

Timing together, acting together. Phenomenology of intersubjective temporality and social cognition

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Abstract In this article I consider how the problem of social (intersubjective) cognition relates to time-consciousness. In the first part, I briefly introduce Husserl's account of intersubjective cognition. I discuss the concept of empathy (*Einfühlung*) and its relation with time-consciousness. I argue that empathy is based on pre-reflective awareness of the other's harmony of behaviour. In the second part, I distinguish pre-reflective (passive) and reflective (active) empathy and consider recent empirical research in the field of social cognition. I argue that these levels of empathy are related with different levels of intersubjective temporality. By the intersubjective temporality I do not understand being in the same moment of objective time (so called clock time) but rather the shared experience of time and sharing temporal structure of actions. In the final part, I gather my considerations together and propose a general three-level framework of intersubjective temporality.

Keywords Phenomenology · Intersubjectivity · Time · Social cognition · Embodiment

1 Phenomenology of the other

As is well known, embodiment plays a central role in Husserl's phenomenological account of social cognition. In *Cartesian Meditations* Husserl emphasizes that the cognition of others is possible only by virtue of perception of their bodies (Husserl 1982, pp. 108–128). The other, as a subject of mental acts and states (thoughts, intentions, emotions etc.), or using Husserl's words, *alter ego*, presents herself through her body and bodily behaviour. Husserl calls this mode of presentation of foreign subjectivity, which is mediated through the body, co-presentation or appresentation (in analogous manner to the apperception of the back side of perceived material objects). In other words, the other's body expresses his/her mental states and intentions. Husserl calls this act of apprehending the other's mental states empathy (*Einfühlung*). We have to emphasize, however, that empathy is not a kind of simulation process or theoretical

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inference (Theory of Mind)—rather it is a form of immediate understanding or direct perception (Gallagher 2008; Zahavi 2011, 2012).

Husserl begins his considerations of the constitution of the *alter ego* with the perception of the other's body. It seems obvious that in order to “see”, say, someone's anger or fear, he or she has to be bodily present in perception. However, in order to “perceive” the emotion, the other's body has to be already recognized as a living body (*Leib*), that is as sensing, spatially orientated, and having motoric possibilities together with correlated kinaesthetic experience. According to Husserl, the other's body is constituted as the living body through “analogizing apprehension”, in which the perceiving subject “transfers” into the other's body (*Körper*) the sense of a “living body” (*Leib*). However as Husserl states: “It is clear from the very beginning that only a similarity connecting, within my primordial sphere, that body over there with my body can serve as the motivational basis for the ‘analogizing’ apprehension of that body as another animate organism.” (Husserl 1982, p. 111).

First, we have to notice that a necessary condition of “analogizing apprehension” is that I have to experience myself as a living body (the body as the bearer of sensations, movement and kinesthesia, spatial orientation). To put it briefly, the other is ‘there’, which is always correlated with my ‘here’; the other's ‘there’ is his or her center of orientation and point of view in an analogous manner as my ‘here’. In virtue of this correlation I understand the other's perceptual profile, which is what he or she is seeing or may see. Furthermore, a similar correlation concerns the phenomenon of movement. The other moves and his or her movements and their intentions are apprehended only because I experience my own movements. These aspects of experience of my living body are pre-reflectively “transferred” into the other body.

However, and especially important for us, Husserl writes about the “similarity connecting” my body and the other's body, in virtue of which the “analogizing apprehension” may be accomplished. But what kind of similarity is required here? It seems that considering visual similarity leads to various difficulties. For instance, how would it be possible to empathize with people of other races, disabled people, or animals? The visual appearance of the other's body may be different from the perceiver's, yet the empathic relation is still possible. The next problem is how to account for visual similarity if the mode of perception of my body and the other's body is essentially different (for instance I can see the other from a distance, I can walk around him etc., whereas my body is always given to me partially). Therefore we have to look for bodily similarity elsewhere.

