that are necessary for adequate responsiveness, for instance the ability to use a certain kind of tool appropriately. Often the use-potential of an object

affordance (say a mailbox) will be dependent upon the existence of a background practice (the "community with a postal system", Gibson 1979, p. 139). We will see below that responsiveness to object affordances has a normative dimension and that we can speak about responsiveness to irrelevant or relevant affordances within a particular socio-cultural context.

Once an ability is acquired after a history of training, practice and experience in an environment (Ingold 2000/2011), the relationship between body and environment is modified. The individual is now attuned to, or at home in, a 'familiar' world. At that moment the level of skill rises to the point where the individual is able to perceive and respond immediately to 'affordances' in this new domain. I am interested in the phenomenological description and analysis of an individual's adequate responsiveness to affordances in skillful unreflective action. I believe that for our insight into motor intentionality it is important to develop a better understanding of the way humans and animals are responsive to a *field* of relevant affordances.

The first aim of this paper is to investigate the nature of 'motor intentionality' or 'bodily intentionality' that is characteristic of unreflective action (Merleau-Ponty 1945/2002). The second aim is to shed light on some aspects of the context in which social affordances are encountered in unreflective action. I will discuss the field of affordances, the normative aspect of responsiveness to affordances, and the role of the individual's concerns respectively. The third aim of this paper is to show that the novel insights in motor intentionality presented here are relevant for cognitive neuroscientists who use empirical findings related to the 'mirror neuron system' as a starting point for a theory of motor intentionality and social cognition (in particular Rizzolatti & Sinigaglia 2008; Sinigaglia 2008).

Before moving on to a discussion of unreflective action and the field of affordances, let me briefly introduce the concept of 'motor intentionality' and explain how the notions of 'concern' and 'emotion' are related.

Maurice Merleau-Ponty introduces motor intentionality to distinguish it from two other types of behavior that traditionally have received more attention. He suggest, to quote Evan Thompson, that

> our primary way of relating to things is neither purely sensory and reflexive, nor cognitive or intellectual, but rather bodily and skillful. Merleau-Ponty calls this kind of bodily intentionality 'motor intentionality'.
>
> (Thompson 2007, p. 247; cf., Gallagher 2005)

Motor intentionality is the bodily intentionality that characterizes skillful unreflective action. It manifests itself both in everyday skillful unreflective activity and in unreflective expert-level performances, such as those of a football player engaged in a flow of action, or of an architect working on the improvement of one of his designs (Rietveld 2008a/c). This latter example of the architect at work is of crucial importance because

it shows that not just simple routines but also types of activity that were traditionally seen as 'high-level' cognition can be understood in terms of unreflective responsiveness to a field of affordances.

Until recently, the standard interpretation of motor intentionality saw grasping an object, for instance a coffee mug, as Merleau-Ponty's (1945/2002) paradigmatic example of motor intentionality. Thompson had put it as follows:

> [Merleau-Ponty's] example is grasping or intentionally taking hold of an object. In grasping something we direct ourselves toward it, and thus our action is intentional. But the action does not refer to the thing by representing its objective and determinate features; it refers to it pragmatically.
>
> (Thompson 2007, p. 247)[1]

However, some important recent papers on Merleau-Ponty's (1945/2002) discussion of motor intentionality have made a plausible case for an alternative perspective (Rietveld 2004, 2008b; Dreyfus 2007a; Thybo Jensen 2009). Even though grasping something is indeed an instance of motor intentionality, the paradigmatic phenomenon might be another one for Merleau-Ponty, namely being responsive to possibilities for action on the *horizon* of one's field of action (Dreyfus 2007a). This latter interpretation fits well with my earlier analyses of embodied cognition in action (Rietveld 2004, 2008a, b, c). It is a responsiveness to affordances "in the background" that may motivate one to switch unreflectively yet appropriately from doing one thing to doing another within a flow of activities.

Here I would like to shift attention away from the question 'What is the paradigmatic example of bodily or 'motor' intentionality according to Merleau-Ponty' to the question 'How can we characterize the bodily intentionality characteristic of adequate unreflective action'. Rather than exegesis this amounts to the presentation of a proposal based on my own earlier work on skillful unreflective action. I propose to understand bodily or 'motor' intentionality not just in terms of responsiveness to affordances on the horizon, but in terms of *responsiveness to the field of affordances as a whole*. To give an example, while drawing an image of a proposed intervention in public space, an architect at work can simultaneously be responsive to his digital drawing pen, the

1. This orthodox position is in line with Sean Kelly's (2000, 2005) understanding of motor intentionality in Merleau-Ponty. Grasping a coffee mug is, according to Kelly, Merleau-Ponty's paradigmatic example of motor intentionality: "Merleau-Ponty argues that the phenomenological analysis of action indicates the need for a category of behavior that is between the purely reflexive and the purely cognitive. He calls this category motor intentional behavior, and he takes the grasping of an object to be a canonical example of this type of behavior. When we grasp an object we are directing ourselves toward it, and therefore the action is intentional" (Kelly 2000, p. 176).

