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The intersubjective turn (8500 words, incl. refs)

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When I was invited to write this chapter, I was given the title "The interactive turn". But I think – and I am not alone in this – that the interactive turn in the embedded, embodied, and enactive sciences of the mind, is really an *intersubjective* turn. If by intersubjective (the two parts here separated for a moment, to emphasise each aspect) we understand that which happens *between subjects*, then several elements of this are being increasingly investigated today, social interaction being only one of them. Subjects are animate, bodily, experiencing persons, who live in a meaningful world, and to whom things happen and matter. They engage with each other affectively, experientially, cognitively, and are almost continually involved in understanding both the world and each other, often together.

Indeed, there is currently a heightened attention to interaction processes, but that is not all that is going on. There is also increasing interest in *the feeling of connecting with others*, i.e. in the personal experience of being involved in interactions – a fundamental aspect of subjectivity (Thompson 2001, 2005). In line with inspiring work by Shaun Gallagher, Peter Hobson, Vasu Reddy, Evan Thompson, Colwyn Trevarthen, and others, I felt early on that what was needed in the science of social understanding was a recognition of connecting, which connotes both interacting *and* its experience. The impulse for this movement towards not just an interactive, but an intersubjective turn in the investigation of social understanding comes in part from the phenomenological insights generating many of the criticisms of cognitivist social cognition research (e.g. Ratcliffe 2007; Gallagher 2001, 2012; Zahavi 2001, 2011; Szanto and Moran 2015). What they diagnose as missing concerns especially the *human*, the *personal* aspects, and these centre on experiencing and interacting (Gill 2015; Satne and Roepstorff 2015). Both are things that machines still can't do, and that particularly characterize living beings.

Interaction and its experience are especially part of the embedded, embodied, and

enactive sciences of mind, in their weariness of functionalism, cognitivism, and computationalism. While Dreyfus (1992) doesn't write about social interaction, his critique of the artificial intelligence programme in the 1970's was that experience shouldn't (because it cannot) be ousted from cognition (research). It is the kind of experience that Gendlin considers central to meaning: "*Meaning* is not only *about things* and it is not only a certain *logical* structure, but it also involves *felt* experiencing. Any concept, thing, or behavior is meaningful only as some noise, thing, or event interacts with felt experiencing. Meanings are formed and had through an interaction between experiencing and symbols or things" (Gendlin 1962/1997, p. 1, emphasis in the original). It is this kind of meaning or sense that subjects make, find, and participate in in their world.

Subjectivity is core to a bio-logical understanding of meaning – a meaning that has its roots in the lived- and living-body of animate creatures who move around in a world in search of what nourishes them, and who are constrained and enabled by the needful freedom of their self-organization and self-maintenance (Merleau-Ponty 1945/2012; Jonas 1966; Varela, Thompson and Rosch 1991; Sheets-Johnstone 1999, 2009; Di Paolo 2005, 2009; Johnson 2007; Thompson 2007; McGann et al 2013; Buhrmann and Di Paolo in press). Subjectivity has been repeatedly overlooked, but again and again called back into psychology and cognitive science throughout their history. Often these appeals have only been heard with half an ear, or the enthusiasm quickly dissipated within the contingencies of the times (see e.g. Bruner 1990). It is important to extend this call again, and in this chapter, I relate some of the efforts made in the area of research on social understanding. I prefer to use the term social understanding over social cognition, to indicate a broader subject matter than that of explaining and predicting other people's mental states.

Many have thought and written about experiencing and interacting. In psychology there is, among others, the work of Vygotsky, Asch, Donaldson, in sociology, of Mead, Goffman, in phenomenology, Gurwitsch, Schutz, Husserl, Merleau-Ponty, and so on. Their work is now once again being re-discovered, -applied, -interpreted, and -operationalized. In this short chapter, I give a necessarily cursory and incomplete overview of the state of the art. I also argue that this isn't just an interesting movement, but that it already has the ingredients to become an encompassing and coherent view, perhaps even a new science of social understanding.

