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Autonomy and Sense-Making: Problematizing the Individual in Social Cognition

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ABSTRACT
This paper examines the overarching trajectory of the social cognition conversation with particular focus placed upon the use and role of the individual throughout. Traditional theories posit that individuals apply knowledge about their own internal states to something or someone else in order to infer what that person or thing is experiencing. Embodied and enactive approaches pay closer attention to the individual's bodily experience, as well as interaction processes themselves. As more research is done in regards to both traditional (Theory of Mind Theory, Simulation Theory) and contemporary theories (Interaction Theory, Participatory Sense-Making), the role and use of the individual becomes increasingly convoluted. By calling attention to relevant points of agreement, problematic concessions and obvious inconsistencies, this paper aims to shift the conversation towards a more homogeneous use of the individual throughout social cognition. Inconsistent use has led to inconsistent research. With a better defined individual, contemporary theories like Participatory Sense-Making can effectively move beyond the shortcomings of the ongoing discussion.

KEYWORDS
Participatory Sense-Making, Interaction Theory, Autonomy, Enactivism, Social Cognition

Social cognition attempts to determine how we go about understanding others as well as understanding *with* others. To understand another person is a complicated process. Theorists of many disciplines and dispositions have understood the issue in several ways. One piece integral to the current conversation in the discipline is the use and role of the individual.

Traditional approaches to social cognition tend to lean on individual cognitive functions in explaining how we go about coming to terms with other people. In such approaches, the individual applies knowledge about their own internal states to something or someone else in order to infer what that thing or person is experiencing. Those approaches fail, however, to consider the extent to which cognition arises from bodily interactions with the world and others. Embodied accounts more seriously consider the experience of an individual in terms of their particular perceptual and bodily capabilities. Those capabilities are combined with high level concepts like reasoning, language, memory, and all other aspects of mental life, to construct and perpetuate an identity in the world (Shapiro, 2019, p.56). Embodied approaches still take seriously individual cognitive functions, but begin to place emphasis, too, on social interaction. Finally, an enactive account of embodied social cognition takes the interaction process much more seriously. In such accounts, interaction becomes an explicitly measurable entity. Attention is given to the interaction process as a whole which in itself incorporates, affects, and is affected by, the internal cognitive mechanisms fundamental to other approaches.

Throughout these theories, the individual plays an important, but convoluted role. The current debate rests on the individual in a way that has yet to have been sufficiently recognized by theorists contributing to the conversation. While the individual is taken seriously, the inconsistencies attached to its use and role in relevant theories hinder the overarching progress of social cognition. This paper will examine the trajectory of the social cognition debate and delve more specifically into the ways in which differing conceptions of the individual, as put forward by newer theories, tend to complicate the conversation in an unproductive manner.

TRADITIONAL APPROACHES TO SOCIAL COGNITION

To best understand the distinctions drawn between differing theories surrounding social cognition, looking at how standard approaches go about contemplating the problem will be useful. There are two key approaches which dominated the field of social cognition for years: Theory of Mind Theory (TT) and Simulation Theory (ST). Each of these approaches stem from methodological individualism. Broadly understood, methodological individualism posits that "... social phenomena must be explained by showing how they result from individual actions, which in turn must be explained through reference to the intentional states that motivate the individual actors" (Heath, 2015, p.1). Evidently, the individual is immensely important in these traditional theories. To understand the world and the people in it, individuals must utilize their internal cognitive mechanisms. While the theories in themselves are genuinely complex, this paper will focus less on the intricacies within, and instead pull out relevant information about the use and role of the individual in these standard approaches. These approaches serve to contextualize the discussion surrounding social cognition, while exemplifying the shortcomings of methodological individualism.