image on his computer screen, the cup of coffee that solicits grasping and drinking, the colleague who enters the building and solicits greeting, and multiple affordances on the horizon of his current drawing situation (perhaps the possibility of answering a few e-mails that he received yesterday, the possibility of booking a hotel for his visit to the US next month, or the possibility of making a to do-list for tomorrow, etc.). In short, our pre-reflective, bodily intentionality can be characterized as adequate responsiveness to a field of relevant affordances.[2]

The term 'concerns' covers all that matters to an individual (Frijda 1986, 2007; Lambie & Marcel 2002; Bennett & Hacker 2003). According to Bennett and Hacker:

> The manifestation of an emotion exhibits an appraisal of people, things and events relative to one's concerns (and one's concerns may stretch far beyond one's personal welfare and illfare). (Bennett & Hacker 2003, p. 217)

This is in line with what we know from emotion psychology: affective perturbations are related to what is significant for the organism. For example, according to Nico Frijda (1986), emotions are related to changes in action readiness that are generated as a reaction to objects or events that are appraised as relevant to the individual's concerns. At the psychological level of analysis we can say that emotions regulate 'control precedence', i.e. the priority of an activity over other tasks (Frijda 2004, p. 159).

This brings me to a methodological point. I believe that insights from phenomenology, psychology and neuroscience can complement each other (Klaassen et al. 2010). One example is the notion of relevance-related changes in action readiness, a notion at the psychological level of description (Frijda 2007, 2010). This notion sheds light both on the first person experience of being drawn to act on an affordance (Rietveld 2008c) as well as on the causal bodily impact of detected relevant affordances, including changes at the neural level of description (Rietveld 2008a; Frijda 2010).

2. Skillful unreflective action and the field of relevant affordances

Our everyday activities unfold in situations that offer a multiplicity of possibilities for action. While typing this text, the apple on the right side of my laptop affords eating, the cup of coffee drinking from it, and my colleague next door affords conversation. Every now and then I unreflectively switch from typing to eating or drinking and back to typing again. A relevant possibility for action is embedded in a field of other

2. This field of affordances can include possibilities that would require reflection if one were to act on them.

soliciting possibilities for action. This implies that several other affordances form the context of both object affordances and social affordances encountered.

Part of the phenomenology of responsiveness to affordances is that affordances are not *mere* possibilities for action but are bodily *potentiating* and/or experienced as having *affective allure* (Rietveld 2008b). Dreyfus and Kelly (2007, p. 52) describe the phenomenology of responsiveness to affordances as 'experience in which the world *solicits* a certain kind of activity'. Often we simply respond skillfully to affordances in online activity. I have argued elsewhere (Rietveld 2008a) that for understanding such episodes of unreflective action, it is crucial that our responsiveness to affordances is *concernful*, in the sense that it takes into account what matters to us; our current needs, interests and preferences. We normally take for granted that we are not responsive to all affordances, but primarily to *relevant* affordances for us.[3] I will use the term *solicitations* (Dreyfus & Kelly 2007) as a synonym for the relevant affordances that we are responsive to.

As mentioned in the introduction, for understanding how we switch unreflectively from doing one thing to doing another it is important that one can be affected by an affordance in on the background of one's field of action; by an affordance "on the horizon" (Dreyfus 2008; Rietveld 2008a; Rietveld 2004). Moreover, the field of relevant affordances in which we are situated is made up of a figure-affordance we are currently directed at and responding to, and a multiplicity of more marginally present ground-affordances that solicit us as well. A quote from Merleau-Ponty might illustrate this phenomenon of being affected by solicitations to act with a more marginal position in my field of relevant affordances:

> To see an object is either to have it on the fringe of the visual field and to *be able* to concentrate on it, or else respond to *this summons* by actually concentrating upon it. (Merleau-Ponty 1945/2002, p. 78, my italics)

Dreyfus & Kelly (2007) notice correctly that solicitations are not *merely* perceived possibilities that reflect what one could or could not do. The *demand character* (what the thing or event is inciting or ordering, Frijda 2007) is intrinsic to the experience of a relevant affordance. The phenomenology of responsiveness to affordances in unreflective action suggests that the individual feels immediately attracted or drawn to act in a certain way (Dreyfus & Kelly 2007, p. 52). His or her activity is immediately *summoned* by the situation (Merleau-Ponty 1945/2002, p. 78).

One does not just see what the situation allows one to do without actually arousing one's action readiness but, rather, one gets *bodily ready* to act. At the psychological

3. In the neurological condition utilization behavior, which is discussed below, we encounter examples of responsiveness to *ir*relevant affordances.

level of analysis we can understand this getting bodily set to respond to the situation as a relevance-related change in *the readiness of coping skills*.[4] This phenomenon of readiness has a position in between capacity and overt action.