The individual is here

Speaking of an inter*subjective* turn makes it clear from the outset that this development is not only about interacting, but also – and fundamentally – about the individual. Proposing that interaction is important (as we indeed did, De Jaegher and Di Paolo 2007; De Jaegher et al. 2010; Di Paolo and De Jaegher 2012) does not mean forgetting about individuals, as it has sometimes been understood (Bohl and van den Bos2012; Michael and Overgaard 2013). What it does mean is a re-thinking of the subjects involved in interaction (Di Paolo and De Jaegher, 2016). Individuals now appear not in a mentalistic vacuum, but as dynamically participating in different-each-time encounters.

Participants do not always have power over the interactions they engage in. Nor can they fully grasp them. Sometimes they are even under the control of these interactions. This is the most radical form of the enactive proposal for explaining social understanding: that interactions can take on a life of their own, or be autonomous in a particular (well-defined) sense, and that if this is the case, then we can argue that interaction processes *as such* can influence (form and transform) individual intentions (De Jaegher and Di Paolo 2007, De Jaegher et al. 2010). The best way to illustrate this is in a situation where people do not intend or wish to interact, but nevertheless find themselves doing so. This can happen when you encounter someone walking towards you from the other direction on a narrow path, and you end up stepping in front of each other a few times before one of you can break the spell of this unwanted "corridor dance," allowing each of you finally to continue on your way. Or think of saying goodbye on the phone where, sometimes, even after both speakers have said goodbye it takes a while before they can finally hang up. Another familiar example is the escalating pull to fight or argue with someone even when neither participant wants to. This often happens between family members, and is largely based on patterns of shared interactional histories (Granic 2000).

From the point of view of everyday personal or subjective experience, the idea that interactions can influence individual intentions does not seem radical (everyone knows this). Where it is revolutionary is in a cognitive science that has dealt mainly with individuals confronting – on their own – a logical world to interpret (and this interpreting is the main object of study of that kind of cognitive science). Here, interactions have long been ignored as mere contexts, because inconsequential and not worthy of examination in their own right, reducible to a peculiar stream of sensory data and essentially compatible with the assumption of detachment between cognitive processes and world. What the intersubjective turn is thus realizing, is an increasing scientific attention to interaction processes, including their measuring and quantification. And the findings confirm that the inherent dnamics of interactive processes render invalid the traditional assumptions.

The strange thing here is that interactions have of course long been studied scientifically, and pointing to the importance of interaction sounds odd to those working in fields that have always been about interactions, e.g. subdisciplines of the social sciences like conversation analysis and ethnomethodology. However, they have been ostensibly far out of contact with cognitive science. Without having the space to go into this disciplinary rift here (but see Boden 2006), suffice it to say that the sociological study of interactions is becoming increasingly relevant to cognitive science, and calls for a dialogue between the two (Bender et al. 2012) are being taken up (e.g. Hutchins 1995; Jensen and Cuffari 2014; Beller and Bender 2015; De Jaegher et al. in review). On the other hand, the social sciences also stand to benefit from a contact with embodied cognitive science in this: namely. precisely about the more embodied and experiential – subjective, personal, meaningful – aspects of interacting. For conversation analysis and ethnomethodology have focused a lot on talk, but less on embodiment (with exceptions, of course, e.g. Kendon 1972, 1990). Many interaction researchers (with the exception of Goffman, who himself

however remains ambiguous on the topic) have positively banned subjective experience from their interests (REF CA handbook Anssi). Changes are happening here too, partly under impulse from phenomenology, cognitive science, and philosophy of mind (see e.g. Streeck et al. 2011; Meyer et al. 2015).