According to Theory of Mind Theory, individual cognitive functions are integral to the study of social cognition. In describing TT in his paper "Two Problems of Intersubjectivity," Gallagher states that "we use a theory about how people behave (folk psychology) to infer or 'mindread' (or mentalize) the beliefs, desires, intentions of others" (Gallagher, 2009, p.290). Folk psychology in this context is understood as the ability to treat agents as the proprietors of unobservable mental states. Those mental states are subsequently used to explain and predict the behavior of agents (Apperly, 2008, p.3). In TT, individuals process something in front of them. When taking an interaction between two people into consideration, TT would suggest that there is in some sense a conceptual wall that must be breached in order for each individual to understand what the other is feeling, intending and desiring. The presupposition behind that conceptual wall is that our intentions as individuals are hidden from other people. We must therefore figure out another person from what we observe of their behavior. That behavior, however, isn't in itself linked directly to their internal states. Rather, inferences are necessary using our own internal mechanisms to determine how another's behavior might be linked to their internal states.

Simulation Theory puts forward a similar conception of the individual to TT. ST accounts of social cognition were developed in the first place as a skeptical response to TT's claims about the way individuals use theory to explain and predict the behavior of others. "Simulationists note that biology ensures that our own minds will have processes for the fixation of beliefs… desires… and other processes involving mental states that are essentially similar… to the same processes in the minds of others" (Apperly, 2008, p.5). Put simply, because the cognitive states and functions of human brains are similar to one another, much of the work involved in considering another mind can be done using one's own mind as a model. Humans have the capacity to put themselves into the shoes of others, using their own mind to create 'as if' beliefs, desires, and intentional states which are then projected into the mind of another person to explain and predict their behavior (Gallagher, 2009, p.290). Like TT, there is again a presupposition attached to the way in which individuals go about projecting simulated understandings *of* one another *to* one another. The presupposition is that other people's minds are hidden until a simulation stemming from one's own mind can be projected into the other.

The basic suppositions behind methodological individualist theories such as ST and TT can be synthesized to make clear the relevant aspects of these traditional approaches to social cognition. Gallagher neatly lays out these suppositions. First, each theory conceives of the individual as processing the world through the lens of their own subjective cognitive functions. Individualist theories posit that we cannot directly perceive another person's thoughts, feelings or intentions. The mind and the body are separated here in a Cartesian sense. Moreover, due to this disconnect, extra cognitive processes such as theorizing or simulating are necessary in making inferences about another person's mind (Gallagher, 2009, p.291). Second, TT and ST both use the process of observing another person's behavior as the starting point for making those theoretical inferences or simulations which in turn can be used to explain and predict future behavior. Third, both standard theories posit that these "...mentalizing processes constitute our primary and pervasive way of understanding others" (Gallagher, 2009, p.291). TT and ST make clear that individual mechanisms provide the most useful way of understanding the problem of social cognition. These traditional approaches fail to recognize the significance attached to the embodiment of the individual in social situations. To properly take into account the pieces of social cognition

which methodological individualist theories leave out, Gallagher puts forward an embodied approach to social cognition which he calls Interaction Theory (IT).

EMBODIMENT AND INTERACTION

Embodied approaches to understanding the mind hold that "...the body is crucial for cognition" (Di Paolo & Thompson, 2014, p.68). To embodied theorists, the mind arises from the nature of our brains, bodies and bodily experiences. Cognition is therefore not confined to the functions of the brain, rather it is influenced and in some ways determined by our experiences in the physical world. This extension of the mind into the surrounding environment, as well as the ways in which each factor can determine things about the other, is important in beginning to understand the individual's multifaceted role in social cognition.

Gallagher's IT, an embodied approach to social cognition, directly challenges the base suppositions attached to TT and ST. He argues that the dualistic framework within which TT and ST are understood is problematic. To Gallagher, other minds are not "...hidden away and inaccessible…" (2009, p.292). Rather, he points to evidence from his research in phenomenology and developmental psychology to put forward the claim that we can and do directly perceive another person's intentions, feelings, and desires through their embodied behavior. In his book "The Phenomenological Mind," he states, "Before we are in a position to theorize, simulate, explain, or predict mental states in others, we are already interacting with them and understanding them in terms of their expressions, gestures, intentions, and emotions, and how they act toward ourselves and others." (Gallagher, 2012, p.210). To illustrate this idea, consider an infant. An infant, presumably without the intervention of theory or simulation, can perceive bodily gestures as goal directed intentional movement. This idea at once calls into question methodological individualism's claim that other minds are inaccessible, while bolstering the thought that in everyday interaction, no theoretical or simulated inference is necessary. Gallagher further claims that "...we are not primarily spectators or observers of other people's actions; for the most part we are interacting with them on some project, or in some pre-defined relation" (Gallagher, 2009, p.292). Rather than the observational stance offered by methodological individualist theories, Gallagher points to a second-person stance which focuses on the embodiment of interactors. He claims that mindreading, which is that process by which inferences

