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Interactive Time-Travel

*On the Intersubjective
Retro-modulation of Intentions*

Abstract: *The temporality of intentions and actions in situations of social interaction can sometimes be paradoxical. I argue that in these situations it may sometimes be possible to conceive of individual acts that can, in a strong sense, be intended retroactively. This could happen when the relational patterns in social interaction literally alter the virtual structure of a participant's past corporeal intentions resulting in an odd experience of having intended something all along without knowing it. I propose that this possibility should be interpreted as more than just a narrowly epistemic phenomenon. Examining this claim involves clarifying the enactive perspective on intentionality, which I do here. The enactive approach rejects the model of a causal relation between intention and action for one of an intrinsic qualitative relation between the two as facets of sense-making. I develop this idea and compare it with Merleau-Ponty's Fundierung model of the mutual relation between corporeal and reflexive intentionality to show that co-regulated moves/affections during social interaction may modulate both arcs of this relation, creating the possibility of a re-signification that alters not the actuality but the virtual tendencies that preceded the social act.*

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1. Introduction: Back to the Past

In this essay I examine a counter-intuitive relation between intentions and acts performed during social interaction. In an exploratory effort to push the logic of some enactive ideas, I want to consider in particular the question of whether a context of participatory sense-making could allow us to conceive of the possibility that some individual acts can, in a strong sense, be intended retroactively, and that this could occur when the relational patterns in the interaction process literally alters the virtual structure of an individual's past intentions. The result would be a peculiar experience of having intended something all along without being aware of it, but it may be more than merely an epistemic phenomenon.

Let us first consider some broad relevant aspects before attempting to confront this question.

Contemporary accounts of social understanding do not often put enough emphasis on the fact that our comprehension of other people follows a time-extended hermeneutic process. As a social encounter unfolds, new cues help us refine judgments about the actions and expressions of others. If, in addition, we are not merely observers but find ourselves immersed in a social interaction, the hermeneutic process does not fully begin and end in each individual participant but is mutually sustained through intersecting acts of interpretation. The interactive moves, questions, or demands posed to us can clarify our own actions and intentions as well as those of other participants. And underneath all this interpretive activity there lie intercorporeal processes of coordination, breakdown, and recovery that sustain the interaction as a distinct relational pattern also extended in time.

This process, called participatory sense-making (De Jaegher and Di Paolo, 2007), describes the various ways in which interactors mutually modulate affect and cognition, including not only 'classical' interpretive acts where other persons figure as content of my cognition, but also attitudes towards the shared world (see, for example, Gallagher, 2009), and — a theme of this essay — towards the self.

If, following Merleau-Ponty, our bodies are primarily lived rather than inhabited, and if through their pre-personal intentional arc they are the means and the reason for our being-in-the-world, and the mode of our understanding of the world is, reversibly, the means of our self-understanding, then it follows that neither the world is fully opaque nor are we self-transparent. Indeed, we come to know the body through the world, through the reversible acts by which we are touched by what we touch and visible to that we intend to see. And —

important in what follows — our bodies are often moved by the world even when we do not intend to move.

That this self-understanding can often be radically enhanced while engaging with others is not news. As participatory sense-making works by modulating interpretive attitudes towards both the other and myself, the meaning of events, moves, and utterances remains open as their place in the interactive organization is negotiated. There is, through this open temporality, an element of retroactivity at play, which is applicable, because of my self-opaqueness, not only to the intentions of others but also to my own. Making sense in participation has a wide temporal focus, and therefore meaning does not emerge in discrete packages but is always unfinished as other participants and the interaction patterns themselves re-signify my acts.

The epistemic determination of my own intentions through the acts of others has perhaps been under-studied in traditional approaches to social cognition. The possibility is also located at a significant distance from the non-interactive stance of phenomenological attempts to describe the experience of the other from a self-enclosed sphere of immanence. Yet this kind of co-authorship pervades our everyday lives. Heinrich von Kleist has long ago turned it into useful counsel. For our ideas to become clear, he advised, we should simply find a listener and start talking without a script — the interactive act affording through our own self-perception and the attitude of the other enough richness for clarifying our own thoughts (von Kleist, 1951).