In relatively isolated segments of psychology, linguistics, sociology, robotics, some of which I will discuss in the next section, research addressing embodiment, interaction, and experience is already taking place. But why – especially considering that for many people this kind of work rings so true – is this interest not more mainstream? I think it is because of a lack of insight that this *is* about cognition, about understanding, about sense-making. In cognitivist terms, an integration of embodiment, interaction, and lived experience is, indeed, hard to capture. But now, with the embodied, embedded, enactive approaches, we can much more clearly make understandable and testable how embodiment, interaction, and experience shape sense-making. This needs to be theorized, and once a decent connection can be made between individual sense-making and the role of interaction processes, this kind of work will become increasingly recognised as part of the sciences of the mind.

We can see thus a hankering to study embodiment, subjectivity, experience, and interaction, if possible all together. In the next section, I survey some of these streams and the different turns they take towards an increased attention to aspects of intersubjectivity. I will mainly focus on studies of interaction and of experience. In the final section, I explain how I think they are already carrying and are beginning to bring together many of the basic materials needed for a science of intersubjectivity.

The growing intersubjective turn

In this section, I give a brief overview of the kinds of research that consider interaction and subjectivity central to social dynamics and social understanding.

First, however, let me remark that meaningful experience is pertinent, even in standard, non-interactive, cognitivist research. In one of the seminal studies of social cognition, Premack and Woodruff investigated whether chimpanzees have a Theory of Mind (Premack and Woodruff 1978). Even here, even though the study is carefully described in mechanistic-mentalistic – "neutral" – terms,[1] a recognition of the experiential significance of what is going on is unavoidable. I do not just mean the fact that mentalist staples of ToM like 'desire' and 'belief' have a personal, subjective basis, but that what went on in the experiment turns crucially around what *matters* to the actors, chimps as well as humans. In the study, chimpanzee Sarah is shown videos of a human actor in precarious situations, e.g. his food is out of reach, or he shivers with cold – all situations that are of *concern* to the actor. When Sarah is then shown photographs of possible solutions and non-solutions to the situation, she consistently chooses the one in which the actor gets out of his predicament. Whether traditional cognitive science is embarrassed by it or not, all of these situations appeal to concrete practical (even sometimes existential) needs and efforts of the actors involved. Moreover, it is quite possible that the chimpanzee relates to the actors in

their situations through a recognition of precisely these needs and efforts. If the videos had been of situations that were not meaningful to the chimp (whether to her own personal experience – she knows about hunger or cold, or to her as empathizing with the human in the videos – she sees the human wanting food), she would likely not have found the solutions.[2] This way of thinking is supported by research that suggests chimpanzees develop better joint attention and cooperation skills, the more affective experiences of engagement they have, just like human children do (Bard et al. 2014).

Indicators that what personally matters plays a great role in the development of understanding other people's minds is also evidenced in humans. Young human children can reason about desire before they can reason about belief (Wellman 1993), indicating that they more readily understand that which is closer to their direct concerns (understanding belief in that sense may be a later achievement than understanding desire, since desire is about what concerns you in terms of wanting it, whereas belief is about what you know about). They also will offer an experimenter the food they themselves like best (out of two choices), even if the experimenter expressed disgust at it, before they are able to give the experimenter the food which he likes best (even if it is the food they themselves dislike, 14 months and 18 months respectively) (Repacholi and Gopnik 1997). Young children are also better able to indicate knowledge of what someone else knows, the more the test involves them as active participants, rather than as observers of a story played out in front of them, for instance with puppets, and the more the test takes into account their ways of conveying what they know (see O'Neill 1996, and also Donaldson 1978).