At this psychological level of analysis, the phenomenon of being attracted or drawn by a solicitation can be understood as an emotional perturbation in Frijda's (1986) sense. According to Frijda (2010) occurrent motive states are crucial for understanding what *causes* unreflective actions. Occurrent motive states are states of *action readiness* or action tendencies that are generated as a reaction to objects or events that are relevant to the individual's concerns (Frijda 2010). These relevance-related embodied "states of action readiness […] flexibly motivate flexible actions" (Frijda 2007, p. 115). He makes the following important observation:

> Emotions should not be primarily understood as reactions. They are best viewed as modulations of a prevailing background of continuous engagement with the environment. (Frijda 2007, p. 38)

Frijda's eye for the background of continuous bodily engagement with the world dovetails nicely with my current effort to call attention to the importance of not only relevant figure-affordances but also ground-affordances, that is to the field of relevant affordances as a whole.

At the psychological level of analysis there is something in between overt action and a capacity: readinesses of coping skills (cf., Frijda 2007). Thanks to the 'the intentional arc' (Merleau-Ponty 1945/2002) these readinesses are motivated from without in the sense that perceived relevant affordances are able to generate bodily action readinesses. It is our bodily responsiveness to the 'summons' of ground-affordances that makes understandable how our gaze can be attracted by a possibility for action that is unrelated to our current task yet significant (and sometimes even more significant than it). Generation of action readinesses in response to affordances present can occur in parallel to the individual's already being engaged in some overt activity. For instance, while typing this sentence the cup of coffee and cookies on the right side of my keyboard may simultaneously generate states of bodily action readiness.

In sum, thanks to earlier learning and experience, which have shaped our abilities and sensitivity to relevant affordances, we can here and now be moved towards improvement of our situation by simply being responsive to our particular field of relevant affordances. This field includes multiple affordances, including social affordances. This is a situated kind of normativity, namely the normative aspect of embodied cognition in adequate unreflective action. This deserves further investigation.

4. Janna van Grunsven (2008) introduced this term in an insightful discussion of Wrathall (2000) and Dreyfus (2000).

Let's therefore now turn again to Thompson's work in order to see what he has to say about the normative aspect of bodily intentionality.

3. The normative aspect of bodily intentionality in Merleau-Ponty

As part of his introduction to motor intentionality Thompson (2007) discusses our adequate responsiveness to affordances. He writes:

> In grasping something we direct ourselves toward it […] At the same time, things in my surroundings, such as teacups, computer keys, and door handles, have motor senses or meanings, what Gibson (1979) calls 'affordances,' which elicit *appropriate* actions. *Things in the world bring forth suitable intentional actions* and motor projects from the subject […]. (Thompson 2007, p. 247, my italics)

There is a direct relation between my body as a system of potentiated readinesses on the one hand, and my world of experienced solicitations to act, on the other. So in motor intentional activity it is the world that directly (without mediation of explicit deliberation or reflection) motivates our appropriate actions.

However, like McDowell (2007, p. 344), Thompson (2007, p. 247) immediately remarks that this responsiveness to relevant affordances presupposes something, namely that we possess embodied *know how*; that we are skilled.[5] So in motor intentional activity, it is 'simple' responsiveness to affordances by a skilled individual that brings forth appropriate actions. Here it is important to see that appropriate unreflective action in a complex situation, such as for instance that of an architect at work, requires a much broader contextual-attunement than just grasping an object in a

5. Husserl's notion of 'I can' had inspired Merleau-Ponty: "In describing the kinesthetic experience of bodily movement in intentional action, Husserl had already stated that its intentional structure is 'I can' (move this way) rather than 'I think' (a particular thought) (1989, pp. 266–277). Merleau-Ponty takes up this formulation and applies it to motor intentionality: 'Consciousness is in the first place not a matter of 'I think that' but of 'I can" [1945/2002]. Consider his example […] of the football player in action […]" (Thompson 2007, p. 313, he refers to an example in Merleau-Ponty 1942/1983). I believe that the best way to understand this phenomenon of 'I can' is as an affordance-generated responsiveness of coping skills or abilities (importantly this responsiveness can be disorganized or partial; see Rietveld 2008b) that is reflected in our experience of the situation. Phenomenologically the intentional structure of the experience of everyday skillful unreflective action can be characterized by being drawn to respond; it is characterized by lived possibilities for action. The football player example in Merleau-Ponty (1942/1983) is all about motor intentional activity. The player is responsive to affordances: the openings between the adversaries.

way that is technically adequate. Acting appropriately requires that a complex and particular situational context is taken into account by the individual's motor intentional activity.

Thompson summarizes his ideas on bodily intentionality of an individual absorbed in a flow of activity as follows:

> Motor intentionality is the sort of intentionality that characterizes habitual actions and bodily skills, or what Hubert Dreyfus (1991, 2002[a], 2005) calls absorbed skillful coping […]. (Thompson 2007, p. 313)

Thompson then continues by accepting an important aspect of Dreyfus' interpretation of motor intentional activity: this takes place in the context of the individual's lived movement towards *an optimal grip* on the situation. Thompson writes:

> As Dreyfus explains: 'According to Merleau-Ponty, in absorbed, skillful coping, I don't need a mental representation of my goal. Rather, acting is experienced as a steady flow of skillful activity in response to one's sense of the situation. Part of that experience is a sense that when one's situation deviates from some *optimal* body-environment relationship, one's activity takes one closer to that optimum and thereby relieves the 'tension' of the deviation. One does not need to know, nor can one normally express, what that optimum is' (Dreyfus 2002a, p. 378). (Thompson 2007, p. 313)

In the particular situation the individual experiences a deviation from adequate performance as an (affective and behavioral) tension that motivates improvement. An architect at work, correcting the design of a door, might for instance live this normative aspect of skillful unreflective action as discontent that calls for improvement of the door. Lived normativity and motor intentionality are like two sides of the same coin.

