

Neither individualistic, nor interactionist^{*}

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Abstract.

We summarize some of the main proposals of the enactive approach to social understanding and discuss some common misreadings of the notion of participatory sense-making. The emphasis on the role played by social interaction in the enactive perspective is sometimes misinterpreted as the adoption of an interactionist stance, whereby individual processes are less relevant. This is not the case, and we proceed to explain and exemplify the central role played by individual agency, subpersonal processes and subjective personal experience in the framework of participatory sense-making. This is clear from how social interaction is defined as involving the co-arising of autonomous relational patterns, not under the full control of any participant, but without loss of individual autonomy of those engaged in the social encounter. We discuss how interactive patterns can sustain a deep entanglement between brain, body and interactive dynamics during social engagement, as well as the functional role played in some case by collective dynamics.

The enactive approach is neither individualistic, nor interactionist. However, we express skepticism regarding the usefulness of hybrid approaches, which perpetuate dualistic distinctions between mind and body. Instead, the tensions in the notion of participatory sense-making are elaborated dialectically, demonstrating how complex forms of social agency, including language, develop from the primordial tension in participatory sense-making.

Keywords. Enactive approach. Intersubjectivity. Participatory sense-making. Social cognition. Social interaction.

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1. Introduction

Enactive approaches to social understanding have been the subject of much development and debate over the last few years. We think that these are fruitful debates, but sometimes it is useful to take stock and clarify what aspects of these discussions may point to gaps in the theory or needs for clarification, and what aspects may be rooted in misunderstandings and misinterpretations.

In this essay we provide an overview of the various claims defended by the enactive approach to intersubjectivity, from how social interactions can be defined operationally, to how social understanding is rooted in participatory sense-making, even when we are not interacting with others. In contrast to prevailing views, the enactive approach does not put all the emphasis on individual capabilities in order to explain forms of social understanding and social action. This has often been interpreted as adopting an interactionist stance on intersubjectivity. It is indeed the case that social interaction patterns have not played a very prevalent role in cognitive science and social neuroscience until recently and, in the light of this, a participatory as opposed to spectatorial stance still needs to be presented and defended.

One common misreading of this interactive emphasis, however, is to consider the enactive perspective as downplaying the role of individual processes and subjectivity. But in truth, the claims made position social interaction and embodied agency as equi-primordial loci of scientific and philosophical enquiry. The realm of intersubjectivity is animated by a force that is *neither* what goes on in people's brains or in their self-affective bodies, *nor* what occurs in social interaction processes—if we consider each alternative on its own. On the contrary, intersubjective phenomena emerge only as a *dynamic relation* between these two broad domains: the personal and the inter-personal. Any emphasis on either side of this relation fails to capture the complete picture.

To see the enactive approach as defending an interactionist position is to repeat the mistakes of methodological individualism we criticize in others. This interactionist interpretation is the cousin of another common misunderstanding of enactive ideas, viz. the idea that meaning is somehow “generated” in the agent-world coupling, and hence that enactive explanations are limited to concrete cognitive targets present in the here-and-now of interaction, e.g., coordinating movements in a joint action task. Enactivism, so the critique goes, cannot deal with anything beyond what is concurrently present to the cognizer. Thinking, planning, or imagining are supposedly out of reach for enactive explanations of cognition. This criticism is often invoked to defend some updated version of representationalism, since how else could we think, plan, or imagine, if not by using representations to supplement that which is absent in our immediate

couplings? We discuss the roots of this misunderstanding and explain why we can indeed propose that agent-world (and agent-agent) coupling is partly constitutive of sense-making—partly, because on its own it is not sufficient. Constitutive as well are the agent’s multiple forms of autonomy, her history, and the broader forms of value she is concerned with.

Similarly, the claim that the relation between persons and social patterns—embodied intersubjectivity—is primordial makes the enactive approach suspicious of hybrid solutions. These hybrids emerge as artificial middle ground positions between agonistic conceptual frameworks and hardly ever as the overcoming of their tensions. The theory of participatory sense-making, instead, offers dialectical tools for the self-deployment of the tensions that give rise to partial frameworks (individualist and interactionist). In the process, it offers accounts of increasingly complex forms of social agency: from bodily coordination to languaging.

2. Participatory sense-making

Let us review some of the enactive claims made regarding the study of social cognition and intersubjectivity and highlight how they always involve interactive and individual elements.