The point about the role of one's interest in or concern for the stimuli as a precondition for successful performance on the experiment is related to a slightly different one about the role of the personal and the subjective in studies of cognition, and even in scientific practice in general. Jack and Roepstorff (2002) argue that subjectivity plays a role at every stage of experimentation, from design to interpretation, whether or not we are aware of it – an idea with precursors in, for instance, the work of Polanyi (1958). However, embedding the role of experience within research practice indeed requires "trusting the subject," as Jack and Roepstorff put it, instead of exiling the subject from psychology. While experience and subjectivity may be present in every investigation, this is hardly ever made explicit, let alone reflected on, and even less is personal experience in social interactions investigated as such. Even neurophenomenology (Varela 1996, Gallagher 2003) and practical phenomenology (e.g. Depraz et al. 2003) which investigate personal experience, sometimes in intersubjective settings (Petitmengin 2006), don't generally turn to interactive experience.

However, encouragingly, there *is* research which does exactly this. The connection between subjectivity and interaction is effectively part of investigations at the intersection between developmental psychology, psychopathology, psychiatry, and psychotherapy. These fields share a concern for development, communication, and mental health, and researchers often span several of these areas in their work. For instance, Reddy's second-

person approach to development and social understanding is steeped in meaningful, personal experience in interactive situations, studied from very early on in ontogeny (Reddy 2008). This allows Reddy to examine humour in infancy and in children with autism or Down's syndrome (Reddy et al. 2002), or to chronicle very young children's coyness, and to relate these to the development of self-awareness (Reddy 2000). Another example is Hobson, who argues that emotional interpersonal connections early in development lie at the roots of thinking. He connects this to the hypothesis that disruptions to infants' engagements with primary caregivers can lead to impaired ways of thinking, for example in autism (Hobson 2002). In this work, interactive experience is at the start and at the heart of it all, and it is investigated as such, allowing for instance Hobson to make distinctions between imitation and identification in autism (Hobson and Lee 1999), and to talk about qualities of relatedness (Hobson and Hobson 2008). Similar themes run through the work of Trevarthen (2009; Trevarthen and Hubley 1978; Delafield-Butt and Trevarthen 2015), Beebe and Lachmann (1998), Tronick (2005), Stern (1985/1998), Fogel (1993), and others (Gratier and Apter-Danon 2009; Leavens et al. 2014; etc.).

Several other related areas of research link engagement, interaction, and personal experience. The study of music, musicality, and music therapy are wonderful conduits for this (Trevarthen 1999; Malloch and Trevarthen 2009; Moran 2011; Krueger 2013). In ecological psychology, the study of interaction dynamics goes together with various ideas about how these dynamics, and language, are infused with and infuse personal and societal meaning (Hodges et al. 2012; Zukow-Goldring 2012; Zlatev 2012; Tylén et al. 2013; McGann 2014). Cowley et al. (2014), for instance, show how in interactions between mother and infant culturally specific expectations are played out and learned in the mutual regulation of affect and interaction between them. A particular hand-waving gesture by a Zulu mother from South-Africa is taken up by her baby as a request to be silent now. Cowley and colleagues argue that this is culturally specific because the particular fast-paced gesturing of the mother would be experienced as frightening or overwhelming in another culture, and yet the baby becomes quiet, but not afraid or distressed. This becoming quiet or "thula" is an important element of the culture this dyad lives in, and is learnt very early, in lively bodily exchanges.

Intersubjectivity is also crucial to understand psychiatric disorders, ranging from autism (Gipps 2004; Donnellan et al. 2013, De Jaegher 2013), over schizophrenia (Irarrázaval and Sharim 2014; Fuchs 2015; Kyselo in press), or OCD (de Haan et al. 2013), to dementia (Colombetti and Torrance 2009). Therapy studies also tap into – as well as contributing their expertise to – intersubjectivity research across disciplines, from neurophysiotherapy (Øberg et al. 2015), over psychotherapy, to dance-, movement- and music therapy (Schiavio and Altenmüller 2015, Zeiler 2014; Samaritter and Payne 2013). In this way, caring for people with dementia through a phenomenologically inspired music therapy can inspire an intersubjective notion of personhood (Zeiler 2013).