1.1 Harmonious behaviour and the other living body

According to Husserl, my living body (*Leib*) is not being constituted in visual perception but through tactile sensations, bodily feelings such as warmth and, most importantly, kinesthesia (Husserl 1989). In short, I experience my living body not as seen but as felt. Thus the similarity between my body and the other's body should also be understood as similarity of bodily experience. However I do not have direct access to the other's bodily feelings, I do not feel what the other feels, but I do perceive the other's bodily expressions of those feelings. Feelings and expressions should be thought of as two sides of the same phenomenon. As Edith Stein wrote: “Feeling in its pure essence is not something complete in itself [...]; it is loaded with an energy

which must be unloaded [...]. [Feeling] by nature must always motivate something, must always be 'expressed'. Only different forms of expression are possible" (Stein 1989, pp. 51–52). The unity of feelings and expressions helps us to grasp the similarity between me and other. It is similarity that I perceive in the other body, but it transcends visual appearances. Generally speaking, similarity connecting my body and the other is the similarity in bodily affectivity as well as in motility. The expressive dimension of the other's body reveals his or her "inner life" or, to put it differently, reveals the other body as a sensing, living body.

In *Cartesian Meditations* Husserl observes that the other's behaviour is harmonious. Moreover, it seems that the harmony and continuity of bodily behaviour is a necessary condition of the perceived body being recognized as an animate organism. As he writes: "The experienced animate organism of another continues to prove itself as actually an animate organism, solely in its changing but incessantly harmonious 'behavior'. Such harmonious behavior (as having a physical side that indicates something psychic appresentatively) must present itself fulfillingly in original experience, and do so throughout the continuous change in behavior from phase to phase. The organism becomes experienced as a pseudo-organism, precisely if there is something discordant about its behavior." (Husserl 1982, p. 114).

It seems clear that for Husserl perceived 'harmonious behaviour' is essential in transferring the sense of the living body. But how should we understand harmony here? It seems that in this passage Husserl understands harmony as a coherence and continuity of movements "from phase to phase": that is, as a temporal structure, which transcends successive gestures and movements and unites them. Following Alexander Luria this phenomenon may be called a "kinetic melody" (Luria 1973; Sheets-Johnstone 2003), which expresses the motoric unity of the body, the synchronicity of different bodily parts, movements and rhythms. It unites various gestures and movements into one coherent "form" of behaviour. As a dynamic pattern of movement it allows the body to find a kinetic optimum in the environment and with the other, to attune to them. This harmony is a temporal pattern, the 'how' of the perceived body behaviour, in virtue of which the sense of living body is transferred. Harmonious pattern is thus amodal. In other words, visual appearances (gesturing, posture, movement etc.) in which harmony manifests itself are secondary to the primary phenomenon, which is essentially temporal.

1.2 The other minded body

It seems however that perceived harmonious behaviour may carry more information about the other body than temporal coherence. Namely, in some cases (most cases of other humans' perception) the perceiver can see in the other's behaviour an expression of an "internal" state, such as emotion or intention. In other words, harmonious behaviour may reveal not only the continuity of movement but also its directedness, its intentionality. Moreover, the coherence of expressions reveals the other as an expressive unity. This means that every gesture and movement always appears as a part of a larger system of expressions, for instance perceiving someone's way of smiling has to come together with other expressions, for instance with the eyes, gestures and voice. An angry voice is not harmonious with a "smiling face", but it is harmonious with bursting hand movements, etc. Thus a body creates an expressive harmony and when the harmony is disrupted we may perceive the other's behaviour as weird, uncanny or fake, such as when someone is pretending.