Notice, however, that if there is a sense of retroactivity in this example it could be interpreted as narrowly epistemic (i.e. we pick up new information about ourselves that was simply there). Accordingly, our ideas are pregnant but not absent, our intentions obscure, but pre-existing the act in order to furnish it with motive, norms, and conditions of satisfaction. Notice, also, how the interactive situation is reduced to the mere presence of a minimally active interpreting other.

This narrow epistemic interpretation could easily be accommodated within a causal view of the relation of intention and action, a view with Cartesian roots and still dominant in cognitive science and a good part of philosophy of mind. Accordingly, actions gain their status by being the outcome of a special kind of cause, a ‘mental’ event of some sort, usually a desire-belief combination, or an intention or goal. The modern variants of such a view, *pace* the self-transparency suggested by its Cartesian origin, are nevertheless able to accommodate an imperfect degree of self-knowledge and therefore could accept a form of narrow epistemic retrospection by which our motivations become increasingly clear to ourselves, typically in a passage from

sub-personal to personal-level ‘representations’. The presence of others in this story is a mere trigger, a perspectival shift on our own actions providing additional information or the occasion to reconsider our own motives.

In contrast with this causal view, we find implied in some contemporary approaches to embodied cognition, notably the enactive approach, a notion of intentions-in-action, i.e. a qualitative distinction linking acts and intentions together in a totality of sense-making (Di Paolo, 2005; Thompson, 2007). The act is a systemic whole to which purposes naturally belong, as do its more or less skilful overt and introvert facets. Its grounding is the precarious, self-constituted nature of the body, its intrinsic norms as a living system, and its incorporated norms as a cognitive and social being. Intention is indeed to be found *in* action as one of its facets if we conceive of action not as mere movement, but as explicitly involving a network of normative and material relations, notably the body’s self-constitution and its interactions with the world and others (I expand this idea in the next section). Understanding intentions-in-action demands a wider focus than that of individual ‘mental states’ causing an act. Even though this notion has been articulated in modern terminology using systemic concepts such as operational closure and so on, the idea is hardly new and finds notable precursors, among others, in Merleau-Ponty’s corporeal intentionality and Hegel’s prioritizing of ongoing practical activity.

The latter developed a sophisticated notion of retrospectivity for intentions-in-action. One particular form of activity — intersubjectively mediated self-reflection — precipitates forms of self-knowledge that can have a transformative effect on action (Taylor, 1985).¹ For Hegel in the fifth chapter of the *Phenomenology of Spirit* (1977), the unfolding in time of the act brings on the dimensions of expressivity and public accessibility that retrospectively reveal, partly through its consequences, partly through the norms and practices embodied in the reaction and interpretation of others, what must have been intended. Actions disclose intentions as much to others as to the agent herself, who may normally be the best authority on what she

[1] One could speculate that the experiential roots that motivate the causal story have been influenced by taking these crystallized forms of reflective self-knowledge as given: not as the achievement of a full body activity but instead as so-called ‘inner mental states’, motivations, desires, and goals. As self-explicitation gives the appearance of a separation between such ‘mental’ states from other facets of the act to which they still bear an inner relation, it is not a big leap to posit that this relation is one of causality (an answer to a why-question) between an intention reflectively disengaged from other parts of the act, i.e. the act’s effective or expressive world coupling.

intended but not always the most reliable one (Pippin, 2010). The interpretation of this disclosure is a temporally extended process always open to some degree of negotiation, as we shall see, particularly in live interactive situations.

Asking how best to interpret the intersubjective retrospective determination of intentions in Hegel, Laitinen (2004) describes as epistemic the possibility of a retrospective awareness, justification, and appropriation of our intentions-in-action. He finds this epistemic sense unproblematic as it simply involves an achieved reflection on our past actions and motivations and so any notion of ‘retrospection’ is limited to the (not necessarily trivial) explicitation of motives. For the enactive, non-causal notion of intentions-in-action this reflexivity would in itself constitute a change to our acts and our intentions. The passage from corporeal to reflective intentionality, as I discuss below, is a non-trivial achievement that certainly cannot be arranged into a simple causal chain. Nevertheless, for Laitinen this is quite unlike a radically ontological sense of determination that would conceive of intentions as constituted *retroactively* — not just retrospectively — after the (f)act and via an intersubjective exchange of some form. The latter sense seems absurd because, to put it bluntly, you just can’t travel back in time.