A field where, until recently, it has been notoriously difficult to detect much explicit

attention to interaction or subjectivity, is neuroscience. Even social neuroscience often still starts from a conception of the brain as the sole controller of machinations on inputs and outputs (Van Overwalle 2009). But this idea of neural processing directly reifies descriptions of what happens at the personal level into mechanisms at the subpersonal level (Bennett and Hacker 2003), and it is individualistic – thereby foregoing both experience and interaction. An embedded, embodied, enactive idea of the brain, on the contrary, views neural activity as no more than one chain (however crucial it is) in a continual looping with the body and the (overwhelmingly social) environment (Fuchs 2011). Thus, embodied, embedded, and enactive premises promote a very different basis from which to do social neuroscience (Froese 2015). And the field is catching up to these quickly: a number of programmatic papers recently have advocated making interaction and experience mainstays of social neuroscience (Hari and Kujala 2009; Sänger et al. 2011; Di Paolo and De Jaegher 2012; Konvalinka and Roepstorff 2012; Schilbach et al. 2013; Pfeiffer et al. 2014; Hari et al. 2015; De Jaegher et al. forthcoming).

Concomitant with this, the technology for interactive brain research is evolving quickly. It is already possible to scan two people interacting live, through various forms of hyperscanning (see e.g. Dumas et al. 2011; Hasson et al. 2012). An interesting addition to this, as Hari and Kujala (2009) point out, is that social neuroscience should not just focus on the central nervous system (the brain in the head), but also on the autonomic nervous system, i.e. the nerves connecting the brain and physiological, emotional organs like the heart, the lungs, and the skin. Physiological studies of coordination between people in terms of heartbeat (Konvalinka et al. 2011; Fusaroli et al. 2015; Mitkidis et al. 2015), respiration (McFarland 2001; Lande 2007), and touch (Morrisson et al. 2010; Chatel-Goldman et al. 2014) indeed are an interesting way to combine measures of interaction and coordination with elements of subjective experience. These aspects of physiology are closely related to emotion and affect, and forms of hyperscanning could, and perhaps should, in this way be connected to emotional and affective engagement in interactions.

The various kinds of synergies between brains, across many timescales (Dumas et al. 2014) suggest that interactions cannot be simply treated as inputs to an information processing machine, empirically invalidating cognitivist assumptions. Instead, the brain is an organ of and for relating (Fuchs 2009, 2011).

Clearly, things are moving. What we are witnessing are the emergence and the convergence of increasingly interactive-experiential trends in social understanding research. But I think that there is more going on than just turns and trends.

Towards a science of intersubjectivity

The investigations described above could be seen as disparate and unrelated to each other. But I would like to suggest that they are more than just a loose collection with some affinities and compatibilities. To see this, we would need to show a framework that brings them together in a coherent way.

What would be the desiderata of such a framework? A comprehensive framework for an intersubjective turn should take into account the interaction process, and also do justice to subjectivity in its bodily, experiential, existential, and historico-socio-cultural complexity. It needs to be able to relate physiological, neural, coordinative, interactional, linguistic, and socio-cultural phenomena and levels of explanation. It should facilitate collaborations that not only span, but perhaps better even, shun disciplinary boundaries. It should be able to generate hypotheses, evaluate research findings, as well as develop methodologies. It should encourage applications, and seek a dialogue with field experts (people who are not necessarily academics, but who have extensive intersubjective experience, such as teachers and therapists). Finally, an integrative framework should recognize and be explicit about the values underlying it, and thus be aware and critical of its influences for and from societal institutions and norms, and it should have something to say about ethical issues. Are the elements of a theoretical framework for an intersubjective turn here?