The phenomenon of harmonious behaviour shows that the similarity with the other is not visual but it lays in the dynamics of behaviour. Furthermore the temporal coherence of bodily expressions and movements makes possible the perception of the other's intentions and mental states. Using the terminology of Husserl's theory of time-consciousness we may say that the other's harmonious behaviour is constituted by the fulfillment of anticipations (protentions) of his/her movements and gestures as well as by the retentions of the already passed phases (Hua X 1969; Husserl 1991). These "temporal functions"—protention and retention—Husserl recognizes as constitutive of the temporal stream of consciousness as such. Therefore we may conclude that the other's "harmonious body" presents itself in perception as the living and "minded" body because it manifests ("appresents" in Husserl's words) the other's own temporal stream of consciousness. In short, the other's body as expressing and moving appears surrounded by a temporal horizon, and as a result the other is experienced as another time-constituting subject, as an *alter ego*.

However, it is important to note that the apprehension of the other as the other temporalizing subject does not mean constitution of a union. In spite of her similarity, the other is always other. The resemblance with the other is never perfect; otherwise I would find in the other myself and thus lose his or her otherness. Also in *Analyses Concerning Passive Synthesis* Husserl states that the "similarity is a unity through resonance, thus, through 'harmony,' 'agreement.' Harmony, however, does not exclude degrees." (Husserl 2001, p. 507) Husserl explicitly states that we cannot experience the other's stream of consciousness, but we can through empathy apprehend it (Zahavi 2012). As Dan Zahavi puts it: "the primal mode of my own streaming present 'coincides' with that of the other, who is experienced precisely as someone who is time-constituting—i.e., as someone constituting the mundane present and a mundane temporality, with temporal contents of past and future, starting from her own present. However, this coincidence is a specifically peculiar kind of *unity in conflict or coincidence in difference* (...)" (Zahavi 2001, p. 68).

Perceiving others' expressions also leads to the problem of cultural or racial markers, which we wanted to avoid in the case of visual similarity. Culture and society (education, social class etc.) shapes our behaviour in various ways including the way we move and gesture, thus the harmony of expressions may differ across cultures. Thus it may happen that we will misunderstand the other's behaviour. However, while the harmony of expressions may be misperceived and the goal of intention misunderstood the basic form of empathy is possible. We may not understand the other's behaviour, but still we perceive him or her as living, sensing being. We may see the other's actions are intentional, coherent in time, yet it may not be clear to us what he or she is intending. The problem of cross-cultural empathy is certainly important and should be considered in detail elsewhere. It is worth noticing that in cases of misunderstanding of the other's behaviour we usually start to reflectively consider and theorize about the situation in reference to cultural context. That is, our tacit, immediate apprehension of the other becomes a reflective understanding. Thus we may conclude that empathy is a complex and multileveled phenomenon, which extends between passive analogizing apprehension of the other as a living and minded body expressing intentions and emotions, and an active understanding of the other's intentional mental states with reference to sociocultural context.

2 Time and empathy

According to Zahavi, in Husserl's account of empathy we should distinguish different levels (see Zahavi 2012). First, the basic, passive form of empathy, in which we perceive the other's body as animate organism, as the other living, sensing body. Second, an active empathy which is a form of perception or understanding of the other's intentions, beliefs, attitudes, emotions, etc. A different division was proposed by Rodemeyer, who however links levels of empathy with different modes of time-consciousness. She argues (Rodemeyer 2006, pp. 118–119) for three levels of empathy dependent on different temporal functions: i) reproductive empathy (recollection), ii) “motivated association” (far retention), and iii) “proto-empathy” (near retention). Reproductive empathy is related to the phenomenon of understanding others through our memories. However this active form of empathy needs to be triggered by the middle level—the passive “motivated association”. In other words, something in the other's behaviour has to awake my memories. Finally, the most basic and enigmatic form of empathy—the “proto-empathy”—which Rodemeyer also calls a “temporal fusion” because it discloses the continuity, but not unity, of mine and the other's temporal stream. This form of empathy is based on “near retention” since it is essentially related with the experience of the present.

While it is important to notice that empathy is a complex multileveled phenomenon, we have to remember that these distinctions are not clear cut. They are the result of phenomenological analyses, which are important in understanding the nature of the phenomenon but are performed on experience, which in the natural attitude is always holistic. Now I will discuss how passive and active empathy are related to time-consciousness.