2.1 Social interaction

The enactive approach has seen an important amount of development over recent years. It offers a non-reductionist, naturalistic perspective on cognition and aims to answer questions that have been largely ignored by traditional functionalist approaches (Varela et al 1991, Di Paolo, et al 2010, Di Paolo 2005, 2009, Froese and Di Paolo, 2011, Thompson, 2007). It offers a conception of autonomy and individuality of the embodied cognizer based on the precarious organization of its material, ongoing self-constitution (Di Paolo and Thompson, 2014). This conception of the embodied cognizer, or sense-maker, serves to ground notions of interiority, agency, and normativity (Barandiaran et al. 2009). Unlike functionalism, the enactive perspective is concerned with what makes cognitive systems individual subjects with their own experience and perspective. And it offers the conceptual categories for approaching this question in a naturalistic manner. Few other frameworks put so much emphasis on the issue of the individual cognizer. Functionalist (computationalist and representationalist) approaches dodge these questions.

An issue that is raised when conceiving of cognitive agents in this way is whether their engagements with the world show any qualitative difference when this world is in part constituted by a community of other agents. The answer is yes. As agents regulate their coupling with their environments, they engage with traces of the activity of other agents, which

accumulate historically as patterns of mutually shaped ontogeny. Thus, a collective dimension contributes to the path-dependent transformations undergone as the agent makes sense and acts in the shared world (Di Paolo, forthcoming).

This historical aspect, however, could be seen mainly as a cumulative effect, leaving unchanged the fundamental property of agency: the asymmetrical regulation of the coupling with the world by the self-constituted agent. However, this is not the end of the story. A novel domain is opened up as agents engage in a mutual, concurrent, joint regulation of their couplings with the world and each other. As collective regulation becomes mutual co-regulation, new situations emerge. They include relational phenomena such as coordination and mis-coordination, as well as the possibility of complementary and conflicting acts. They also include relational patterns that become self-dependent, i.e., sustained but under-determined by the action of the agents engaged in mutual coupling.

These systemic phenomena lead us to the first contribution of the enactive approach: A formal definition of social interaction. Surprisingly, such a definition has been lacking, not only in the psychology literature, but also in interaction studies in sociology and conversation analysis, although much of the associated phenomena are clearly addressed by these disciplines. According to the definition,

“[s]ocial interaction is the regulated coupling between at least two autonomous agents, where the regulation is aimed at aspects of the coupling itself so that it constitutes an emergent autonomous organization in the domain of relational dynamics, without destroying in the process the autonomy of the agents involved (though the latter’s scope can be augmented or reduced)”, (De Jaegher & Di Paolo, 2007, p. 493).

We should notice then that social interaction is not the mere co-presence of two or more autonomous agents (they may just stand there and ignore each other), nor is it just the presence of a mutual coupling between these agents (such as the transfer of body heat, or merely noticing each other). The definition demands two strong conditions. Condition (1): there is a co-regulated coupling, which originates a series of dynamical, relational processes that becomes self-sustaining (autonomous) in the relational domain. This is important because this condition allows us to speak of events and properties as belonging to the interaction or being external to it. Condition (2): the participants are and remain autonomous. They do not lose the possibility of exerting their powers on the interaction patterns or acting so as to attempt to terminate it. This does not mean that interactions always unfold according to individual intentions, as this would contradict the first condition that says that interaction patterns have autonomy.

At this point we should note already that to speak of a social interaction is also to speak about relational patterns and individual participants as equi-primordial. Too much emphasis on the autonomy of relational patterns, such that individuals are subordinated to them, ignores the second condition of social interaction, which demands the sustained autonomy of individuals. Similarly, too much emphasis on the individual determinants of a social encounter (individual intentions, brain mechanisms for interpreting the actions and intentions of other, etc.) misses the role played by the self-determining aspects of the interactive dynamics.

2.2 Social understanding and the individual

A definition of social interaction is a first contribution of the enactive approach towards operationalizing social cognitive phenomena. While an increasingly larger proportion of empirical research in psychology and neuroscience is concerned with social interactions as defined above, a good part is not, even if the term ‘interaction’ is used. Such is the case of experiments where ‘interactions’ are non-autonomous (e.g., games with pre-established paced turns, or limited set of moves), violating condition (1), or experiments involving non-autonomous others (e.g., images, videos of other persons), violating condition (2). Research of this sort can be very valuable even from an enactive perspective. It simply does not involve actual social interactions as defined here. They involve social, but non-interactive situations, or agent couplings that are non-social.

The enactive approach introduces the concept of sense-making to describe the key constitutive aspect of all forms of mind, from the simplest to the most complex. Sense-making is what occurs when an adaptive autonomous system (e.g., an organism) regulates its coupling with the world and its own states as a function of the virtual (non-actualized) implications for its continuing form of life (organic, sensorimotor, cognitive, social, etc.) (Varela, 1997, Di Paolo, 2005, 2009, Thompson, 2007). It is an ongoing engagement with the world by an agent that is sensitive to the consequences of this engagement.