can be drawn through theory and simulation, is not in fact, the primary and pervasive way of understanding others (Gallagher, 2009, p.292). According to Gallagher, "...in most intersubjective situations we have a direct understanding of another person's intentions because their intentions are explicitly expressed in their embodied actions, and mirrored in our own capabilities for action" (2005, p.224). Put simply, we understand others due to our own embodied experience, with reference to other bodies.

Throughout his work, Gallagher does well at distancing his ideas from a purely methodological individualist standpoint. He puts clear emphasis on the embodiment of the individual within interaction processes. However, according to Di Paolo, Rohde, and De Jaegher, "...proposals of embodied cognition like these have a drawback: they often presupposed coupling between persons" (2010, p.61). Coupling here is understood to be "The influence between a system's variables and another system's parameters" (De Jaegher, Di Paolo & Gallagher, 2010, p.441). Think of a person walking a dog on a leash for example. Due to that presupposed coupling, "...*how people interact* does not in itself become an explicit topic for investigation" (Di Paolo, Rohde & De Jaegher, 2010, p.61). The idea that an interaction process could become a measurable system is foundational in understanding how participatory sense-making (PSM), an enactive approach to embodied social cognition, goes about understanding and utilizing the individual in terms of social situations. De Jaegher and Di Paolo find that in attempting to understand the meaning that stems from sociality, not only the embodiment of the interactors, but the interaction process which occurs between them, both must be considered as relevant areas of focus.

ENACTIVISM, PARTICIPATORY SENSE-MAKING, AND EMPIRICAL POTENTIAL

The enactive account of intersubjectivity brings new light to participatory and non-individualistic processes in social cognition (Di Paolo & Thompson, 2014, p.75). Enactive accounts consider concepts which allow meaning to be drawn not only from individuals within social situations, but the interaction processes themselves. Intersubjectivity here can be best understood as the psychological and interactional relations between two or more individuals. To reiterate, traditional theories focus on the inferences that an observer can make

using theory or simulation about the intentions, feelings, and desires of another person based on their external behavior. An embodied account considers more thoroughly an individual's bodily interactions with the world. That said, in applying an enactive approach, the domain of social interaction is made explicit. In their paper "An Inter-Enactive Approach to Agency: Participatory Sense-Making, Dynamics, and Sociality," Torrance and Froese consider the key attributes of an enactive approach to cognition and agency. Enactivism, to the authors, addresses the question: "What is it to be an (cognizing, conscious) agent?" (Torrance & Froese, 2011, p.22). Torrance puts forward a five-fold response to enactivism's foundational question. To be a conscious agent is to have the following attributes:

> …(a) to be a biologically autonomous (autopoietic) organism – a precarious, far-from-equilibrium, self-maintaining dynamic system; (b) with a nervous system that works as an organizationally closed network, whose function is to generate significance or meaning, rather than to act via a set of continually updated internal representations of the external world; (c) the agent's sense-making arises in virtue of its dynamic sensorimotor coupling with its environment, such that (d) a world of significances is 'enacted' or 'brought forth' by a process whereby the enacted world and the organism mutually codetermine each other; and (e) the experiential awareness of that organism arises from its lived embodiment in the world. (Torrance & Froese, 2011, p.22).

As PSM is laid out, the complex terminology in the above excerpt will fall into place. The most important concepts in the authors' understanding of enactive social cognition, with respect to this discussion, are autonomy and sense-making. These two concepts serve to shift how the individual is commonly understood in social cognition. PSM, as proposed by De Jaegher and Di Paolo in their work "Participatory sense-making: An enactive approach to social cognition," provides a starting point in coming to terms with that shift. The theory is held up by two key pillars. The subjects involved in the interaction process, and the definition and operationalization of the interaction process itself.