2.1 Pre-reflective “proto-empathy”

First, let us consider the passive, basic form of empathy that, following Rodemeyer, I will call “proto-empathy”. In other words, “proto-empathy” is the passive constitution of the other as the other temporalizing subject, or minded body, as discussed above. Contrary to Rodemeyer, I think that “proto-empathy” is based on retention as well as on protention. Both retention and protention constitute the span of awareness of the present, and both are necessary for experiencing the continuity of the other's consciousness. In other words I have to retain the other's already past expressions and movements as well as anticipate those which are yet to come. But the crucial question is *what* is retained and anticipated? On the one hand, we apprehend the other's intention, which is bodily expressed, as an object changing yet identical in time. This would be an active form of empathy due to reflective objectification of the other's mental states. On the other hand, we retain and anticipate the very dynamics of the other's behaviour, in other words, we grasp “how” it is continuously changing from phase to phase. That is, we apprehend, but do not objectify, the dynamics of the other's temporal stream.

This idea is close to the Husserlian concept of the double intentionality of time-consciousness introduced in *Zur Phänomenologie des inneren Zeitbewusstseins*. There Husserl distinguished longitudinal intentionality (*Langsintentionalität*)—a peculiar form of intentionality that is directed towards the “how” of the stream, namely into succeeding phases synthesized into a non-objectified continuity—and transverse

intentionality (*Querintentionalität*), which is the intentionality directed towards *what* appears in the flow—a temporal object. As Husserl writes: “two inseparably united *intentionalities*, requiring one another like two sides of one and the same thing, are interwoven with each other in the one, unique flow of consciousness. By virtue of one of the intentionalities, immanent time becomes constituted—an objective time, a genuine time in which there is duration and the alteration of what endures. In the other intentionality, it is the quasi-temporal arrangement of the phases of the flow that becomes constituted.” (Husserl 1991, p. 87-88).

In virtue of retention and protention, “proto-empathy” as awareness of the continuity of the other temporal stream is possible. It does not mean however that the other’s stream of consciousness becomes an intentional object. It is the “quasi-temporal arrangement of the phases”, the very dynamics of expressions grasped by the non-objectifying longitudinal intentionality. It seems clear therefore that this basic form of empathy has to be pre-reflective. What I understand by that is that “proto-empathy” is not a thematic reflection towards the other as an intentional object: rather it is kind of non-intentional awareness of his or her internal, but bodily expressed, temporal continuity. Furthermore, the “proto-empathy” understood as pre-reflective awareness of the other’s dynamics is a necessary condition for higher order empathic phenomena.

2.1.1 *Affect attunement and rhythmical patterns*

In order to illustrate the phenomenon of “proto-empathy” we may refer to research on social cognition, especially to several studies from developmental psychology. For instance, developmental psychologists Daniel Stern and Colwyn Trevarthen (Stern 1985; Trevarthen 1979; Trevarthen and Reddy 2006) have argued for the existence of primary intersubjectivity in infants based on rhythmicity and the melodic structure of performances (e.g. movements, facial gestures, vocalisation). This basic form of interpersonal interaction precedes active forms of understanding and cooperating with others. Their research on mother and infant interaction is particularly remarkable. Stern has observed that the motoric and vocal behaviour of infants is synchronised with their caregivers’ bodily performances (e.g. voice, facial gestures, movements). The crucial aspects of these phenomena, which Stern called “affect attunement”, are the rhythm and the dynamics of performances (“temporal contour”). For instance, mothers’ vocal rhythmicity was positively correlated with infants’ performed rhythm of movements. According to Stern: “Affect attunement, then, is the performance of behaviours that express the quality of feeling of a shared affect state without imitating the exact behavioural expression of the inner state.” (Stern 1985, p.142) What is pertinent here is that affect attunement is: pre-reflective, cross-modal, and based on temporal patterns. According to Stern, affect attunement is based on the perception of amodal “vitality affects”, the “temporal contour” and rhythmical dynamics of expressions. As Stern emphasizes, the “infant from early in life is exquisitely sensible of and sensitive to the temporal features of the environment” (Stern 1985, p.49). In other words, infants are primarily sensitive to the “how” of the world, to how it is changing and affecting, and not to “what” is experienced.