Given the definition of social interaction, which involves sense-makers in a particular relational configuration, we describe the sense-making that occurs in these situations as *participatory sense-making*. This is “the coordination of intentional activity in 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 & Di Paolo, 2007, p. 497). It is through mutual (not necessarily symmetrical) participation by cognitive agents in the sense-making activities of others, that their understanding depends not just on themselves but on the unfolding of the social engagement. The influence of other participants can take many forms, from “simple” orientations, as when a gesture is used to guide someone who’s looking for a

missing object, to joint sense-making, or co-authored cognitive activity, such as the collaborative elaboration of a piece of work.

Clearly, participation and social understanding are things that *individuals* do. There are obvious implications from the perspective of the subjectivity of the participants involved in an interactive encounter—implications for their affect and experience during concrete encounters, as well as many other aspects of personality and of social and individual capacities along developmental timescales, in relation to histories of interactions embedded within a particular culture.

One of these implications concerns the personal experience of the alterity of other participants in an interaction, a fundamental issue in the phenomenology of intersubjectivity. Given the autonomy conditions for both interaction pattern and participants, the experience of the other never achieves full transparency or full opacity, but rather intermittently moves through regions of understanding and familiarity towards provinces of misunderstanding and bemusement, corresponding to periods of coordination or breakdown respectively, (De Jaegher and Di Paolo 2007, p. 504). Personal experience is, in this perspective, underpinned by a pre-reflective intercorporeality (Merleau-Ponty 1945), or mutual incorporation, in which “our body’s operational intentionality is partially decentered” (Fuchs and De Jaegher 2009, p. 476). Here, there are “two ‘centers of gravity’ which both continuously oscillate between activity and receptivity, or ‘dominance’ and ‘submission’ in the course of the interaction” (ibid.). This centering and decentering is the pivot of embodied intersubjectivity, and implies an ongoing fluctuation between empathy and alterity: “Both partners bring in their dispositions that are based on acquired intercorporeal micro-practices, [and] their retentions and protentions of the process that are partly fulfilled by interactive matches, but also partly disappointed by mismatches” (ibid.).

These intimate relations between intercorporeality and personal experience can reach deep levels of bodily affection. Social interaction processes enter into the core of our self-constitution. In and through social interaction, we can truly affect each other, even each other’s self-maintenance and self-affection (De Jaegher 2015). This is illustrated, for instance, in research showing that social interactions can influence humor in infants and the development of self-conscious emotions (Reddy, 2008) and perceptual attitudes (Di Paolo, forthcoming), and that interactions with close others can modulate pain experience (House, et al., 1988; Turk, et al., 1992; Krahé et al., 2013). And since, from an enactive perspective, self-affection is always-already an experiential manifestation of the precarious self-constitution of the body, it is also relevant that kind marital relationships can make a spouse’s wounds heal faster, while hostile relations can slow down their healing (Kiecolt-Glaser et al., 2005; Gouin et al., 2010).

2.3 The constitutive roles of intra- and inter-personal processes

The activity of interactive agents is therefore never simply their own, in that it arises under the influence of the participation of others as long as interaction is ongoing. But this is not all that happens. Since the definition of social interaction postulates the emergent (though temporary) autonomy of interaction patterns themselves, individual sense-making is influenced by these patterns, which are not under the full command of any participant. Thus we postulate that social interaction itself can play different roles in sense-making in general and social understanding in particular (De Jaegher, et al., 2010). In some cases the role of interaction patterns may be contextual, i.e., variations in these patterns produce variations in social cognitive phenomena. A stronger possibility is when interaction patterns play an enabling role, i.e., they facilitate or constrain cognitive phenomena, such that variations in the interaction can result in the absence of such phenomena. These are both cases of a ‘causal’ role played by social interaction in the emergence/explanation of social understanding. But there is also the possibility that social interaction itself plays a constitutive role in social cognition. This is the case when the specific social cognitive activity is at least partially *constituted* by what goes on in the interaction (in addition to what goes on in each individual).

This proposal has generated some discussion (e.g., Herschbach 2012). It may be useful to rehearse one of the cases that, in our view, most clearly exemplifies the claim. Consider the well-known perceptual crossing paradigm (Auvray et al. 2009). In it the ecological situation is maximally simplified without eliminating a key factor: the free control of social interaction dynamics by the participants. Two blindfolded participants interact by moving a sensor along a shared virtual line using a computer mouse. Whenever the sensor encounters an object on this line, the participant receives a tap on the finger. The moving objects in this space are controlled by the other participant, one corresponds to the other’s own scanning sensor, the other is simply a shadow object moving at a fixed distance from the other’s sensor. Participants are instructed to click on the mouse whenever they judge that they are in contact with the other participant. The findings show that mouse clicks concentrate on each other’s sensors and not on the identically moving shadow objects. However, the probability of clicking following stimulation from the other’s sensor or from the other’s shadow is shown to be approximately the same. This must mean that sensor-sensor encounters occur more frequently than sensor-shadow encounters.

