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INTERSUBJECTIVITY, MIRROR NEURONS, AND THE LIMITS OF NATURALISM

Abstract: The paper explores the possibilities and limits of naturalizing the experience of intersubjectivity. The existence of mirror neurons illustrates that an experience of intersubjectivity is already present on a more primitive, precognitive, and embodied level. A similar argument had been made in the first half of the twentieth century by phenomenologists, such as Edmund Husserl. This motivated Vittorio Gallese, one of the discoverers of mirror neurons, and other philosophers to connect the functioning of mirror neurons with Husserl's phenomenology of intersubjectivity as presented in his *Cartesianische Meditationen*. I argue that such attempts are grounded in an inadequate interpretation of Husserl's analysis and turn into a circular argument. As such, they bypass a more primordial experience of intersubjectivity, which Husserl thematizes in *Ideen II* as the experience of an "expressive unity," and which resists any project of naturalization from within.

Keywords: intersubjectivity, mirror neurons, naturalism, Edmund Husserl, Vittorio Gallese.

1. Introduction

One of the recurring debates in recent philosophy of mind concerns two widespread approaches within contemporary philosophy and cognitive science to phenomenal consciousness, namely the naturalistic and the phenomenological one. The question arises to what extent can phenomenal consciousness be naturalized: is the scientific understanding of mentality as we find it in neuroscience reconcilable with mental life we experience in everyday life in a pre-theoretical attitude? Is it possible to explain acts of consciousness, such as perception, imagination, and memory, in physicalist terminology?

The paper explores the limits of naturalizing intersubjectivity as the experience of the other as another conscious person. Traditional theories of

intersubjectivity call upon mental capabilities to posit the consciousness of the other. This paradigm became doubtful with the discovery of mirror neurons, as they indeed show that there is already an interaction with the other on a more primitive, pre-theoretical level that precedes our mental capacities of positing the existence of other consciousnesses. Such an argument had already been made in the first half of the 20th century by phenomenologists like Edmund Husserl and Maurice Merleau-Ponty. This appears to be the cause for Vittorio Gallese, one of the discoverers of mirror neurons, and for other philosophers to seek for a matching between the mechanics of mirror neurons and Husserl's phenomenology of intersubjectivity. These publications are simultaneously, although often implicitly, an attempt to approach the phenomenon of intersubjectivity as part of the physical and causal reality, i.e., an attempt to naturalize our experience of the other. However, it seems that such endeavors overlook a more original experience of the other, which Husserl describes and which essentially resists the reconciliation with a naturalistic approach, such as the one present in neuroscience.

104 In what follows, I will, first of all, provide a sketch of the debate regarding the so-called "other minds," and the impact of the discovery of mirror neurons on this debate. Next, in section 2, I will summarize concisely recent publications that connect Gallese's research on mirror neuron mechanisms and Husserl's phenomenological analysis of intersubjectivity. Both indeed point out that the interaction with the other originates in a precognitive, bodily "pairing" between self and other. The blind spot in this debate, however, seems to be the question whether Husserl's phenomenology is at all compatible with a naturalistic approach to consciousness. Therefore, I will, in the 3rd section, present an analysis of the way Husserl's theory is presupposed in the academic literature on the subject of mirror neurons and phenomenology. The analysis will show that this theory, as employed in recent publications, is faced with a logical problem, and that, consequently, the theory cannot contribute to an elucidation of intersubjectivity. Against this current approach to the question of mirror neurons and Husserl's theory of intersubjectivity, I pose a different description of the experience of the other by Husserl, which points towards the limits of a naturalization of intersubjectivity.