In PSM, the individual is a sense-maker, or a cognizing agent. Sense-making as a concept is understood to be the relational process between an autonomous self-organizing agent and their world. Sense-making implies active engagement.

This will be important in considering the shortcomings of the theory later in the paper. According to De Jaegher and Di Paolo, sense-making "...is an intentional activity that can become expressive in social situations through embodied action" (De Jaegher and Di Paolo, 2008, p.41). The concept of sense-making contrasts the commonly held view that organisms passively receive information from their environment and then process it into internal representations which are given significance only after further processing (De Jaegher and Di Paolo, 2008). Importantly, a sense-maker's self-organization entails particular needs and constraints which produce a perspective on the world. That perspective, according to De Jaegher and Di Paolo, stems from the thought that sense-making "...grounds a relational and affect-laden process of regulated exchanges between an organism and its environment…" (De Jaegher and Di Paolo, 2008, p.35). Those regulated exchanges give rise to normative conditions attached to a sense-maker's experience of the world at multiple levels of its identity. Meaning can then be drawn from the normative conditions which are attached to what is relevant to the needs and constraints of the self-organizing system. The idea of self-organization can be understood more simply in terms of existence. Meaning here can be pulled from any level of the identity of the existing system. From a metabolic perspective, meaning might stem from the nutrients a system requires to perpetuate its state of being. On a more conceptual level, meaning might stem from things that matter to the system existentially and are relevant to how it organizes itself conceptually. Autonomy is integral here, and an explanation of an autonomous system, as it's understood through an enactive lens, is necessary in drawing parallels between individuals as autonomous sense-makers and interactions in themselves being understood as autonomous sense-making systems.

To De Jaegher and Di Paolo, an autonomous system is "...a system composed of several processes that actively generate and sustain an identity under precarious circumstances" (De Jaegher and Di Paolo, 2008, p.35). The concept of operational closure will be necessary in considering identity generation with respect to interaction. Operational closure is the idea "...that among the enabling conditions for any constituent process in the system there will always be one or more other processes in the system" (De Jaegher and Di Paolo, 2008, p.35). In other words, with respect to each process in a given network of processes, there will always be another process by which they are conditioned. Precarious conditions point to the idea that without the organization of the system as a network of processes,

isolated component processes would tend to run down or extinguish (De Jaegher and Di Paolo, 2008). In terms of a sense-making thing, precariousness generates meaning and necessitates the normativity connected to its existential regulation. This idea links back to the needs and constraints relevant to a sense-maker at multiple levels of its identity. An individual sense-maker then, is uncontroversially autonomous.

According to De Jaegher, Di Paolo and Gallagher, "Autonomy can happen on different levels (metabolic, neural, cognitive and social) and different timescales, and autonomous agents can interact at various levels" (2010, p.443). It will be shown that the precarious, operationally closed conditionality of interaction processes can fit neatly into the conceptualization of autonomy as put forward above. Interaction processes often parallel and incorporate the needs and constraints attached to individual sense-makers at multiple levels of their identities. Meaning, therefore, can be drawn from interaction by considering more explicitly the interaction process as a sense-making thing with needs and constraints of its own. The relational processes that occur between two or more individuals when they encounter each other is the next step in coming to terms with how PSM conceptualizes the individual and the interaction process.

Sense-making is an embodied process of active regulation of the relation between an agent and its world. Through relational patterns of coordination and breakdown, this sense-making process can be shared between individual interactors (Di Paolo and Thompson, 2014, p.75). These patterns give meaning and perspective to interaction processes in a way that parallels how meaning arises from the needs and constraints of an individual sense-making system. In this way, encounters between two or more sense-makers can, in some circumstances, take on a life of their own and in turn become sense-making processes in themselves. Important here is the idea that the actions or intentions of the agents involved may sometimes fall short in determining the outcome of an encounter (Di Paolo and Thompson, 2014, p.75). In some cases, an interaction may emerge and keep existing against the intentions of the individual interactors involved. Take the narrow hallway thought experiment as an example. When walking down a hallway, sometimes a person will attempt, multiple times, to shift out of the way of a person coming in the other direction, only to unintentionally remain in the way. To De Jaegher and Di Paolo, this illustrates a way in which the relational patterns of coordination and breakdown in interactions can modulate, enable

and constrain individual sense-making processes and even supplement or replace aspects of individual cognitive functions (2007, p.491). In other words, an interaction process which could count as an autonomous system is one that would inherently incorporate individual sense-makers into the overarching process. The dynamic nature of the patterns of coordination and breakdown attached to social interactions, too, exemplify the various levels at which an autonomous system can be considered as such. Given the operationally closed and precarious nature of some interaction processes, one can be justifiably considered to be an autonomous, sense-making system.