Described in strict computational terms perceptual crossing is a highly ambiguous, type-2 problem (Clark & Thornton, 1997) where stimuli must be actively discriminated spatially and qualitatively using only temporal and proprioceptive cues (all “objects” found in the virtual space produce the exact same tactile stimulation). In these terms, the task is untypically difficult, since the moving objects that interact with the participant (the other participant’s sensor and shadow) move identically and could only be distinguished based on how these objects themselves react to

contact. The fact that the difficulty of this computationally tough problem deflates dramatically once we understand the collective dynamics is the theoretically pregnant point of the experiment.

The type-2 regularities present in the perceptual crossing sensory signals that could help distinguish sensors from shadows are statistically invisible in the absence of a systematic sampling strategy. One way to solve the task is to implement a strategy that successfully transforms these type-2 signals into type-1 data, i.e., into non-relational and unambiguous inputs (Clark and Thornton, 1997). A type-1 signal would by itself contain enough information to determine the next course of action towards the resolution of the task. This route towards solving the task involves a biased sampling of the raw sensory streams. Were this biased sampling to be implemented in the participants' brains, we would not hesitate in acknowledging that the neural processes involved are responsible for the core cognitive workload required to solve the problem. In other words, to solve the perceptual crossing task using this strategy *amounts to* finding the right way of biasing the sampling of sensory inputs so as to transform them from type-2 into type-1.

Now, this sampling bias is precisely what is achieved by the collective dynamics, i.e., by the combination of individual strategies. The social interaction process biases the statistical presentation of sensory stimulus towards much more frequent encounters with the other participant's sensor and not the shadow. Mutual scanning of sensors produces mutual sensory feedback and promotes permanence in the shared spatial region, which is more stable than one participant uni-directionally scanning the shadow of the other. This is not done consciously by the participants but by a relation that emerges between their correlated movements. The cognitive work is neither done externally by a third party nor is it generated internally within the participants. It is produced by the collective dynamics in which they participate but whose properties do not correspond to individual properties of either agent on its own or to a linear aggregation of these. In a clear case of participatory sense-making, the task is transformed from type-2 to type-1 — in other words, it is *solved* — by the interaction process. The participants deal with quasi-disambiguated, type-1 stimuli: “if it moves but stays nearby (repeated crossings), then click”. If a process (in part) constitutes the solution to a cognitive problem it (in part) constitutes an instance of cognition. This is precisely what social interaction does in perceptual crossing.

But even in those cases where agents aren't right now interacting, the interaction process is basic to social understanding, as proposed by the interactive brain hypothesis (Di Paolo and De Jaegher, 2012). In the absence of live interaction, the capacities at work in understanding others still rely on interactive skills. People, their bodies, their actions, manifest themselves to other people not as inputs but in the richness of a dynamical coupling full of virtual possibilities, even when the agent is not interacting with them directly. We can describe this as interactive,

interpersonal, and even linguistic sensitivities (Cuffari, et al., 2014). In other words, social agents are pulled into interactions with others to different degrees and this pull exists even if actual engagement is absent or not possible. These dispositions have been described as readiness-to-interact (Di Paolo and De Jaegher, 2012). This embodied pull (much closer in kind to somebody actually pulling our body physically away from its current activity than to something we would have to cogitate about before reacting) is strictly speaking something that social agents do to each other even when they don't engage directly (it can be appreciated, e.g., in differential neuro-muscular activity when embodied gestures are shown to participants, as opposed to other cues, e.g., Sartori et al. 2009, Ebisch et al., 2014). It is not a result of agents' individually controlled agency, or a sensory input to be processed inferentially, but a direct modulation of bodily self-affection by (even remote) others because our bodies are primarily interactive bodies (De Jaegher 2015).

2.4 Deep entanglement

To understand the embodied pull of the social interactive domain we need to thematize the deep entanglement of interactive and individual processes, especially in the case of brain dynamics during social interaction. This entanglement is an aspect of the relation that the enactive approach considers prior to and constitutive of both individual and interactive processes involved in embodied intersubjectivity.