2. Other minds and mirror neurons

One of the central questions in contemporary philosophy of mind considers how is it possible that we have an (implicit) understanding of others as conscious beings, i.e., as the so-called “other minds.” Man is often characterized through a specific cognizance of one’s own consciousness. René Descartes wrote already in 1637 that the only initial certainty we have is the existence of the “I think,” i.e., of ourselves as “cogito.” Such a reasoning might lead to different forms of solipsism. Nevertheless, we are easily able to interact with others in daily life without a highly engaged philosophical attitude that ensures the existence of the other. This is apparent in the other’s behavior, facial expressions, and actions that we immediately perceive as meaningful and not as arbitrary or coincidental. Such phenomena related to our immediate and spontaneous interaction with the other play a crucial role in society and are indeed also ethically and politically relevant. The question however arises how is it possible that we understand each other as conscious beings, while our consciousness only allows us to experience our own consciousness. In other words: which capabilities allow us to understand and to know the other? The problem of other minds, thus, seems at first an epistemological problem.

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One of the classic attempts to explain the possibility of understanding the other resides in “folk psychology.” One of the defenders of this theory, Dan Sperber, claims that the knowledge of the other amounts to the attribution of mental states to others. These attributions rely on a “theory” of mental life that posits a relationship between mental states and “outcomes,” such as actions, emotions, and expressions. For this reason, the traditional approach is indeed often called the “theory theory.” When I see another person drink (under normal circumstances), I can conclude that this person has the desire to quench their thirst. This is possible because of my theoretical and general assumption that the one who is thirsty drinks.

The first possible solution to the problem of other minds is challenged by simulation theory. Defenders of this theory, such as Alvin Goldman, claim that social cognition does not rely on the attribution of mental states to others, but on the ability to imagine the mental state of the other as one’s own. A certain action, movement, or decision leans on this or that belief, or desire.

The simulation of another's mental state then happens on the basis of the so-called pretend beliefs and desires that ought to provide an explanation for the actions performed by the other. In other words, I can gain a grip on the other's consciousness by imagining, which mental state precedes the kind of action that the other performed. The similar cognitive systems of people make this inference of other minds possible on the basis of analogy.

106 Although these two theories defend a different outcome, both assume that the possibility of understanding the other is based on certain mental or cognitive abilities. The *theory theory* refers to the ability to attribute mental states to others, whereas *simulation theory* assumes that an act of imagination is required to understand the other. This paradigm was recently refuted by, among others, Vittorio Gallese through the discovery of mirror neurons: "[A]t the basis of our capacity to understand others' intentional behavior [...] there is a more basic functional mechanism which exploits the intrinsic functional organization of parieto-premotor circuits like those containing mirror neurons." (2009, 521–522.) As an argument against mentalist explanations of intersubjectivity, Gallese points to a more fundamental, primitive, and precognitive level, at which the other is already understood. Because of the relational nature of actions, there is always already a common understanding between subjects without the need for a mental act. According to Gallese, it is the mirror neurons, which cause the possibility of interaction with the other.

Gallese and his fellow researchers at the University of Parma discovered mirror neurons in the premotor cortex of the brain. These neurons are activated, when a subject perceives a goal-directed action itself (Gallese 2001, 35). In macaques, it has been shown that the same neurons are fired, when they see someone grasp an object. Examples that are more similar to our everyday reality might be the contagiousness of emotions, such as laughter and sadness. Although the intensity of the neurons firing differs between the perception of an action and the performance of an action, an *as if* motor system always appears to be activated in the individual brain, so that it can be said that the visually registered movement of the other person is "represented" in the individual brain via mirror neurons.

With this discovery, Gallese and others are able to characterize the understanding of the other as automatic and unconscious. This, again, refutes

the core aspect of mentalist theories of intersubjectivity. No “analogical inferences” make the interaction between self and other possible, but rather embodied processes that already precede the mental construction of the other. This makes an immediate understanding of the other possible. The imitation processes that mirror neurons create already constitute, in a certain sense, a grasp of the other person’s actions from a first-person perspective. Because of this “match” between the body of myself and the other, I already understand the other in a fundamental way, even before I can approach the other cognitively or reflexively.

3. Mirror neurons and Husserl’s phenomenology of intersubjectivity

In Gallese’s numerous publications, in which he elaborates his findings on mirror neurons, we regularly find references to the phenomenology of Husserl and Merleau-Ponty, or, more specifically, to their analyses of empathy and intersubjectivity. By doing so, he tries to conceptualize the results of his research by, for instance, linking the working of mirror neurons to Husserl’s descriptions of the lived body (*Leib*) and his concept of *Paarung*, but also to Merleau-Ponty’s concept of *intercorporeality* as evidence of a pre-reflexive level of a mutually embodied understanding between self and other. Let us dwell for a moment on a number of references in Gallese’s articles to Husserl.