Further evidence for the crucial role of temporal structures in social cognition comes from the well-known experiments on neonate imitation conducted for the first time by Meltzoff and Moore in the late seventies (Meltzoff and Moore 1977, 1997). They observed that infants shortly after birth are able to imitate facial gestures presented by

an adult, such as tongue protrusion, lips protrusion, mouth opening etc. Meltzoff proposed a hypothetical explanation of this phenomenon based on an innate mechanism called “organ identification”. Meltzoff proposed two explanations of this mechanism. While the first is based on an organ’s visual form recognition (e.g. recognizing face-like objects), the second explanation uses the concept of the “spatiotemporal pattern of movement” (“kinetic signature”).

According to Andrea Zhok (2012) the “visual organ identification” hypothesis leads to many difficulties. First, we have to posit an innate mechanism of visual recognition of others’ organs (e.g. face). However if the neonate imitation has a cross-modal nature (involving both vision and proprioception) then the form that is recognized cannot be only visual or restricted to any single modality. Thus Zhok proposes that the form that is recognized and imitated is not visual, in fact it is not modal at all, but is “supramodal”. Zhok argues that neonate imitation is based on a “kinetic signature”, understood as supramodal sensorimotor rhythmical patterns. In general, these rhythmical patterns, or *rhythmòs* as Zhok calls it, define the supramodal “way of changing” of movements, including gestures as well as voice. Infants as well as adults are able to immediately recognize and imitate this temporal pattern in various modalities.

To sum up, the phenomena of affect attunement and neonate imitation are part of “primary intersubjectivity” (Trevarthen 1979), which is a primitive form of interaction and communication with others, active from the very beginning of our lives. Despite the fact that infants do not have advanced perceptual systems or concept of the other person, they are able to communicate and respond to the other’s behaviour. The temporal, rhythmical structure of behaviour that expresses affective states plays a crucial role in these phenomena.

2.2 Active empathy and the shared present

As I argued above the higher order phenomenon of empathy is the perception and understanding of the other’s mental states. I will not discuss in detail the nature of this kind of empathy here, for instance whether it is related to the perceiver’s past experience and thus based on recollection and reflection, or a more direct, embodied and perceptual activity. What is important here is that on some level empathy becomes an active phenomenon, which means that it is related to specific acts of consciousness, which may result in objectification of the other’s mental states. In other words, on this level the subject refers to the other’s mental states in perception as intentional objects. For instance, I may see someone’s anger and consciously change my behaviour in reaction. Furthermore, once I thematize the other’s mental state I may refer to it in recollection or anticipate it as a possible future occurrence. This however is related to the emergence of temporal dimensions of past-present-future.

What is especially interesting is that the other subject may co-constitute the experience of the present. In other words, interaction between me and the other may affect our experience of the present; for example, when the performance of a task requires mutual cooperation in time. It is important to notice that the present is understood here as an intersubjective phenomenon and not as an objective time. Phenomenology of intersubjective time concerns the shared experience and co-constitution (in phenomenological sense) of temporality and not that we are “in” the same moment of objective time (clock-time).

The phenomenon of the shared present was considered by Husserl in his working manuscripts. For instance in the C-Manuscripts (Hua Mat. VIII) he considers the co-present (*Mitgegenwart*) and in manuscripts published as *Zur Phänomenologie der Intersubjektivität* Husserl writes about the shared present (*gemeinsam Gegenwart*): “He acts in ‘the my present’, and I am for him in his present. We are not only in the same context of things or in the same ‘place’, rather we are in the ‘shared’ present, in the common present place, in the intentionally common surrounding world. We are its subjects and as ‘we’ are mutually constituted: for one another we are here, each one as ego, the other as other. The ‘we together’ is given to me in the form ‘I and he’, however for him it is given in the form, which I express ‘he and I’ but he expresses ‘I and he’.”¹