Brain-centered approaches assume that brains are nearly decomposable systems (Simon, 1962) with respect to body and environment. Nearly decomposable systems interact with other systems without losing their functionality or altering significantly their internal causal relations. One way in which the brain could be treated as such a system is to treat its couplings with body and world as inputs. There are solid arguments against the disposability of body and world for normal brain function. Some are based on the abundant evidence of the entangled neural, body, and environmental dynamics in a wide range of cognitive performance (see Anderson, et al., 2012). A more conceptual argument is the critique of the brain-in-the-vat thought experiment by Thompson and Cosmelli (2011). They argue that it is inconceivable for a brain to retain its functionality if separated from body and world, and that the vat and fake input signals fed into it amount to a surrogate body embedded in the world.

This is borne out empirically. Consider the evidence of the deep entanglement of brain and interaction dynamics observed in dual-scanning experiments (see Babiloni and Astolfi, 2014 for a review). According to Simon (1969, p. 204) a nearly decomposable system “has the effect of separating the high-frequency dynamics of a hierarchy—involving the internal structure of the components—from the low frequency dynamics—involving interactions among components.”

Evidence indicates that this is precisely *not* the case during inter-brain synchronization in live interactions. Using dual EEG scanning during an imitation task with interactors visibly moving their hands and allowing spontaneous synchrony and turn-taking, Dumas et al. (2010) have found interbrain phase synchronization in the alpha-mu (8–12 Hz), beta (13–30 Hz) and gamma (31–48 Hz) bands. How is it that an interactive pattern appears to affect the oscillation phase of neural groups occurring in two distinct brains at frequencies more than one order of magnitude faster than the interactive movements?

A possible answer is that interaction patterns produce an entanglement between the brains of the participants. Internally, the wave of influence across various temporal and spatial scales may travel from low to high frequencies via cyclical variations in neuronal excitability (see Le Van Quyen, 2011). These top-down effects have been associated with different cognitive phenomena, notably with the control of visual attention (Buschman & Miller, 2007). From here it is not a big leap to suggest that what explains inter-brain synchronization at high frequencies in the experiment by Dumas et al. and in others (e.g., Astolfi et al, 2010) is a combination of high-to-low frequency integration and low-to-high frequency enslavement, with the difference that, instead of slow neural oscillations, the processes “at the top of the hierarchy” are the emergent rhythms of social interaction.

This interpretation is in line with calls to investigate the braided coordination of neural, behavioral and social processes (Dumas, et al, 2014). It also coheres with cumulative evidence of the brain-body as an interaction-dominant system (the opposite of a nearly decomposable one), based on the variability across a wide range of temporal scales in neural processes and behavior (Kelso, et al., 2013, van Orden, et al., 2003). Interaction-dominant systems are characterized by the causal inextricability of the various component-processes involved, as well as the unpredictability of the behavior of the whole from knowledge of the isolated parts.

Some evidence of interaction-dominance has been also found to involve extra-neural factors (e.g., in tool use Dotov, et al., 2011). Others involve social interaction patterns, which themselves show signatures of interaction-dominant dynamics (e.g., Richardson et al. 2010, Riley et al. 2011, Abney et al. 2014, Fusaroli et al. 2014).

3. Not one, not two

Studying the human mind is a complex endeavor. It would seem that our insistence on the different ways in which extra-neural and interpersonal factors can play constitutive roles in particular instances of social understanding only complicates this task beyond hope. This is a hasty reaction. After all, the evidence discussed above has been gathered with existing scientific

methods. And in some cases, like that of perceptual crossing, broadening the range of phenomena under study to include collective dynamics actually simplifies scientific explanation. Choosing the right level for attempting to explain social cognitive phenomena has thus become an additional task for researchers. It used to be a choice dictated by tradition—a neuroscientist would limit herself to looking at brain activity under a range of relevant independent variables, a social psychologist would care about the subject’s self-conception and cognitive skills in relation to a situation and to others, and a social scientist might offer structural accounts about expected behavior under given socio-cultural norms. Now choosing the relevant explanatory factors necessitates some kind of justification both in theoretical terms when this is possible but also in terms of an awareness of the kind of explanations that we require given the pragmatic context of interest (Garfinkel, 1981).

The scientific and philosophical task of understanding embodied intersubjectivity requires an awareness of phenomena outside the boundaries of particular academic traditions. Multi-disciplinary efforts, with their difficulties and pitfalls, become unavoidable as we approach a theoretically-loaded scientific picture of intersubjective phenomena. However, this must not be read as a recommendation to only approach specific problems by forming multi-disciplinary teams. It is fair to think that research within a given discipline will almost surely also be informative about the bigger picture. What is required however, is an awareness of how a piece of knowledge fits this picture. It is sadly very frequent to encounter fashionable, one-fit-all, solutions, especially in neuroscience, once an important result promises to explain a wide range of phenomena (think mirror neurons). Often such results provide crucial clues to a mystery that has not been well formulated in the first place.