Laitinen’s analysis is useful because it speaks its common sense rather loudly: intentions are conceived as actualized events and their temporal course implies that they should occur no later than the action, even though they need not be extinguished or remain unchanged as the action unfolds. It is only our reflective powers that are allowed a backward gaze on anything we may have missed about our intentions, even though it must have been unquestionably there. Here again it is intentions that grant the act its status by specifying its conditions of satisfaction like in the causal view. While Hegel did not hold this causal view as we have said, Laitinen’s point is that the temporality constraint applies to his perspective as well. In other words, in both causal and enactive-like outlooks, it seems simply impossible for the act to precede intentions short of divesting the act of its status as such. Were this order not to be observed, annoying complications would arise, such as for instance the possibility of conveniently recasting whatever event or deed as an intended act.

There are reasons to question this conception of the time-course, efficacy, and determinacy of intentions. In what follows, I consider an alternative perspective of intention-in-action, informed by a reversal that conceives the ‘pre-intentional’ situation as richer, not poorer, than the intentional one. I also draw on dynamical ideas of virtuality and

Merleau-Ponty's relation of *Fundierung* between corporeal and reflexive intentionality. The description is supported by the concepts of autonomy and sense-making developed in enactive theory (Varela, Thompson and Rosch, 1991; Thompson, 2007; Di Paolo, Rohde and De Jaegher, 2010; McGann, De Jaegher and Di Paolo, 2013).

However, what allows the reinstatement of the possibility of an intersubjective retroactive determination of intentions in more than a narrow epistemic sense is the new factor briefly introduced above: the autonomy of social interaction. This under-studied situation allows acts to have conditions of satisfaction within the organization of interactive dynamics because social interaction itself is norm-generating. A person can engage in such acts in ways that are not directly intended and, in some extreme cases, actually opposed to a previous explicit individual intention. Nevertheless such acts and their intentions-in-action could be retroactively owned by the participants. It is not always the case, however, that interactive situations will produce a radical retroactive determination of individual intentions. This is rather one possibility in a variety of forms of modulation of intentions and coordination of individual and social action.

2. Enacting Intentions

As a first step, we should examine whether an intention-in-action is best conceived as a simple actual event. In the causal view this must be the case because it is after all its efficacy in determining the conditions and motivations for action that compels it not to post-date the act itself. Here the enactive notions of autonomy, adaptivity, and sense-making can help delineate a different conception of intentions. I turn now to a brief explanation of these terms.

For the enactive approach, an autonomous system is an operationally closed organization, whereby precarious processes form a network via two conditions: 1) each process in the network is enabled by at least another process in the network, and 2) each process in the network is an enabling condition for at least another process in the network² (Di Paolo, 2005; 2009; Di Paolo and Thompson, 2014; Thompson, 2007). The outcome of the operation of all these processes is the sustaining of the closed organization in time, its systemic identity. This closure is organizational, not interactional, which means of course that there are dependencies and influences on processes

[2] An enabling condition is more than a condition of dependence or a contextual factor. It is a necessary condition without which the enabled process cannot occur (see De Jaegher, Di Paolo and Gallagher, 2010, for a discussion and application of this term).

outside the autonomous system. The classical example is a living organism where autonomy corresponds to autopoiesis or material self-production (Varela, 1979). The precarious nature of this organization (precarious because without the networked co-dependencies, the component processes would disappear) introduces, following Hans Jonas (1966), a relation of *needful freedom* with the world. The system is in constant flux, avoiding the fate of each of its passing material configurations by never fully coinciding with them, by changing from one to the next, a feat that requires resources from the world. We see here a tension basic to all forms of life. On the one hand, an organism sustains itself as a distinct entity and for this reason it must severely regulate the effects of the external world on its own organization. On the other, it can only remain alive by depending on the right sort of exchanges with the environment. It must, in other words, be both closed and open to the world in an existence that is inherently discriminatory.