Let's take a look first at interaction processes and subjects. We have seen already that social interactions can take on a life of their own. Interactions can emerge and maintain themselves for a while, regardless of, and even against, the intentions of the individuals. This forms one pillar of the enactive approach to intersubjectivity, in which we speak of a social interaction when two conditions hold: 1) a relational dynamic emerges and maintains itself for a while (i.e. a self-organizing *in-between* emerges), which 2) does not destroy the autonomy of the invididuals involved in it, though it could descrease or increase their participation (for the full-blown definition and some extensions, see De Jaegher and Di Paolo 2007; De Jaegher et al. 2010; Froese and Di Paolo 2011). In the corridor situation, two people enter into an involuntarily swirl of reciprocal moves, a supra-individual process that can momentarily determine what each person can and cannot do, including their potential to exit it.

On such a conception, interactions form and transform individuals and their intentions, just as individuals form and transform interactions. To think of the interaction process as an effective factor in social understanding means to understand it not just as a *contextual* or an *enabling factor*, but also possibly as a factor *constitutive of* it. A contextual factor is something that is found to affect a particular phenomeno, to modulate its properties, an enabling factor is necessary for a phenomenon to occur, and a constitutive factor is part of what makes the phenomenon what it is (De Jaegher et al. 2010). If interaction processes can (in part) constitute social understanding, then social understanding is not reducible to individual mechanisms. Thus, in the enactive view, properly reckoning with the interaction process entails a rethinking of cognition or understanding – in general, not just social understanding.

Enactivists understand individual subjects as sense-makers, who enact and engage with their environment in terms of its significance and valence on the basis of their autonomy (Thompson and Stapleton 2009). Sense-makers are autonomous in the sense that they self-organize under precarious circumstances. A sense-maker is sensitive to what

is beneficial and what is pernicious for self-maintenance, and capable of adapting to the circumstances in the service of self-organization (Di Paolo 2005). Sense-making is thus always a relation of significance, an adaptive behaviour based in the needs and constraints of a precariously living bodily being in specific circumstances. Subjects are, in consequence, existentially and experientially sensitive, and experience and affectivity are fundamental aspects of enactive cognition (Thompson and Stapleton 2009; Colombetti 2013). Things literally *matter* to sense-makers.

Social understanding, on such a view, can be understood as the coordination of intentional activities in and through interaction, "whereby individual sense-making processes are affected and new domains of social sense-making can be generated that were not available to each individual on her own" (De Jaegher and Di Paolo 2007, p. 497). Individuals can thus *participate in each other's sense-making*. While the idea was first formulated in order to capture ongoing embodied interactions, it turns out to also be useful to describe social understanding in a more general sense (Gallagher 2009; De Jaegher 2009, 2015).

The implications of this for fields like social neuroscience and psychology are considerable. It will not suffice to study what happens to perception and performance in the actual or virtual presence of other people (e.g. Doerrfeld et al. 2012, Schilbach et al. 2006; Rice and Redcay, in press). What is needed is to account for interaction's role in social understanding and cognition in general. Social skills, for instance will be understood not as something individual, but as partly constituted in interactions and interactional histories between people (McGann and De Jaegher 2009), and social agency as the development of increasingly sophisticated ways to deal with the tensions between individual and interactional autonomies, leading to complex capacities such as self-control and languaging – i.e., genres of participation (Cuffari et al. 2015).

Thus, the enactive framework provides a definition of the social interaction, and an account of various aspects of its phenomenology and organization, in combination with an understanding of individual sense-makers that includes how they participate in social interactions as meaningful encounters.

How about connecting the physiological, neural, coordinative, interactional, linguistic, and socio-cultural levels at play here? It would be hard to show at once that all these aspects are connected, of course, but investigations are being made of how some of them connect. For instance, interesting new work on music pedagogy investigates how the experience of connecting, self-regulation, and interaction dynamics connect to and can transform prevailing societal and cultural views on living and learning (Laroche and Kaddouch 2014; 2015; Van der Schyff 2015; Schiavio and Høffding, in press).