In sum, Thompson suggests that bodily intentionality is characteristic of (skillful) unreflective action, a type of activity that we as everyday experts perform in our familiar environments. Furthermore, with respect to the lived normative aspect of motor intentional activity, there is a central role of the tendency towards an optimal grip, which Dreyfus described in the above quotation and to which I will turn now.

4. Motor intentionality and the tendency towards an optimal grip

In this section I would like to suggest that bodily responsiveness to relevant affordances is the central phenomenon at the psychological level of analysis (of the whole individual in its situation); i.e. for understanding what normally drives behavior of animals and humans in unreflective action.

If we take the idea that lived normativity and bodily intentionality are two sides of the same coin seriously, then this has important implications for an account at the

psychological level of analysis. It suggests that for animals and humans alike the *function of bodily intentionality is the tendency towards an optimal grip on the world*. To quote Dreyfus:

> Merleau-Ponty understands *motor intentionality as the way the body tends toward an optimal grip on its object*. As he puts it: 'For each object, as for each picture in an art gallery, there is an optimal distance from which it requires to be seen, a direction viewed from which it vouchsafes most of itself. The distance from me to the object is not [experienced as] a size which increases or decreases, but [as] a tension which fluctuates round a norm' (Merleau-Ponty 1945/2002, p. 352).
>
> (Dreyfus 2007a, p. 63, my italics)

Merleau-Ponty compares this to handling a microscope: "We therefore tend towards the maximum of visibility, and seek a better focus as with a microscope" (Merleau-Ponty 1945/2002, p. 352).

The crucial thing to see is that the function of bodily intentionality is not just getting in touch with the world or situation, but rather getting an *improved grip* on the world or situation. This lived, normative aspect of normal motor intentionality is often ignored, or at least not integrated in accounts of motor intentionality. For instance it is what is missing in Thybo Jensen's (2009) otherwise illuminating discussion of Merleau-Ponty's (1945/2002) work on motor intentionality.

The tendency towards an optimal grip describes and clarifies how one can be moved to improve by the situation when one is immersed in action. One does not need an explicit representation of the right distance. The distinction between optimal and suboptimal is determined actively and pre-reflectively. Determining this expresses a form of bodily intelligence *in interaction* with an aspect of the environment.

In the context of his work on the tendency towards an optimal grip in basic perception, Kelly describes the experience of lived normativity as a felt "normative pull" (Kelly 2005, p. 107). As I have discussed in detail elsewhere (Rietveld 2008b, Chapter 7), in his later work Merleau-Ponty is still interested in this bodily or instinctive type of normativity and intentionality. Let me present one of the central (yet somewhat obscure) quotes that I discussed there:

> [M]y body defines the optimal forms; when we look in the microscope, Husserl says, there is a strange teleology of the eye that means that this eye is appealed to instinctively by an optimal form of the object. The activity of the body defines this form; therefore the idea of a *Rechtgrund* is established in us, from which all knowledge will be formed. […] The Absolute in the relative is what my body brings me. (Merleau-Ponty 2003, p. 75)

Even when unreflective action is drawn to move by the world, the active body (for instance the individual at work using his microscope) is not fully determined by

external forces, but has its own perspective from where one distinguishes between optimal and suboptimal and self-corrects in action. This grounds the individual's situated normativity in the given particular situation. In unreflective action we encounter not only a bodily type of intentionality, but simultaneously also a bodily type of normativity.

Dreyfus continues his interpretation of the tendency towards an optimal grip as follows:

> Objects, in other words, draw us to get an optimal grip on them, and we *experience a tension* whenever the body/world relation fails to achieve that optimum. For Merleau-Ponty, this tension is a *fundamental* aspect of our involvement.
>
> (Dreyfus 2007a, p. 63, my italics)[6]

There is an immediate tendency to lessen the experienced tension. Importantly, however, there is no representation of the goal in advance of this responsiveness to the situation; no "pre-existing sense" of the appropriate distance in this particular situation *before* the actual performance (Kelly 2006, p. 4). An advantage of this attention to the first-person perspective is that it clarifies that improving the situation not only makes things better, it also makes us (at the personal level) *feel* differently. For instance, when we are compelled to act in a certain way and give in to that, we also reduce our felt lack of equilibrium.