Francisco Varela saw in this basic tension a link between autonomy and sense-making, i.e. the organism's relation to the world in terms of concern and value (Varela, 1991; 1997; Weber and Varela, 2002). The autonomous organism is capable of evaluating a given interaction with the world as beneficial or not for its own continuation. In other words, the maintenance of systemic identity is a source of intrinsic normativity: eat food, avoid poison, etc. The problem is that the condition of closure of a living system is in itself binary, not graded. The network of process relations is either closed or not, and as a consequence it cannot serve *directly* as a source of graded values (this is better or worse than that) to filter through encounters with the world. Some form of mediation is missing in this picture, something that can link actual states with the tendencies and capacities involved in evaluating the consequences for the system's own viability. Sense-making requires not only an autonomous organization but also an adaptive one (Di Paolo, 2005). *Adaptivity* is the capability of an autonomous system to respond to tendencies in the trajectories of its states and its relations to the world, such that when these tendencies approach the boundary of its own viability the system modulates its coupling with the world in a way that tends to avert the crossing of this boundary. Adaptive responses thus permit the regulation of states before the breakdown of closure (death) has occurred. Such responses can succeed or fail, which is crucial as this makes adaptivity a graded property that naturalizes sense-making in the system's organization.

Relevant to our discussion is the fact that adaptivity works on the virtual field that surrounds the current dynamical configuration of the

agent–world system. In two senses: first, the agent must be responsive to whether or not *tendencies* approach the boundary of viability — if the crossing of this boundary is actualized, it is simply too late; second, it must make use of its *capacities* to modulate the constraints of the coupling with the world by introducing changes that alter the virtual field around the current states (modifying the direction of the negative tendencies).

What exactly do we mean by a virtual field? The notion of the virtual in the current context follows from the metaphysical tradition of granting a real ontological status to capacities and tendencies, especially those in the neighbourhood of current actual states. This tradition includes Aristotle’s notion of potentiality, Spinoza’s concept of affect, and related (but not identical) usages of the term virtual by Bergson and Deleuze. For our purposes, we additionally use the rich conceptual resources of dynamical systems theory to speak of trajectories, traces, and tendencies. In a few words, in this tradition, the virtual is that which is real but not actual, such as the glass’s capacity to hold liquids or the tendency of liquid water to become solid at freezing temperatures. Such capacities and tendencies need not be currently actualized (the glass is empty and in principle could remain empty forever but its capacity is still real). Notably, these capacities and tendencies are always relational, unlike the properties of an object that belong to it in all contexts (e.g. water is composed by H₂O molecules). Hence, virtual capacities and tendencies can be potentially infinite in number (the glass can be used as a paperweight or a doorstop, water also has a tendency to slow down high-energy neutrons inside a nuclear reactor). This doesn’t mean that we can manipulate circumstances so that any object could acquire any arbitrary capacity or tendency (the glass hasn’t got the tendency to slow down fast neutrons, and liquid water makes a rather ineffective paperweight and doorstop). Actualization of virtual capacities and tendencies occurs always as an event, or a doing, or an act as we shall see. These actualizations are situated in history, have duration, and so forth.

By speaking of fields we want to focus on the structured situatedness of virtual tendencies and capacities, i.e. not just any non-actualized counterfactual, but those that neighbour a current state of affairs. This structured field can be studied by examining the dynamical landscape around a current trajectory (this landscape in itself need not be fixed in time). Such fields have been investigated in many simulation models of embodied cognition to different degrees of explicitness. It is common in such models to artificially travel back and forth along a recorded behavioural trajectory and manipulate circumstances

and re-run the model to ask ‘what-if’ questions in order to systematically map a virtual field (e.g. Beer, 2003; Iizuka and Di Paolo, 2007; see also footnote 4) or to attempt to produce exhaustive maps of sensorimotor possibilities (Buhmann, Di Paolo and Barandiaran, 2013).

Adaptivity entails complex aspects of temporality, such as directedness, minimal granularity, and historicity. The phases of an adaptive event, i.e. the actualization of virtual tendencies and capacities, bear a qualitative resemblance to the phases of an act proposed by Langer (1967) (onset, acceleration, consummation, and cadence; see Di Paolo, 2005, p. 444). In other words, sense-making, which even in its most basic forms implies adaptivity, always occurs in a ‘thick’ here-and-now. By this I mean that, given the current situation, not only the actualized states matter to the sense-maker but also the virtual traces and tendencies that surround these states, whether they become actualized or simply modified but not necessarily actualized in the course of events.