Enaction's phenomenologically and biologically sensitive logic of how autonomy, emergence, sense-making, embodiment, experience, and the socio-cultural fit together could help to better understand the connections between physiological, neural, coordinative, interactional, linguistic, and socio-cultural elements (Laroche et al. 2014; for examples, see Buhrmann and Di Paolo 2015; Di Paolo under review). In social

neuroscience, it may be interesting to find out how the body maps of the subjective experience of emotions (Nummenmaa et al. 2014) and their neural signatures (Saarimäki in press), connect to body maps of where others can touch us (Suvilehto et al. 2015). The development of these two kinds of body maps (Hietanen et al. in press) probably depends on local individual-to-individual interaction patterns, as well as being informed by socio-cultural norms, and on personal experience and bodily habits, sensitivities, and possibilities.

Inherently, the questions at issue here span several disciplines, and one of the threads running through much of enactive research is the elaboration of a conceptual toolbox. An enactive conceptual toolbox can be used for furthering interdisciplinary research in the sense not merely of dialoguing between disciplines, but of intervening in one discipline in the ways of another one, of innovating ways of working and thinking, and generating new empirical paradigms beyond disciplinary boundaries (Callard and Fitzgerald 2015). For this to be successful, it is paramount to have a clear and precise definition of the topic of investigation (whether it is clear at the start, or develops during the study). Only then will it be possible to generate hypotheses about the contributions of various factors, and to say which ones are contextual to the phenomenon, which ones are enabling, and which ones are constitutive of it (De Jaegher et al. 2010; Di Paolo, under review). This conceptual distinction between contextual, enabling, and constitutive factors is a meta-conceptual tool. The enactive concepts are honed for the precise study of how particular physiological, coordinative, neural, linguistic, and socio-cultural elements are at play in different aspects of intersubjectivity. They can be used to generate novel experiments or models, and to evaluate existing research in terms of whether it can support enactive hypotheses or theories. Whetting these tools happens in ongoing theoretical, experimental and modeling work.

As for dialogue with field experts, the enactive theory of social understanding is being taken up in many different sectors. It is already being used to understand addiction (Zautra 2015), clinical interactions (Øberg et al. 2014), clinical reasoning (Øberg et al. 2015), augmented communication in cerebral palsy (Auer and Hörmeyer 2015), martial arts (Light 2014), literature (Caraciollo 2014; Popova 2014), classroom interactions in higher education (Saiter 2012), and so on.

The ultimate criterion for an integrative framework for intersubjectivity is that it should be able to critically engage with society, and to probe ethical concerns. Enaction is well poised to do this because it foregrounds values as the basis of all sense-making, including world-understanding scientific and philosophical endeavours themselves. Critical and ethical work, for instance, looks at embodied political affect (Protevi 2009), care ethics (Colombetti and Torrance 2009; Urban 2014), organisational culture (Küpers 2014), or subjectivity in the corporate workplace (Slaby 2016).

One important area to develop further is the phenomenological exploration of the experience of interacting and how it informs and is informed by social understanding (Høffding and Martiny in press; Kimmel and Preuschl 2016; De Jaegher et al. under

review).

The presence of all these formative elements, together, I think, is the reason why there is such confidence that this is not just a matter of isolated or tentative innovations. It seems that a new approach, an interactive-experiential science of social understanding is visible on the horizon, one that already starting to push past the cognitivist folklore. Participatory sense-making was proposed precisely for this purpose: to be a theoretical framework capable of bringing different elements and levels together, across disciplines, around the notions of coordination, interaction, experience, autonomy, subjectivity, sense-making, affect and embodiment, to better understand intersubjectivity in its various dimensions.

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[1] E.g. "In assuming that other individuals *want*, *think*, *believe*, and the like, one infers states that are not directly observable and one uses these states anticipatorily, to predict the behavior of others as well as one's own" (Premack and Woodruff 1978, p. 525).

[2] Even to understand anything as a *problem*, and to be motivated to find a solution for it, you need to have a meaningful relation to the world to begin with.