In “The Roots of Empathy: The Shared Manifold Hypothesis and the Neural Basis of Intersubjectivity,” Gallese (2003) refers to Husserl in a review of earlier theories of empathy and intersubjectivity, and to the specific relationship between self and other that is central to them. In doing so, he lays the conceptual ground for his own hypothesis that the experience of the other is a correlate of neurological structures. Referring to Husserl’s *Cartesianische Meditationen* and *Ideen II*, he points to the anti-solipsistic character of Husserl’s description of the other, which also forms the core of Gallese’s own work: “The other is apprehended by means of a primitive holistic process of ‘pairing’ (*Paarung*): the self-other identity at the level of the body enables an intersubjective transfer of meaning to occur.” (2003, 175.) The bodily aspect of intersubjectivity that Husserl point to is further clarified by Gallese in his article:

[T]he body is the primary instrument of our capacity to share experiences with others [Sheets-Johnson, 1999]. What makes the behavior of other agents implicitly intelligible is the fact that their body is experienced not as material object (“Körper”), but as something alive (“Leib”), something analogous to our own experienced acting body. (2003, 176.)

The embodied relationship to the other makes that we can understand the other from a certain immediacy without transcending the singularity of consciousness. According to Gallese, this explains how we can perceive the other *as a person* and not as a mere physical body or object in the world.

In a slightly more recent article, “Embodied Simulation: From Neurons to Phenomenal Experience,” Gallese (2005) uses Husserl to demonstrate a similarity between, on the one hand, what experimental research shows about intersubjectivity and the role of mirror neurons therein and, on the other hand, what Husserl writes about the role of the body in interacting with the other:

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These results suggest that the full appreciation of others as persons like us depends upon the involvement of body-related first-person tactile experiential knowledge. Again, this perspective is closely related to Husserl’s notion of intersubjectivity. As repeatedly stated in *Ideas II* (1989), the dual nature of our own body as the sensing subject and the sensed object of our perceptions, enables the constitution of other living humans as understandable persons. [...] We retrieve the inner sense of the experiences and motivations of others from their overt behavior because it induces the activation of the same functional mechanisms enabling our own sense of personhood. (2005, 40–41.)

From a reading of these and other texts by Gallese (including: 2001, 43–44; 2004, 397; 2008, 774), it indeed appears at first sight that the discovery of mirror neurons is highly relevant for a phenomenological analysis of intersubjectivity. In the scientific debate on intersubjectivity this appeared to be the reason for some publications on the possibility of a reconciliation between phenomenological descriptions of phenomena and neurological

findings. A brief review of the literature demonstrates this from different perspectives.

A first way, in which such a connection is made, is by arguing that the empirical findings of Gallese and his colleagues can serve as *an empirical justification* for Husserl's theory of intersubjectivity. In Jean-Luc Petit's contribution "Constitution by Movement: Husserl in Light of Recent Neurobiological Findings," this is made very explicit:

[W]e must at least be prepared to admit that the recent findings of neurophysiology amply justify Husserl's upholding [...], the assertion that our empathic experience of the other is an internal imitation of the movement accomplished by the other, and which implies an actualization of the kinesthetic sensations—including its neural correlates—corresponding to the movement in question and not its effective execution nor even any affective fusion with the other. (1990, 241.)

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Evan Thompson also cites the relevance of mirror neurons as support for Husserl's analysis of the experience of the other as evidence of a pairing between myself and the other (2001, 9).