To clarify, when two sense-makers (self-organizing systems) interact, another self-organizing system emerges between them which itself possesses the necessary properties to be considered an autonomous system. This emergent self-organization is the interaction process. According to Di Paolo and Thompson, this "…shared form of sense-making is what is meant by 'participatory sense-making'" (2014, p.75). The individual here can be understood in terms of their own sense-making attributes as they are affected by the coordination dynamics described above, as well as the joint sense-making processes which often co-opt those individual processes. The individual is a sense-maker with normative needs and constraints which apply to each level of their identity. The interaction process is a combination of two or more sense-making things which itself has needs and constraints (patterns of coordination and breakdown) which include those of the individual sense-making things involved. In a given social interaction, the agents involved sustain the encounter, while the encounter itself influences the agents and places them into the role of interactors (De Jaegher and Di Paolo, 2007, p.492). The dynamic organization of these joint sense-making processes is significant due to the empirical potentialities attached.

Using dynamical systems tools, an interaction process can be made explicitly measurable. According to Thelen, a dynamical systems model can explain the full range of an individual's behaviors without "...invoking constructs of 'object representation,' or other knowledge structures" (Shapiro, 2019, p.61). Due to the patterns of coordination and breakdown which mirror and exemplify the functions of an autonomous system, the various facets of an interaction process can be reliably accounted for. Here, one's individual autonomy is a necessary precondition for the autonomy of the system. Dynamical systems can be used to show not only

an interaction process, but the blurring of the individual within the process when it is implemented to its fullest extent.

De Jaegher and Di Paolo take this idea farther than Gallagher and other embodied theorists are willing to. The two theorists have consistently alluded to the idea that such models could nullify the relevance of individuals' internal states, as PSM would inherently provide meaningfully measurable representations of those functions. Gallagher, on the other hand, still points to the relevance of the individual as an entity less wholly integrated into the interaction process. The individual, to Gallagher, has a personal and social narrative experience of the world which informs and adds to interaction processes. While that narrative is necessarily present in De Jaegher and Di Paolo's view, it is simply seen as a nondescript portion of the overarching interaction process, particularly when that process takes on a life of its own (as in the hallway example). The inner lives of individuals, through the lens of PSM, do not matter when taking seriously the extent to the potential meaning that could be drawn from interaction processes. A disagreement is clearly present here in terms of how these embodied theorists understand the individual. The conversation takes an interesting turn, however, when De Jaegher, Di Paolo and Gallagher write a paper in which they appear to make concessions to one another regarding the ways they conceive of the individual and interaction in social cognition.

SUBJECTIVITY CAPTURED

It has been shown that De Jaegher and Di Paolo put forward a view of social cognition that focuses on the operationalization of the interaction process as an autonomous and measurable joint sense-making venture. In applying the concept of coordination to the shifting and emerging levels of autonomous identity present in sense-making things, the authors successfully embody social interaction (De Jaegher and Di Paolo, 2008). Through this enactive conception of embodiment, PSM pulls away from both traditional approaches, as well as more recent embodied approaches with respect to the use and role of the individual.

In a paper published by De Jaegher, Di Paolo and Gallagher, titled "Can social interaction constitute social cognition?" the three theorists put forward a carefully constructed opinion. That opinion, however, is one that the theorists seem hesitant to agree upon. The authors state, "Our proposal is…that the role

of interactive and individual elements in social cognition must be systematically re-evaluated" (De Jaegher, Di Paolo & Gallagher, 2010, p.441). In achieving this goal, the authors make concessions to one another which fail to remain present in their later pieces. Throughout the paper, a division between Gallagher's more standard understanding of embodiment and portions of PSM becomes apparent. Though the authors offer a synthesized view, lines can still be drawn between their theories which show a failure to sufficiently recognize implications attached to certain aspects of the individual in less obviously social situations.