In order to explain the constitution of the shared present Husserl considers the possibility of the other acting in “my present” and my acting in his or her. It seems that an essential aspect of this process is the perceived intention of the other and possible interaction in “the intentionally common surrounding world”. Furthermore, the fulfillment of this process leads to the mutual constitution of the “we” structure, in which we share intentions and act together. It seems however that we have to distinguish two modes of this phenomenon. First, when I and the other reflectively anticipate the goal and pre-reflectively share intention (actions of the other are not a theme of reflection). Second, when we interact and focus on each others’ actions in order to synchronise together and achieve the shared goal (the main theme of consciousness are the other’s actions), for instance when we learn the task and practise cooperation.

As discussed above, according to Husserl we can, by means of empathy, “see” the others “mental states” such as intentions, emotions, and attitudes. The “direct perception” of the other’s motor intentionality assumes that what is perceived is temporally extended. The perceiver has to grasp not only the current phase of movement but also its past and future stages, which have to be both retained and anticipated (in protention) in time-consciousness. As we have seen above, what is most significant in apprehending the other’s intention is the pre-reflective awareness of the other’s body dynamics, how movements and expressions change in time and space. At the same time, what is reflectively given is the common goal of our intentions. When we anticipate the other intention’s dynamics we may adjust our movements or attempt to influence his/her actions. As Merleau-Ponty nicely puts it, I find in the other body a “miraculous prolongation of my own intentions, a familiar way of dealing with the world.” (Merleau-Ponty 2005, p. 412). Despite the fact that our bodies are separated, they participate in one intentional structure, which covers the common surrounding environment and our bodies.

Furthermore, together with the shared present the “we-together” intentionality is constituted. It is important to remember that “we” is constituted mutually (*miteinander*): both subjects have to interact with each other and coordinate their behaviour in the shared present. In this case two separate streams of consciousness mutually fulfill and constitute a shared intentional experience. While acting I know that in order to fulfill the shared intention and accomplish the task my actions have to come

¹ “Er handelt ‘in meiner Gegenwart’, und ich bin für ihn in seiner Gegenwart. Wir sind nicht bloss überhaupt im demselben Dingzusammenhang, an demselben ‘Orte’, sondern wir sind in einer ‘gemeinsamen’ Gegenwart, in einem aktuell gemeinsamen Ort, einer bewusstseinmässig gemeinsamen Umwelt, wir sind ihre Subjekte und sind als ‘wir’ miteinander konstituiert: und füreinander sind wir da, jeder als ego, der Andere als Anderer. Das ‘wir beide’ ist mir gegeben in der Form ‘ich und er’ und für ihn gegeben in der gegebenen Form, die ist ausdrücke als ‘er und ich’, die er aber ausdrückt als ‘ich und er’.” (Hua XIV 1973, p. 212).

together with yours and vice versa. However to do so, I have to grasp the other's intentions as temporally extended and understand them together with accompanying beliefs, emotions, attitudes, etc. The shared present is being constituted in a manner analogous to the constitution of intersubjective space. The other's 'there' appears correlated with the 'here' occupied by my body. Whereas in joint intentionality my 'now' refers to the other's 'then', for instance I move when you moved. The motoric sequence of intentional action and its distribution in time is thus divided between me and you. Mutual anticipation of actions and coordination is replaced by co-constitution. We participate together in a shared temporal horizon. The shared present, which is co-constituted by me and you, is something we live through together.