Concerning *social* affordances, it is important to realize that the notion of the tendency towards an optimal grip is not just relevant for understanding how we deal unreflectively with an object like a painting or something we try to see clearly under a microscope. The same phenomenon functions in all types of motor intentional activity, including intersubjective situations. Merleau-Ponty, for instance, uses the example of immediately addressing a public with words, attitude and tone appropriate for it (1945/2002, p. 122). And Dreyfus (2002b) and Rietveld (2008c) uses the example of how we move to an appropriate distance from other people in an elevator. Elsewhere I have discussed the example of an immediate response to a friend who obviously feels miserable (Klaassen et al. 2010, p. 56). As mentioned earlier, social affordances can simply be treated as a subcategory of affordances, all of which are integrated in the field of affordances.

To conclude this section: There is no goal representation or pre-existing sense of what is adequate in advance of our performance in the highly particular situation

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6. Merleau-Ponty also writes: "An oblique position of the object in relation to me is […] *felt as a lack of balance*, as an unequal distribution of its influences upon me. […] There is one culminating point of my perception which *simultaneously satisfies [multiple] norms*, and towards which the whole perceptual process tends. [… Through the] body I am at grips with the world" (Merleau-Ponty 2002, p. 352, my italics).

of our everyday unreflective lives. Optimal grip is an experiential equilibrium, and disequilibrium is experienced as a tension, similar to the tension we experience when someone stands too close and we are immediately compelled to step back. Such a tension is affective and behavioral at same time. It seems that the *function* of motor intentional activity is best conceived in terms of the tendency towards an optimal grip. Or in my own words, the function of bodily intentionality *is* being moved to improve (one's situation) by simply being responsive to a field of relevant affordances (including social affordances).

5. The role of affect in motor intentional activity

We should realize that it is characteristic for the skillful body as a concernful 'system of possible actions' (Merleau-Ponty 1945/2002, p. 291; Rietveld 2008a) that it inhabits familiar environments, where it not only knows how to act, but, moreover, where it *cares* about what happens. We allow ourselves to be invited by some alluring and potentiating possibilities for action rather than by other affordances. In motor intentional activity one moves towards objects that look already "attractive or repulsive" before one perceives their objective qualities (Merleau-Ponty 1945/2002, p. 28).[7]

Merleau-Ponty (1945/2002) discusses the example of a craftsman, a wallet maker, in his familiar environment who perceives the world around him in terms of his possibilities for action. Merleau-Ponty describes it as follows:

> [T]he subject, when put in front of his scissors, needle and familiar tasks, does not need to look for his hands or his fingers, because they are … potentialities already *mobilized* by the perception of scissors or needle, the central end of those '*intentional threads*' which link him to the objects given. […It] is the piece of leather 'to be cut up'; it is the lining 'to be sewn'.
>
> (1945/2002, pp. 121–122, my italics)

This is a good example of the way the motor potentialities (the I can's, so to say) of the body are provoked or recruited by affordances (e.g. leather 'to be cut up'). The body that is attuned to its environment does not deliberate but allows itself to be invited

7. Here it is also important to note how action and perception are *meshed* for Merleau-Ponty. Previous activity has contributed to one's currently present sensory stimuli: "[S]ince all the stimulations which the organism receives have […] been possible only by its preceding movements which have culminated in exposing the receptor organ to the external influences, one could […] say that the behavior [of the organism] is the first cause of all the stimulations" (Merleau-Ponty 1942, p. 13).

by the perceived possibilities for action in the given situation. The body's abilities are immediately potentiated by some of the meaningful affordances around it.

In the concluding chapter of *Phenomenology of Perception* Merleau-Ponty writes about motor intentional activity the following:

> [W]e … have a world, that is, a collection of things which emerge from a background of formlessness by presenting themselves to our body as 'to be touched', 'to be taken', 'to be climbed over'. (Merleau-Ponty 1945/2002, p. 512)

The idea that in a flow of unreflective action we perceive our entire world primarily in terms of a field of relevant affordances may make it better understandable how it is possible that we tend towards an optimal grip on our world in motor intentional activity. This process of being responsive to relevant affordances is inseparable from the individual's concernfulness, because, to quote Merleau-Ponty, "we consider everything that bears a significant relationship to our concerns as part of our present" (1945/2002, p. 495).

In concrete situations of skilled activity, a form of embodied intelligence is 'motivated' from without by the world. The individual perceives a *relevant* solicitation to act, an affordance that matters to him or her and is experienced as attractive. An engaged person does not perceive his or her situation in a neutral way. Before any stimulus arrives, something is already there: a skilled individual with certain current concerns already involved in some activity. These concerns have been shaped through past learning in his or her socio-cultural practice and determine what shows up as relevant for him or her in this specific situation.

We have seen that an individual in a familiar world is surrounded by many affordances that invite to act and to move adequately towards improvement. By way of contrast, the neurological condition 'utilization behavior' (Lhermitte 1983) sheds some light on our normal relationship with the world and use-objects in particular. It confirms Merleau-Ponty's observation that the objects in our environment do not leave us cold, but affect us in striking ways. In utilization behavior such immediate responsiveness to affordances does no longer take the individual's concerns into account. The French neurologist Lhermitte coined the term 'utilization behavior' in the early 1980's. It describes the phenomenon that these patients with a lesion of the frontal lobe (and/or of interconnected subcortical structures) demonstrate an exaggerated dependency on the environment in guiding their behavior. Patients with utilization behavior (UB) grasp and use familiar objects when they see them, disregarding a significant part of their situational context (Archibald et al. 2001; Boccardi et al. 2002; Eslinger 2002).