The problem facing the scientific and philosophical study of social understanding is to figure out how various sources of knowledge fit together.

3.1. The trouble with hybrids

A typical response to the situation we are describing is the emergence of hybrid proposals. Hybrid conceptions of social cognition are driven by the uncritical adoption of a distinction between ‘online’ and ‘offline’ cognition (e.g. Bohl and Van Den Bos 2012, see also De Jaegher and Di Paolo 2013, Gallagher 2015). Online cognition is thought to be involved primarily in direct embodied engagements with the world and with others, while offline cognition concerns ‘higher’ mental functions such as planning and inferences. Some researchers recognize that interactive engagements demand a form of practical embodied coping that is not under the full control of an individual participant. But they suspect that the individual resources that allow this coping involve direct action-based mechanisms which differ from those used in more reflective

tasks, such as figuring out the intentions of a remote other, or a character in a film. This distinction leads to the proposal of hybrid, two-systems solutions, which are not unlike those already proposed in other contexts as a response to embodied critiques of functionalism (Wheeler, 2005). The end-game of hybrid proposals is inevitably a restoration of mental representations.

Hybrid conceptions worry that enactive accounts of sense-making can merely handle low-level and immediately present or ‘concrete’ phenomena, and that interactive phenomena belong to this class. “The challenge for enactivism will be to show how a richer notion of coupling can be put to work to explain the development from low-level to high-level social cognition” (de Bruin and de Haan 2012, p. 246). Whereas embodied and dynamical aspects—‘resonance,’ facial mimicry, hand-holding, dancing—can be explained enactively, complex forms of social cognition, such as interpreting mental attitudes, collaborative planning, etc. cannot reduce to participatory sense-making.

In response, we insist that in the enactive account the distinctions between “low” and “high” levels, and between “online” and “offline” cognition, are the first ones to go. Such widespread, seemingly intuitive distinctions belie the inextricable Cartesian roots hiding in everyday language and the common-sense from which they originate. They mischaracterize differences in cognitive complexity and reflexivity as levels of body involvement. I’m no less embodied and coupled to the world when I plan my holidays than when I ride a bike; I’m simply doing different things with my body and coupling. To pre-conceive these differences as high versus low dichotomies is to use different names for the separation between body and mind. Adopting this terminology means implicitly buying into a dualistic perspective. Uncritically assuming this break in the formulation of the question is unlikely to lead to answers that do not perpetuate its inherent dualism. Hybrids of this kind are Cartesian, whether we admit this or not.

Some consider that ‘higher’ forms of social cognition must be ‘decoupled’ (de Bruin and Kastner, 2012). These views are built on an erroneous conflation of the operational conditions of cognitive processes with the meaning achieved by a cognizer thanks to those processes. They also suffer from an erroneously reductive understanding of what it means for something to be ‘right here’. In contrast, the point of enaction is to offer an interpretation of ‘living system’ and ‘niche’ that locates meaning, including what may appear to us uncritically as ‘internal’, ‘detached’, ‘offline’ or ‘abstract’ meaning, in the changing relation between the two.

Though we may describe our cognitive abilities as transporting us ‘beyond’ the present moment, it is misguided to attempt to locate the cognitive abilities themselves somewhere beyond the present moment. There is a fallacy of misplaced concreteness at play here, which is to associate meaning with coupling. How we could ever mean what we are not coupled to? The question is

absurd; like thinking that a house cannot be built with bricks because no brick is as tall as a house. Meaning is the relational activity of sense-making, which holistically involves the autonomous agent's adaptive modulation of its own dynamical tendencies and its coupling with the world (Di Paolo 2005, 2009, 2015; Thompson 2007). Never in any of the descriptions of sense-making in the enactive literature has meaning been equated with coupling. The coupling between agent and environment is only one element in the sense-making process, certainly not the bearer of any meaning by itself (another remnant of representationalist thinking: meaning as content moved about in vehicles). Human sense-making involves a range of sensitivities, including interactive and linguistic sensitivities. When we couple dynamically with other humans, our sense-making reaches a linguistically mediated and layered world of meanings and norms.

In a complex everyday situation, say a group of friends splitting the bill after having had a dinner together, there is no a priori separation between symbolic mental capabilities (e.g., dividing the cost of the wine), subtle sensitivities to socially relevant facts (one of the friends has recently become unemployed), and interactive and affective dimensions of the situation. Sophisticated skills are at play in managing all these different angles in the here-and-now, and in a situated sense. It is concrete cognition involving some of the most complex human mental capabilities. Further evidence of the breakdown of dualistic distinctions between high and low, or online and offline cognition is given by Fusaroli et al (2014) who discuss the synergistic aspects of real life conversations that range from the entrainment of physiological variables to the complex coordinations of vocabulary choices and their effect on the rhythms of the dialogic exchange. This inextricability of various levels and timescales is confirmed by evidence of complexity matching in natural conversations (Abney et al., 2014) where synergies appear at several scales from phoneme intonation to syntactic, lexical and semantic structures.