2.2.1 Active synchronisation and joint action

Joint action has been recently one of the most discussed topics within the field of social cognition (for an overview see e.g. Pacherie 2013). Interestingly part of this discussion has focused on the temporal dimension of interpersonal cooperation and synchronisation of action, both intentional and unintentional (e.g. Hove et al. 2009; Konvalinka et al. 2010; Miles et al. 2009; Oullier et al. 2008; Richardson et al. 2007). Following Pacherie, we can distinguish several conditions for joint action, including joint predictions and adjustments as well as triadic adjustments between the "me-other" pair and the shared goal (Pacherie 2013). Each subject anticipates the other's actions and adjusts his/her own actions in order to achieve the goal. In effect the individual sense of agency becomes the collective agency (we-agency). The strength of the feeling of co-agency depends on the degree of harmony between cooperating agents (Pacherie 2013).

For instance, active synchronisation was investigated by Ivana Konvalinka et al. (2010), in which participants were asked to press a button in synchrony with a beat heard in their headsets. The sound was generated either by another participant or by a computer. The participants' actions were recorded and measured within millisecond accuracy. The results indicated that participants did not take fixed roles of leader or follower, but rather related to one another dynamically, as a dynamically "coupled unit". When two participants heard each other and synchronised actions they created a unit of two "hyper-followers" changing in roles of leader and follower by turns. The researchers concluded that the interpersonal coordination is based on the ability to predict the other's actions and adapt their own actions on a timescale of milliseconds.

Another example of synchronisation comes from Oullier and Kelso (Oullier et al. 2008) who conducted experiments with couples performing rhythmical movements. Two participants sitting in front of each other were asked to move their index fingers rhythmically at their own preferred pace. They were not instructed to synchronize with each other. Trials were conducted in two conditions, one with the participants blindfolded, the other with the participants visible to each other. Oullier reported that spontaneous and unintentional synchronisation between agents occurred as soon as visual information was accessible. Furthermore, it turned out that the rhythmical pattern that emerged in the spontaneous synchronisation was present in participant's movements even after access to visual information was stopped. This phenomenon shows that the motoric pattern of behaviour (kinetic melody) may be influenced by the other, and that in interaction a common pattern emerges and is saved in bodily memory.

These experiments reveal a number of interesting things. First, the process of synchronisation leads to the emergence of a new motoric pattern, which is dynamically shaped by both parties. Furthermore, this pattern may be present in the subject's movements still after the synchronisation stopped, which suggests that it may be saved in bodily memory. Also, the synchronisation and dynamical coupling were significantly less noticeable in trials with non-human agents, whether a human-figured robot and a computer generated hand movement (Oullier) or a computer generated beat (Konvalinka). It seems that the emergence of a dynamically coupled unit is possible only when the influence between agents is bidirectional. In other words, in coupling both parties mutually shape their timing. In trials with non-human agents participants were not able to influence the other's actions. Thus the relation was unidirectional. Furthermore, human behaviour is characterized by being imperfect and changing. These changes, delays and breaks are meaningful to the perceiver. The other's actions are perceived as a response to my actions and vice versa. For instance, when I start to act slower and when I realize that the other has slowed down too, then his/her actions may be understood as a reply to mine. Intersubjective interaction is thus a dialogic structure, like a silent dialogue between me and you. Therefore it is not so surprising that the synchronous acting together is positively correlated with the positive emotions and affiliation between the subjects even though they are often unaware of the synchrony (Hove et al. 2009). Generally speaking, we may say that coupling through synchronized actions not only manifests in motoric reaction but in affectivity as well.

3 Towards intersubjective temporality

The phenomenon of empathy is essentially related with time-consciousness, with the way we experience temporal structures and the continuity and harmony of the other's behaviour. It is important to recognize this aspect and include it in research on empathy. To conclude my considerations, I will now propose and discuss a general distinction between three levels of intersubjective temporality; again however it is important to emphasize that this is not a clear cut division and in everyday experience the boundaries between these levels are fuzzy. The levels in question are: i) pre-reflective, non-intentional attunement with the other; ii) the reflective flow of temporal objects and active synchronization/adjustment with the other in joint action; iii) time as it is represented in planning, narration and history. On the last level of intersubjective temporality the other is represented: as an agent of actions which will be co-performed in future, in personal as well as collective memories and in narration about future events. In this article I have not discussed this issue, which, as I believe, has already been considered to some extent by Husserl scholars (see e.g. Judycki 1990; Lohmar 2010; Rodemeyer 2006; de Warren 2009; Zahavi 2001) and hermeneutists such as Paul Ricoeur.