Others, on the other hand, explicitly cite the similarity or the complementary nature between Gallese's claims and those of Husserl. After a discussion of the findings published by Gallese and Goldman, Thompson argues that precisely the "non-inferential bodily pairing of self and other" is at the heart of both the structure of mirror neurons and Husserl's phenomenological description of empathy (2001, 9). Matthew Ratcliffe, in "Phenomenology, Neuroscience, and Intersubjectivity," points to both Gallese's and Husserl's shared assumption of a fundamental "togetherness" as opposed to a necessary gap between self and other, as taken for granted in the cartesian approaches to consciousness. This, he argues, creates a trade-off between the two theories (2006, 336). On the one hand, the operation of mirror neurons can complement where Husserl remains unclear about what exactly the pre-objective bodily analogy consists in and how it is possible. On the other hand, Husserl provides the necessary conceptual framework to interpret and clarify the findings of mirror neurons.

Finally, Helena De Preester joins in by pointing out that the same “logic” is assumed by both Husserl and Gallese. While, according to her, Merleau-Ponty is rather cited by Gallese to clarify the properties of mirror neurons, Husserl’s theory turns out to be extremely suitable to reinforce the neurological explanation of intersubjectivity, specifically his concepts, such as *Körper*, *Leib*, and *Paarung* (De Preester 2008, 139).

110 Dan Zahavi offers a nuanced perspective on the debate by pointing out the similarities and differences between Husserl’s phenomenology and Gallese’s findings of mirror neurons (2011, 246–149). Zahavi acknowledges that in a sense there is a great similarity between the two theories, since they both draw attention to a certain coupling (“pairing”) between bodies, and to the fact that this coupling happens passively on a precognitive level. Zahavi’s analysis, however, reveals a number of critical reservations about the comparison assumed by the abovementioned literature and Gallese himself. First, the literature seems to ignore the different layers of intersubjectivity. For example, mirror neurons may indeed contribute to a passive relationship between self and other, but this does not yet imply a full interpersonal understanding that concerns our everyday dealings with other people. Second, Zahavi points out a possible tension between the interpretation of mirror neurons as evidence of “immediate” experiences of others, on the one hand, and the conceptualization of this interpretation as a simulation theory with internal imitations as its essence, on the other hand. Furthermore, he poses the question whether mirror neuron activity is not too static to do justice to the dynamic interconnectedness between self and other. In other words: can the concept of “mirroring” describe how the other is experienced? According to Zahavi, a fourth difference lies in the distinction between mirror neurons that should be situated on a subpersonal level, while Husserl’s phenomenology concerns the personal level as a whole. With this, he suggests the connection between both theories as complementary rather than as a justification of each other.

A final question that Zahavi raises is whether a phenomenological approach to intersubjectivity is *at all* reconcilable with a neurological theory (2011, 250). Such a question appears to be the blind spot in many of the publications that address the equation. Each of the articles discussed is implicitly an investigation into the possibility of naturalizing intersubjectivity, i.e., of giving

it a place in physical reality. Although naturalism as a philosophical movement does not have an unambiguous and delineated definition, we can state that a naturalistic approach generally assumes that reality and its properties are fundamentally physical in nature (Papineau 2015). When properties are psychological in nature, they simply must be understood as epiphenomena of the physical. Naturalizing a phenomenon then means trying to give it a place in the physical, spatio-temporal reality that is subject to causal laws. The articles discussed seem to presuppose a naturalism in a certain sense, without confronting it with Husserl's phenomenological project as such. Petit, for example, explicitly states that the complementarity between mirror neurons and phenomenological considerations of intersubjectivity give rise to a legitimate naturalism (1990, 243). Other authors debated above also implicitly seek a way to give intersubjectivity a place in physical reality by reducing the *Paarung* between lived bodies that Husserl speaks of to the mechanisms that constitute mirror neurons. This assumption gives rise to a re-reading of Husserl's phenomenological analysis.

4. Intersubjectivity and naturalism

In order to get a better understanding of the role Husserl plays and can play in the debate on mirror neurons and intersubjectivity, we first need to understand how Husserl's analysis of intersubjectivity itself is presented in the debate. The references to Husserl in the discussed literature start from a specific analysis of intersubjectivity that is mainly elaborated in his *Cartesianische Meditationen*. Intersubjectivity is described there and in the literature on mirror neurons and phenomenology as *Paarung* that is possible because of the similarity of bodies and that forms the foundation for the experience of the other as a conscious, embodied person. Although the references to Husserl's theory in literature seem correct in themselves, they ignore what Husserl's analysis in that text ultimately aims to demonstrate, namely that such an approach to intersubjectivity runs into a logical problem. Before this can be clarified, I will briefly outline Husserl's reasoning step by step in his fifth meditation.