They respond to *irrelevant* affordances. Such a UB-patient may, for example, put on a pair of glasses even though nothing is wrong with his eyes. Or upon seeing a bed he may start to undress, although this bed is in someone else's house. (For a detailed

discussion of utilization behavior see Chapter 6 of Rietveld 2008b). An important characteristic of utilization behavior is that these patients are not emotionally distressed about their inappropriate actions. They manifest apathy instead. This correlation of a lack of experienced tension with a lack of motivation to correct *inappropriate* performance illustrates, by way of contrast, how lived normativity and motor intentionality are related normally.

Patients with utilization behavior have a (generally bilateral) lesion of the medial premotor system (for the distinction between the lateral and medial premotor system, see Goldberg 1985; Archibald et al. 2001; Eslinger 2002). This results in a disinhibition of the "stimulus-driven" lateral premotor system at the neural level and reduced emotional responses ("flat affect").

6. How we unreflectively switch activities and improve our situation

The above discussion of the role of affect in motor intentional activity makes it easier to see how we normally unreflectively switch activities and improve our situation. In a flow of absorbed skillful coping we may *switch* activities as the result of attraction or repulsion that we experience pre-reflectively. Alluring and potentiating relevant affordances clarify how such unreflective switching may occur. For instance from typing, to eating a cookie, to drinking coffee and back to typing. As mentioned above, recently something similar but more far-reaching was suggested by Dreyfus in his discussion of motor intentionality. It is worth taking another look at his point.

Dreyfus relates such unreflective switching to the tendency towards an optimal grip. He puts it as follows:

> [H]umans and animals alike […] respond to situations [i.e. comforting a friend, seeking food, etc. ER] on the *horizon* of their current situation neither as fully actual nor as merely possible, but as soliciting them to turn to them to get a better grip on their world. […T]hanks to motor intentionality, we shift tasks while staying absorbed […].
>
> (Dreyfus 2007a, p. 64, my italics; cf., Rietveld 2004/2008a)

Importantly, this suggests that without any need for deliberation we tend towards an optimal grip simply by being responsive to soliciting affordances (including those that are "on the horizon").

Dreyfus stresses that we sense "tasks and situations other than the one I'm actually engaging in right now as *potential*[8] because they are *on the horizon summoning me right now* […]" (Dreyfus 2007a, p. 65). How should we conceive of this?

8. Recall that the potential is to be distinguished from the *merely* possible.

The following quote on the movement of our gaze may clarify it somewhat:

> Merleau-Ponty […] holds that when something solicits me to shift my attention […] an affordance on the horizon of my involved activity *summons my body* to a new task […]. (Dreyfus 2007a, pp. 62–63)

It is because things matter to us, i.e. because we are concernful and affective creatures, that we can be summoned unreflectively by affordances on the horizon.

At the psychological level of analysis we can use Frijda's work on relevance detection to increase our insight in this phenomenon. We can say that alluring possibilities for action in the background of the field of affordances can potentiate bodily readiness and draw bodily activity in a new direction.

To conclude, affordances on the horizon can allure me ("summoning me") and potentiate action; that is, get me ready to act. In this way that what I have called "background-affordances" (Rietveld 2008c) may motivate an *unreflective switch* from doing one thing to doing another that improves our grip on the world. Unreflective bodily intelligence is motivated by our field of affordances. The structure of the field of relevant affordance generates appropriate action readinesses[9] and moves us towards improvement of our particular situation. So, when skilled, we can be "moved to improve" (Rietveld 2008b).

If indeed the proper *function* of motor intentional activity *is* tending towards an optimal grip on the available affordances, then this function can be investigated further by studying how we are adequately responsive to relevant affordances; that is by studying the mechanisms (including the neural mechanisms) of this responsiveness. Note that this suggests that phenomenological description and analysis can be relevant for functional analysis.

I believe that this new understanding of bodily intentionality as responsiveness to a field of relevant affordances (including social affordances) is relevant for cognitive neuroscientists who use empirical findings related to the 'mirror neuron system' as a starting point for a theory of motor intentionality and social cognition. Therefore I will discuss Rizzolatti and Sinigaglia's (2008) ideas on motor intentionality and social cognition in the final section of this paper.

7. Rizzolatti and Sinigaglia on motor intentionality and social affordances

In this section I would like to show first of all that Rizzolatti and Sinigaglia (2008) suggest in *Mirrors in the Brain* that not only perceived objects, but also actions of others should be conceived in terms of "evoked potential motor acts" or *invitations to*

9. As mentioned above, these action readinesses can be partial or disorganized.

act (Giorello & Sinigaglia 2007). I believe that their interpretation of our motor intentional activities offers possibilities for interdisciplinary cross-fertilization, because it shares with Merleau-Pontian phenomenology an emphasis on the importance of responsiveness to affordances, including social affordances. Yet, two important critical questions are: (1) to what extent they are able to do justice to the normative aspect of unreflective action and in particular to the fact that we are selectively responsive to one (social) affordance rather than another; and (2) to what extent they are able to do justice to the basic phenomenon of motor intentionality: to adequate responsiveness to a field of relevant affordances as a whole.