The first level of intersubjective temporality concerns the pre-reflective awareness of the continuity, or quasi-temporal harmony, of the other's behaviour. What is perceived is the dynamics of the other's bodily movements and expressions, and what is "transferred", to use Husserl's term, is the sense of living and minded body. This process is passive and pre-reflective: it is not a conscious reflection on the aliveness of the other but rather is an immediate awareness of the other as expressed in bodily

dynamics. As we have seen from the developmental psychology research this form of empathy is a very basic ability, which is in our cognitive system from the very beginning. It is the sensitivity to quasi-temporal, rhythmical patterns that motivate the perceiver to emotional and motoric response. Hence, the phenomenon of “affect attunement”, in which an infant and caregiver pre-reflectively attune emotional reactions, vocalisation, facial gestures, movements, etc., in accord with the other. The dyadic structure that emerges between me and the other can be called an “interbodily resonance” (Froese and Fuchs 2012). Bodily expressed emotions of one subject affect the bodily (interoceptive and proprioceptive) experience of the other and vice versa. Generally speaking this mode of intersubjective temporality is i) pre-phenomenal, as it precedes the emergence of temporal objects and shapes the temporal form in which they appear; ii) interbodily, as it emerges as a result of “resonance” between my and the other’s body; iii) polyrhythmical, as it is based on rhythmical patterns experienced and expressed; and iv) lived, as it is an experience of duration as felt.

The second level of intersubjective temporality consists of two phenomena: perception of temporal objects and co-constitution of the present in synchronisation in action. The perceived temporal object is either a shared goal of intentional action or the other’s intention itself and it is constituted in the retentional-protentional flow of time-consciousness. In interaction with the other the phenomenon of the shared present emerges. The temporal structure of action is shaped by both parties. Each subject retains and anticipates one’s own as well as the other’s actions. Finally mutual synchronisation leads to the emergence of the experience of shared intentionality. The temporal horizon of shared intention may be limited to the shared present, but also may extend to the temporal dimensions of past and future. In the first case, the “I-Thou” coordination is pre-reflective, and so our kinetic melodies pre-reflectively synchronise. The temporal structure of a shared action is distributed between ‘already gone’, ‘now’, ‘not-yet’ and an anticipated ‘then’. For instance, I may pre-reflectively slow down my movements because I see that the other will not manage to reach me, or anticipate a next phase of his or her movement and execute my own movement faster. In the latter case, temporal distribution of actions between me and other extends in past and future. For example, I may await the other’s action, which I may suppose to happen in the future: for instance, I may be waiting for an important sign, which will result in my response. In this case, the other may be bodily absent yet his or her actions are nevertheless reflectively anticipated. Moreover, the others future action may affect me emotionally, for instance, I may feel impatient or nervous, which means I may experience specific bodily sensations such as voice trembling, shaking of hands, quickening heartbeat or even suffer from insomnia. What is affected here is my lived bodily experience, my various interoceptive and proprioceptive feelings. If this is the case, then we have to acknowledge that the other, even though he or she is not bodily present, may affect me and shape my experience of the lived present. In other words, the phenomenon of “affective resonance” may emerge to some extent in the case of the other anticipated in the future or recalled from the past.

We see therefore that in everyday experience the lived, pre-reflective temporality and reflective time of consciousness (temporal objects), similarly to longitudinal and transverse intentionality, are interwoven and can be separated only in abstraction. This is especially apparent in bodily interaction with the other. On the one hand, we passively synchronise our bodily rhythms and co-constitute the kinetic melody of

action, we mutually affect each other's body schemas and interoceptive feelings (emotional reactions). On the other, we reflect upon the other's actions and joint goals, we apprehend temporal objects and grasp their duration in the temporal horizon of the future and the past. We temporalize together.

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