While most theories of social cognition, empathy, "other minds," or intersubjectivity mainly focus on the conditions of possibility for understanding

the other or positing its existence as an “other mind,” Husserl points to a more fundamental question that precedes such questions. The question that must first be answered is how a conception of the “other” is possible at all, even before one tries to understand the others in their motives and emotions. The problem of the other becomes with Husserl, in other words, not an epistemological, but a phenomenological problem: how can someone phenomenally appear as another person, as another transcendental ego (*Hua I*, 122)?

In order to analyze this issue phenomenologically, Husserl introduces a specific form of *epoché* to describe how the nature of the ego depends on the experience of the other as a transcendental ego (*Hua I*, 136). Thus, for Husserl, this analysis does not involve a genetic analysis of how the other—and thus intersubjectivity—comes about. Rather, an abstraction of the initial intentional orientation towards the other is necessary, in order to arrive at a “sphere of ownness,” from which one can constructively describe the appearance of the other. Such a sphere concerns the experience of all objects in the world, including the self, which do not refer to others. The experience that results from this is thus not of a cultural nature, but leads to the appearance of the world as mere nature, as a physical world (*Hua I*, 128–129). This also implies that the bodies of myself and others are regarded purely as *Körper*, i.e., as physical bodies that are part of the spatio-temporal, causal reality. The sphere of ownness, to which this *epoché* leads is expressed in an experience of the world in the naturalistic attitude, in which the consciousness of the other is ignored.

According to Husserl, this movement opens the way to the experience of the other in two ways. First, in the naturalistic attitude, the possibility of a similarity between my body and that of the other arises. As a *body*, my body is spatially interchangeable with that of the other, and vice versa. While I normally experience my body as an “absolute here” wherever I go, my “here” and the other’s “there” are arbitrarily considered as *physical bodies* (*Hua I*, 140). Second, I continue to experience my own body insurmountably as a freely movable organ of perception, as the subjective center of my orientation in the world (*Hua I*, 128). Together, these bring about the possibility of a *Paarung*, a transfer of the unity immediately given to me between my physical body and my psychic consciousness as embodied to the other. Husserl describes this

coupling between my body and that of the other as a form of “appresentation” that also occurs in the experience of physical objects: an object, such as a stone or a house, is always given to me from a certain perspective, yet in the perception of the object as an object I am also directed to its not immediately given sides, such as the back of the house. Similarly, in the experience of the other, the consciousness of the other is also given to me in a non-immediate way (*Hua I*, 139–142).

In short, according to Husserl’s analysis in the *Cartesian Meditations*, I can experience the other as another person, because I first objectify my own body and then, through the resemblance between my body and that of the other, constitute the other as an embodied *ego*. Such an analysis, however, runs into a logical problem. The resemblance between my body and that of the other can only take place, because I objectify my own body and reduce it to a purely physical body as part of the spatio-temporal reality. This movement takes place in the naturalistic attitude, in which reality is posited in its physical materiality. But the naturalistic attitude or the approach to the world as physical nature already presupposes an intersubjective constitution of the world (*Hua XIII*, 261–262). My body can only be constituted as *Körper* on the basis of intersubjectivity. Husserl’s analysis thus seems to lose its relevance. Peter Reynaert, however, argues that this reasoning retains its relevance, as long as it is understood as a *reductio ad absurdum* (2001, 214). In other words, we should consider Husserl’s analysis in the *Cartesian Meditations* as a way of demonstrating that, from a naturalistic attitude, the resemblance of bodies cannot be used to clarify the experience of the other phenomenologically.