To accentuate the division present in the language used throughout the collaborative paper, take another glance at Gallagher's individual. This time focusing on his emphasis on subjective narrative competency, as offered in his book, "The Phenomenological Mind." Narrative competency here can be understood in terms of the continuity attached to an individual's experience as an actor in the world. To Gallagher, narrative competency counts in understanding and operating in interaction. He claims that the pervasiveness of narratives in most cultures, from nursery rhymes to performances of theater and film, expose individuals to a variety of characters, situations, and reasons to act in certain ways (Gallagher, 2012). A narrative then, is an unavoidably relevant portion of an individual's worldly and cognitive experience. Moreover, he claims that a combination of one's cultural and personal narratives, "...provide the background knowledge that allows us to implicitly frame the actions of others in understandable narratives, providing a fallible and revisable sense of what the other is up to" (Gallagher, 2012, p.226). In other words, an individual's understanding and experience of the world, including both interactions with others, as well as passive interaction processes (like watching a movie), are inextricably linked to the cultural and personal narratives attached to that individual's embodied experience. Gallagher's conception of narrative competency applies an embodied twist on concepts fundamental to methodological individualist theories.

Gallagher's disposition becomes apparent in the collaborative piece written with De Jaegher and Di Paolo. The authors make a claim about the inherently sophisticated nature of cognitive processes. They state "…interactive processes are not automatic and higher cognitive processes such as reflection, imagination and self-monitoring can influence them" (De Jaegher, Di Paolo & Gallagher, 2010, p.443). The emphasis placed here upon those higher-level cognitive processes leans towards Gallagher's understanding of the ways in which individuals operate

both implicitly and explicitly in terms of their own narrative competencies and experiences. In this paper, De Jaegher and Di Paolo concede the idea that some individual processes may be left out of their otherwise broadly sweeping enactive account. Cases that involve watching a movie, interacting with a social robot, and giving presentations to a virtual audience exemplify just a few of the issues relevant to both ends of the present social cognition conversation.

Weak concessions lead directly to relevant contradictions. The authors collectively state, "…if we take seriously the idea that interaction can enable and constitute social cognition, we can conceive of interaction dynamics as… delivering the necessary cognitive performance" (De Jaegher, Di Paolo & Gallagher, 2010, p.445). To the authors, in cases of social interaction, there would be no need to duplicate cognitive effects by considering individual mechanisms. This is no longer Gallagher's voice. In fact, he would likely take issue with this devaluation of higher cognitive processes due to the significance he places upon narrative. To Gallagher, narrative matters in terms of both the individual's situatedness, as well as the situation itself.

To PSM theorists, in many cases of social interaction the individual would become a non-distinct portion of an operationally closed system. To De Jaegher and Di Paolo, the individual sense-makers within an interaction process can still affect and be affected by the system as well as processes outside of the system. Whereas Gallagher would presuppose a somewhat dichotomous relationship between individuals and interactions, De Jaegher and Di Paolo attempt to "… supersede such a dichotomy..." using their enactive standpoint (De Jaegher and Di Paolo, 2013, p.2). At its most pure, the way De Jaegher and Di Paolo conceive of an interaction process blurs the line between an individual sense-maker and the participatory joint sense-making venture which accounts for the individual mechanisms present in the subsymbolic system. According to Di Paolo and Thompson in a more recent paper, taking a non-individualistic enactive perspective "…does not imply positing either the individual or the interactive levels as fundamental, but rather understanding the mutually enabling relations between the two levels" (Di Paolo and Thompson, 2014, p.75). In other words, studying social situations requires that the complex relations between individual and collective levels be understood as mutually determining concepts.