The discovery of mirror neurons shows that when perceiving the intentional actions of another individual, there are firing patterns in our premotor cortex (to be more precise, in the part Goldberg (1985) called the lateral premotor system) that are similar to the patterns that occur when we execute these actions ourselves. Rizzolatti and Sinigaglia interpret this activity as grounding our bodily and pragmatic understanding of the perceived intentions and actions of other individuals. This understanding does not require any reflection but is primarily an embodied kind of understanding. The other's action gives rise in us to a potential motor act.

This interpretation of the mirror neuron findings is similar to their interpretation of another discovery: (lateral) premotor F5 neurons that respond to objects. Rizzolatti and Sinigaglia suggest namely that we understand the objects around us in terms of the motor opportunities or "possible actions" (2008, p. 49) they offer us.[10] The perception of a cup gets us bodily ready to act in a specific way; to grasp it with this or that grip. Inspired by Merleau-Ponty's analysis of motor intentionality Rizzolatti and Sinigaglia articulate this responsiveness to perceived objects as follows:

> The behaviour of F5 and AIP neurons [helps us] to capture at the neurophysiological level the motor dimension of experience which, in the words of Maurice Merleau-Ponty (1945, pp. 159, 162), 'provides us with a way of access to the world and the object […] which has to be recognized as original and perhaps as *primary*'. (Rizzolatti & Sinigaglia 2008, p. 52)

Even more importantly for the purpose of stressing the importance of our responsiveness to affordances for clarifying motor intentional action at the neural level of analysis, they suggest that in this type of activity we immediately understand objects in terms of the *invitations to act* that they offer us:

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10. "The finding that visuo-motor F5 and AIP neurons respond to object presentation both in executive (grasping an object) and in observation (fixating the same object without picking it up) tasks indicate that the object in question is coded in the same way in both conditions. In other words, the sight of the cup is just a preliminary form of action, *a call to arms* so to speak […]" (Rizzolatti & Sinigaglia 2008, p. 49, my italics).

> [T]he analysis of the visuo-motor transformations operated by the AIP-F5 neurons indicates that the seeing which guides the hand is also (and above all) seeing with the hand, by which the object is immediately coded as a given set of invitations to act. (Rizzolatti & Sinigaglia 2008, pp. 50)

So according to Rizzolatti and Sinigaglia this neural premotor system seems to code aspects of our perceived physical environment in terms of responsiveness to affordances or invitations to act.

As mentioned above, the same goes for perceived actions of *others*:

> The close link between the visual and motor responses of the mirror neurons does seem to indicate that when an individual observes an action performed by others, a *potential motor act is evoked* in this brain which is to all effects similar to that which was spontaneously activated during the organization and effective execution of action. (Rizzolatti & Sinigaglia 2008, pp. 96–97, my italics)[11]

Rizzolatti and Sinigaglia conclude that not only in the case of canonical neurons but also in the case of mirror neurons the visual scene is immediately coded in terms of possibilities for action.[12] They hold that the only difference is that in the first case the visual stimulus is an object and in the second case object-related and goal-directed movements made by someone else (Rizzolatti & Sinigaglia 2008, p. 98).[13]

Because perceptions of objects and of acting others intrinsically involve a (potential) motor engagement for us, Giorello and Sinigaglia (2007) speak of "Perception as an invitation to act" (p. 55). Note that they (Giorello & Sinigaglia 2007) not only discard the dichotomy between perception and action but implicitly also that between social cognition and object-directed cognition (or at least they seem to do so as far as motor intentional activity is concerned). Both perceived objects and perceived activities of other individuals are meaningful for us because they offer us invitations to act.[14]

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11. They add: "[With respect to] the primary function of the mirror neurons […] it can be said that these neurons are primarily involved in the *understanding of the meaning of 'motor events',* i.e. *of the actions performed by others*" (Rizzolatti & Sinigaglia 2008, p. 97).

12. "Therefore what was said earlier regarding the F5 canonical neurons and the visuo-motor neurons of the anterior intraparietal area (AIP) holds true in this case also: the visual stimulus is immediately coded starting from the corresponding motor act, even if it is not effectively executed" (Rizzolatti & Sinigaglia 2008, p. 98).

13. We should keep in mind that mirror neuron experiments are about quite basic activities such as certain hand movements or grasping something, and not about the difference between, for example, grasping a cup of coffee and a cup of tea.

14. "[E]very perceived object (things and other people's behaviour as well) 'invites us to action with reference to it'" (Giorello & Sinigaglia 2007, p. 56, quoting Mead 1938).

This is in line with my emphasis on the importance of responsiveness to the field of affordances, because such a field integrates both social affordances and object affordances.