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Thus, an alternative approach seems necessary to give a phenomenologically adequate description of the experience of the other. In Husserl’s *Ideen II* we find an analysis of intersubjectivity, which seems to be ignored in the literature that connects Husserl with Gallese. According to Reynaert, this analysis in the *Ideen II* describes a more original experience of the other than that in *Cartesianische Meditationen* (2001, 214). For this, Husserl again introduces a different approach by explicitly abandoning the naturalistic attitude, in order to describe the experience of the other. After all, the phenomenological reduction, he observes, creates an openness to other attitudes alongside the naturalistic one:

Auf eine solche *neue Einstellung*, die in gewissem Sinn sehr natürlich, aber *nicht naturalist*, haben wir es jetzt abgesehen. "Nicht natural", das sagt, daß das in ihr Erfahrene *nicht Natur ist im Sinne aller Naturwissenschaften*, sondern sozusagen ein *Widerspiel der Natur*. (*Hua IV*, 180.)

Husserl calls this anti-naturalistic attitude, which he also identifies as an anti-artificial attitude, the "personalistic attitude." Because of the social nature of our world, this attitude is always already present in our interaction with others.

114 The other is then no longer a constituted entity by analogy in the naturalistic attitude, but an expressive unit (*Ausdruckseinheit*). This means that the other as a person is meaningfully structured, expressed in his physical body and is given in a single perceptual act. The other as a conscious person thus does not supervene on his physical body as an epiphenomenon, but is a property of it (*Hua XIII*, 472). Husserl thus describes the other as a "cultural object" that cannot simply be abstracted into a physical entity. The experience of the other is an "interpretation" (*Hua XIII*, 250–251). This gives rise to the possibility of "understanding" the other, since his psychic life is expressed in his physical behavior. Such an interpretation necessarily escapes the possibilities of the naturalistic attitude.

The description of intersubjectivity expresses the way, in which the other originally appears to us, even before any objectification of the body is possible. This originality lies in the fact that it is not derived from the experience of the self or the "sphere of ownness," as is the case in *Cartesian Meditations*. The self does not need to be objectified or naturalized, in order to experience the other as a unit of expression (*Hua XIII*, 76). Although Husserl acknowledges that psychic and cultural consciousness are always dependent on the natural world, he argues that this does not need to imply that the cultural self is subject to the causal laws of physical reality. In other words, Husserl is saying here that the experience of the other cannot simply be naturalized. The other is made expressively present. In *Ideen II*, Husserl argues that the personalistic attitude ontologically precedes the naturalistic attitude. From this point of view, the naturalistic attitude is merely a reinterpretation of the personalistic attitude (*Hua IV*, 281–282).

5. Conclusion

In the present paper, I tried to show that attempts to naturalize intersubjectivity using Husserl's phenomenology run up against a fundamental limit. The discovery of mirror neurons has overturned the traditional paradigm, in which the experience of the other was understood in terms of mental capacities to attribute mental states to others or to simulate them in one's own consciousness. A similar argument was made already among early phenomenological thinkers. A *Paarung* or linkage between bodies counts as a possibility condition for interacting with others in a direct way. This shared argument proved to be a trigger for attempts at reconciliation between Husserl's phenomenology of intersubjectivity and naturalistic approaches to it as found in neuroscience. Several authors underpin this attempt on the basis of Husserl's theory as set out in his *Cartesianische Meditationen*. A re-reading of the fifth meditation reveals that Husserl's analysis runs into a logical problem. In the analysis, the experience of the other as a person depends on a similarity between bodies that can only occur in the naturalistic attitude through an objectification of one's own body. But this objectification itself presupposes intersubjectivity. The relevance of Husserl's reasoning lies in its approach as a *reductio ad absurdum*, which shows that a naturalistic approach to the other cannot adequately contribute to a clarification of intersubjectivity. The existing literature ignores a more original experience of the other that Husserl thematizes as a unit of expression and that comes about in the personalistic attitude. Husserl explicitly characterizes this attitude as being anti-naturalistic and preceding the naturalistic attitude ontologically, so that a naturalization of consciousness is necessarily situated within an artificial involvement with the world. Every attempt to naturalize intersubjectivity or the experience of the other thus encounters a distinct limit.

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