In view of this evidence and for the above theoretical reasons, to adopt an offline/online or low-level/high-level distinction is, at the very least, a risky strategy.

3.2. Culture and the dialectics of participatory sense-making

A different way to approach the problem of how to determine and study the relations between subpersonal, personal and interpersonal factors is to approach the question in a more principled manner, by looking at the implications of the conceptual categories introduced by enactive theory.

At the core of the enactive conception of mind there is the living body as an active network of processes that sustain the organism's identity under precarious conditions. In looking at the

relation of life to matter, Hans Jonas (1966) describes it as a “dialectical relation of needful freedom” (ibid, p. 80). Because of this, the organism is never passive. The need for active regulation is implied in the recognition of the primordial tension of life: materials are essential to the living organism but its identity is dynamic, not tied to the individuation of material constituents but emerging instead as the (risky) ongoing adventure of “riding” material changes “like a crest of a wave” and “as its own [the organism’s] feat” (ibid.). The enactive view of life is inherently dynamic and inherently “at risk” because the overcoming of a primordial tension between self-production and self-distinction is an ongoing achievement. Life is always in a transient, not just empirically, but constitutively as the only way of managing the tensions between its own opposing trends.

We find a similar tension in the notion of participatory sense-making, and it originates in the two requirements of the definition of social interaction.

As we have said, participatory sense-making, in the more general sense, describes the situation in which the sense-making of two or more autonomous agents is mutually modulated as they engage in an interactive encounter. The relational patterns of social interaction also form an autonomous self-sustaining identity in the space of coordinated and uncoordinated relational ‘moves’. In this basic form, participatory sense-making can happen without sophistications such as the recognition of the other agent as an other. From the perspective of an individual agent, basic participatory sense-making can be experienced as no more than a special sort of engagement with the world, one where the agent’s regulation of coupling may be contingently thwarted, extended, challenged, or changed by the interaction dynamics.

The two forms of autonomy in participatory sense-making (individual and interactional) establish a *primordial tension*, one that is managed in increasingly complex ways but never fully disappears. It is important to notice that the tension is *not* between the different participants. The primordial tension is more subtle and pervasive; it is in place even if the other is not present as an other, but as relational patterns that affect my sense-making and are affected by it, such that a social interaction is sustained in time (as in the perceptual crossing experiment). To repeat, the primordial tension, describable only because we have defined social interaction in terms of autonomy is, from the beginning, not between individuals, but between an individual and an interactive (social) order.

An agent acts and makes sense according to her individual embodied norms. These norms relate to the continuity of various forms of autonomous identity or forms of life converging in her body (norms which are biologically, socially, and habitually acquired). However, in an interactive situation these norms may either accompany or be in conflict with the autonomous relational dynamics of the encounter. In pursuit of an individual intention, the acts performed by an agent

during a social encounter sometimes fuel the interaction process, but through their effect on the social coupling they end up frustrating, in apparent paradox, the originally intended goal (e.g., classical narrow corridor example where two people walking in opposite directions get stuck trying to get past each other). There is in the social encounter an interactive normativity, different from individual norms. Independently of how acts and events are evaluated by the participants, they may or may not contribute to the self-sustaining logic that belongs to the social encounter. An individual participant will sometimes perceive a mismatch between what she intends and what actually happens that in general contrasts with non-interactive situations, and this mismatch, this form of heteronomy from the agent's perspective, has its origins in the double normative dimension of participatory sense-making.

How is this tension managed? Both synergy and conflict between interactive and individual normativity have implications for individual acts. These acts suffer an analogous doubling of their nature: they are the acts of an individual agent, but they are also moves in an interactive encounter. In the case of conflict, breakdowns occur and the space of opportunities for accommodating these breakdowns is where the participatory labor of (re)creating sense occurs. These are novel sources of frustration that do not occur in solitary existence. In cases of synergy between individual and interactive normativity, acts acquire a 'magic power'. They achieve more than I intend to. Conversely, I can achieve what I individually intend to with less, through the coordinated completion of the act by the other. Some acts become inherently social; those acts necessarily seek to coordinate interactive and individual normativity.