However, from this one certainly cannot conclude that mirror neurons and canonical neurons are the best way to understand our responsiveness to this field at the neural level of analysis. I believe that for our purpose the importance of the work by Rizzolatti and colleagues is rather that it suggests that an 'affordance-related' (or 'potential action-oriented') view of neural processing is the way to go. A more dynamic account, such as for instance Walter Freeman's (2000), seems to be better suited for understanding how neural processing is related to the field affordances as a whole because it presents a more global level of description (see Rietveld in press). According to Freeman (2000) the brain's *macroscopic* activity pattern relates dynamically to the significances (plural) in the given particular situation; or in my own words, to the *field* of relevant affordances. The activity of the mirror neuron system is not a phenomenon at the most relevant level of description because it reflects just one slice out of our neural/bodily responsiveness to this field.

An illustration of this is that, so far at least, Rizzolatti and Sinigaglia (2008) have focused exclusively on the lateral premotor system and ignored the medial premotor system. The condition of utilization behavior suggests that we need a better understanding of the interactions between the lateral premotor system (parietal cortex, lateral premotor cortex, cerebellum, and thalamus) and the *medial* premotor system (pre-(SMA), ACC, basal ganglia, and thalamus) (cf., Goldberg 1985; Archibald et al. 2001; Eslinger 2002). Moreover, the fact that subcortical lesions can generate utilization behavior suggests that the interactions of cortical and subcortical structures, such as the basal ganglia, will have to be taken seriously here as well.

Given the fact that the medial premotor system actually seems to exercise control over the lateral premotor system (Archibald et al. 2001), it is quite amazing that this topic does not get more serious attention from people interested in mirror neurons. Utilization behavior suggests that the medial premotor system contributes crucially to the reliable and appropriate sensitivity of our actions to the broader situational context. Bilateral lesions to the medial premotor system lead to a responsiveness to irrelevant and inappropriate affordances. Furthermore, I would like to note that within cognitive neuroscience work on the neural basis of decision and action is highly relevant, because this field studies the neural mechanisms underlying deciding 'what is worth doing' next (Rushworth et al. 2004; see Rietveld 2008b, Chapter 6).

To conclude, Giorello, Rizzolatti and Sinigaglia theoretically integrate the findings on mirror neurons and canonical neurons by seeing *both* types of activity as underlying responsiveness to invitations to act. Not only perceived objects, but also actions of others should be conceived in terms of "evoked potential motor acts" or *invitations to act* (Giorello & Sinigaglia 2007). Of course it is an open question how far we may

extrapolate these findings regarding the role of the motor system in relatively simple acts to more complex actions in everyday life. Nevertheless, I think that their work suggests that an affordance-based account is the right way to go for attempts to clarify motor intentional activity and social cognition in unreflective action (cf., Brincker forthcoming).

On the critical side I believe that Rizzolatti and Sinigaglia (2008) do not pay sufficient attention to the fact that we are selectively responsive to one (social) affordance rather than another. They neglect the context of affordances; the fact that any affordance is surrounded by many other available affordances. Therefore, a next step for them should be to move from responsiveness to affordances to responsiveness to *relevant* affordances. I think that the reason why Rizzolatti and Sinigaglia do not pay much attention to that issue may have to do with the fact that they seem to ignore an important aspect of motor intentional activity: its normativity, both the first-person experience of lived normativity and the normativity that derives from the individual's activities being situated in a particular socio-cultural practice. The notion of normativity implied here is a very basic one: it is revealed when we distinguish better from worse, adequate from inadequate, or optimal from suboptimal in the context of a specific situation within a particular practice (Rietveld 2008c). Elsewhere I have suggested that a skillful individual's responsiveness to *relevant* affordances forms the core of the normative aspect of embodied cognition in action. I refer to the phenomenology of such responsiveness as 'being moved to improve' (Rietveld 2008c). A focus on relevant affordances would be able to do justice to the normative aspect of motor intentional activity.

If it is right to say that the function of motor intentional activity is best conceived in terms of the tendency towards an optimal grip on the world (at the level of the individual as a whole), then subprocesses of motor intentionality, such as activity of the mirror neuron system which Sinigaglia interprets as contributing to 'pragmatic action understanding', could also be understood as contributing to this function of the individual's being moved to improve. Importantly, this would suggest that pragmatic action understanding is not a goal in itself, nor that it is to be understood in the light of a pre-given goal, but, rather, that it is an aspect of our performance of tending towards an optimal grip on the world. That is to say, of reducing affective tension, which is reflected in the way the world is experienced (see Ward & Stapleton in this volume) by being responsive to experienced solicitations to act; a responsiveness that establishes a relative equilibrium in the body-world system.

Crucial for understanding motor intentionality in unreflective action is the idea that it is not a pre-given goal that motivates such action. There is no goal representation or pre-existing sense of what is adequate in advance of our performance in this highly particular situation. Optimal grip is an experiential equilibrium, and disequilibrium is experienced as an affective tension, similar to the tension we experience

when someone stands too close and we are immediately compelled to step back. Adequate performance is enacted in the particular situation.

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