To clarify, in the paper "Can social interaction constitute social cognition?" De Jaegher, Di Paolo and Gallagher make concessions to one another in an

unproductive manner. With respect to both of their non-traditional accounts of social cognition, the authors weaken their standpoints. Gallagher weakens IT by accepting that interaction processes can, and in some cases do take into account the whole of individual cognitive functions, including their subjective narrative competencies and experiences. He accepts that in some cases that dichotomy can be made irrelevant on account of the meaning that can be drawn from the overarching interaction process using dynamical systems tools. This is significant in that Gallagher's concession warps his conception of the individual in social cognition. In his work before and after this paper was published, Gallagher consistently leans more heavily upon the subjective intricacies attached to individuals in social situations. The PSM theorists differently weaken their view by conceding that there are social situations which are difficult to explain within their framework. While the paper served to synthesize some of the new thinking present in the social cognition conversation, certain complications arise from the concessions made.

There are some cases of interaction which are disputable. Rather than two or more people interacting with one another in an autonomously organized encounter, these cases involve more of an observational stance. "Such situations are social in an obvious sense and have measurable cognitive effects, but do not involve interactions" (De Jaegher, Di Paolo & Gallagher, 2010, p.443). Cases such as these, especially in light of the more moderate conception of PSM pitched in the collaborative paper, call into question the efficacy of the whole approach. In attempting to blur the line between an individual sense-maker and the sense-making interaction process, PSM theorists leave out explanations about how their model can be applied to passive social instances. For example, PSM fails to reconcile how an individual sense-maker might go about understanding a performance, or an interaction with a non-autonomous social robot. Moreover, traditional views of social cognition can explain these situations by applying foundational aspects of the theories to the passive instance. A person could draw meaningful understanding out of an interaction with a social robot, for example, by using their own internal states to theorize or simulate things about the robot based on its external behavior. In IT, these passive situations could likely be explained with respect to Gallagher's emphasis upon individuals as one traceable piece of embodied socialization. Unfortunately, given the concessions to PSM which Gallagher works with, IT is pulled in two opposing directions. Questions

then arise which remain unanswered. How can more observational forms of social understanding be taken into consideration using an embodied or enactive approach? How do these theories reconcile interaction that is less obviously social? Moreover, is interaction still present in these observational situations? Though these questions haven't been wholly answered, in more recent work, De Jaegher and Di Paolo, as well as Gallagher have each pulled back from the middle ground which they together constructed.

CONCLUSIONS

In theories attempting to explain how humans go about understanding others, as well as understanding with others, serious shortcomings exist with respect to the role and use of the individual. Each theory takes the individual seriously. In TT and ST, the individual is an observer who must use internal theories or simulations in understanding other people and situations. In IT, the individual's embodied experience, as well as their narrative competency are integral to social cognition. IT attempts to consider both interactive and individual levels of socialization. That said, the individual is an acting agent in the world, whose high-level concepts complicate and inform interaction processes. PSM attempts to supersede the implied dichotomy between an individual and the interaction process itself by using an enactive approach. PSM takes an interaction process to be a sense-making thing that enacts its world in a way that at once parallels and also incorporates individual sense-making processes. Using the measurability attached to and the subsequent meaning that can be drawn from the way PSM conceives of interaction, the pieces which make one up become a non-distinct portion of the process as a whole. Meaning can then be drawn from the autonomous nature of the process through the patterns of coordination and breakdown which are present at every conceptual level of the operationally closed system. Individual cognition is present but seen as a portion of the essentially cognizing interaction process.

Though separately these theories each put forward claims about the individual, not one considers the totality of social cognition as a subject. TT and ST fail to recognize the significance of the interaction process and draw hard lines between fundamentally interconnected concepts. IT also fails to take seriously the versatility and measurability of interaction processes. Moreover, it places too

much weight upon the inner lives of individuals in considering social interactions. PSM fails in considering social situations which lack obvious interaction. It takes individual mechanisms to be a portion of the social system, paying less attention to the subjectivity of the individuals involved, and placing emphasis instead upon the subsymbolic system as a whole. This conception of the individual does not well enough consider passive, observational social situations like watching a movie, interacting with a social robot, or giving a presentation to a virtual audience. Regardless, advancement is clear. Moving forward, the role and use of the individual within social cognition should be re-examined once again. Because such a fundamental piece of the discipline is used so inconsistently, progress in solving the problem of social cognition will continue to be a tedious, but worthwhile trek.

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