A single agent cannot manage the tension between acts that simultaneously exist in two different normative domains. On her own, she cannot reliably control the synergy between individual intentions and interactive normativity without terminating the conditions for social interaction (i.e., without overriding the autonomy of other participants). She can only regulate her own coupling to the world in relation to her own individual norms. We have no reason to assume that the credit for sustaining ongoing interactions belongs to individual normativity (the definition of participatory sense-making does not assume prosociality). Instead, in order to manage the tension between individual and interactive norms, the regulation of the interactive coupling must involve other participants. Therefore the recovery of interactive breakdowns requires a co-regulation of the interactive coupling. This co-regulation is directed at managing the mismatches between individual intentions of all participants and the interactive dynamics. This is what we call *social agency*, a specific kind of participatory sense-making whereby the agents not only individually regulate their own couplings and influence other agents, but they also jointly regulate the mutual coupling (following norms that pertain to the interactive situation).

From this starting point, it is possible to follow the consequences of this dialectical self-deployment of the notion of participatory sense-making. Here we summarize in part the

description by Cuffari et al. (2015) of how the primordial tension is transformed in each subsequent attempt at resolving its current manifestation. Along the way, increasingly complex forms of participatory sense-making emerge. Co-regulation leads to the appearance of properly social acts, i.e., acts whose conditions of satisfaction cannot be reached by a single individual such as the act of giving/accepting, or shaking hands. The primordial tension is transformed into the question of how to coordinate the partial contributions to social acts. This can be facilitated by the recursive use of social acts to coordinate other social acts (such as a nod to encourage a particular response in another participant). Social acts become normatively evaluated in their efficacy as in their regulatory powers over other social acts.

New manifestations of the primordial tension arise as we enter the community level and some regulatory acts become strongly normative and therefore meet the requirements of portability among different groups. Ultimately a socio-cultural normativity emerges that belongs not just to the interactors here-and-now but to the larger community in history. However, the existence of strongly normative acts, such as a loud call to attention, generates a new manifestation of the primordial tension. Because, what prevents the abuse of such strong acts? What prevents certain interactors from acquiring a dominant role in all of their interactions? Dominated interactions move towards the loss of the autonomy of some participants, so they either cease to be interactions or a new form of regulation must emerge, one that allows dominant roles to be exchanged in time: a dialogical structure and a mutual recognition between participants as autonomous others. Interactions structured dialogically introduce the phenomenon of the 'utterance' (a turn-delimited act) and the conflicting requirement of ease of production and ease of interpretation. The capability of interpreting utterance implies the possibility of self-interpretation and eventually, social self-control (the use of dialogical mediation on our own individual agency). Cultural patterns facilitate the tensions of producing and interpreting utterances by pre-coordinating situation-based interaction styles, or participation genres (salutations, queuing, moving things together, sitting at a waiting room, etc.). Ultimately, these categories (social agency, dialogical structure, recognition, self-control, participation genres and so on) can be used to clarify how we move from the most general forms of participatory sense-making to one of the specialized ones: languaging.

The lesson is in the method. It is not sufficient to state obvious facts (cultural factors play a role in the human mind, social norms influence our way of perceiving the world, language strongly impacts on conceptual thinking, and so on). Such statements can be true and still leave researchers in the dark as to what is the most useful way of investigating the phenomena. What is necessary is to ascertain whether we are already in possession of the right conceptual categories to describe such broad relations, or whether our epistemic instruments are still too blunt.

The dialectics of participatory sense-making is one possible way of generating the necessary concepts. Had we not attempted to do this, we would have little to go on apart from the vague intuition that the fact that we alter our sense-making together with others must somehow relate to sophisticated skills such as our use of language. Once we have done this, then it is possible to consider developmental models that take into account how forms of social agency change by the fact that infants are always-already embedded in an encultured, enlanguaged world (Cuffari et al 2015, Di Paolo, forthcoming).

4. Conclusion

The point of our discussion is not to insist that everything matters and that we must always take into account all the processes involved in intersubjective phenomena if we want to study a particular instance of social action or social understanding. We do not need the ongoing, concurrent involvement of neurophysiologists, psychologists, and sociologists for each aspect of social cognition that we study in the lab or in a natural setting. What we do need is a theory of intersubjectivity that allows us to determine, in each particular instance, what are the relevant factors that we should pay attention to. The same theory should also allow us to know what is the significance of what we are *not* including and what is the reach of our particular investigation. Such decisions are still made intuitively, or by following a tradition. If we work in a neuroscience department, we will be encouraged to look for the answers to a problem in the activity of the brain, if we are social scientists, we will tend to look for social normative accounts. The knowledge that is produced in this way can be useful, but we are often unaware of its limiting assumptions or of the reasons why it is applicable to certain situations and not others.

Perhaps it is time for such decisions to be made in accordance with an overarching theory of intersubjectivity.

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