From a dynamical systems vantage point, this is no surprise. Let us consider three widespread characteristics that become obvious when agents are considered in dynamical terms. 1) The current state of a system reflects a history of changes that the system has undergone over time. In this way, past events are brought to bear on the current situation and so the accumulation of experience allows the agent to discriminate between different contexts when exposed to identical sensory perturbations. 2) The behaviour of the agent as a dynamical system depends on its limit sets, i.e. the macro-configuration of states that need not be actually ever visited by the system. Since through continued coupling with the environment the agent is able to reach different areas of state space, from different initial conditions the agent may then follow different tendencies as determined by the attracting and repelling sets. Experience can therefore tune those limit sets globally such that the agent’s movement through state space corresponds to the desired response that a given situation solicits. 3) Future tendencies depend on how the agent’s dynamics moves towards the limit set in whose basin it finds itself; asymptotic states need not ever be reached (actualized) or even known, but they nevertheless exert an influence in these tendencies.

One by one, these properties bear a correspondence with three key aspects of Merleau-Ponty’s notion of motor intentionality (Buhmann, Di Paolo and Barandiaran, 2013; Buhmann and Di Paolo, 2014). 1) The accumulation of experience serves to discriminate, with increasing specificity, situations that solicit a particular response (separation

of traces). 2) Experience also allows a person to incrementally refine her dispositions to respond to these solicitations (tuning of tendencies by altering limit sets). 3) A response to a situation takes the form of movement toward the completion of a Gestalt ('maximum grip') or equilibrium towards which the body tends without the need to mentally represent this optimum, as when finding the right distance to admire a painting (dynamics in a basis of attraction).

In the enactive analysis, making sense of a situation — i.e. evaluating its relevance to the sustaining of a precarious identity and responding accordingly — requires by definition both sensitivity to and modulation of the virtual field of possibilities. The sensitivity and capacity for modulation are present in all forms of life with large variations in complexity and refinement. For the average person, it is not the same to walk a straight course stepping along the curb at street level or stepping along the border of the terrace of a tall building, even if the sensorimotor trajectories that should be actualized are nearly identical. For the average pigeon the two situations are similar. This is because both are differently sensitive to risks and have different capacities to respond to them.

Act and intention are not separable but they correspond to different aspects of sense-making. The latter is an operation on virtual fields whose consequences are both actual and virtual, which involves a process of actualization with overt and introvert phases. Therefore, I propose to use the term *intention* to describe the virtual configuration surrounding the current situation including the agent's tendencies and capacities and how this configuration relates to the agent's self-sustained identity. I propose to use the term *action* to describe any actualization process that ensues in the context of an intention and which tends to modify the virtual configuration in ways that avert risks and exploit opportunities for the agent's viability. This of course includes overt behaviour but it also includes actualized bodily self-affection, feelings, and any form of introvert explicitation of intentions. To personally experience one's own intention and to get to know it, in this sense, is already part of an act. We can call this part of the act its manifested intentionality.

This is quite different from the causal model of intentions. Nevertheless, the temporal thickness of sense-making and its relation to virtuality can be described concretely both dynamically and phenomenologically and studied empirically and through models. There is no magic involved.

In summary, to intend and to act in enactive terms are respectively the virtual and the actualized aspects of an agent's active engagement

with the virtual field that surrounds a current situation, with the aim of making sense of this virtual field and changing it by modulating actual states. This virtual field is never fully exhausted as we have said, nor, crucially for our discussion, forever fixed.

3. In the Thick of It

According to our proposal, it is misleading then to conceive of an intention as an event on a par with a movement, or a physiological change — those are already processes of actualization and therefore parts of an act. This conception, needed for the causal view, often goes together with another habitual assumption that we should also question. This is the assumption that the undetermined intentional situation is *poorer* than the determined one, as if the state prior to a formed intention were empty. Here I propose a Bergsonian reversal of ‘less’ for ‘more’ (Bergson, 1934; Deleuze, 1991). For Bergson there is more artifice in the idea of nothingness than in the idea of something, disorder has more ‘content’ than order, and so on. This is because we commonly misconceive the ‘wild’ original state as a deprived one through an act of imagining the current state and subsequently emptying it of its content. In other words, we exercise a suppression of the current state of affairs (being, order, determinateness, etc.) without the corresponding substitution for something else and proceed to fill in in its stead a theoretically void state for which we have never had any direct experience or evidence. We then proceed to elevate the artificially created situation to the status of a primordial state of affairs.

There are two intimately related senses in which a primordial state, one that presumably is not determined or ordered, should be conceived as being ‘more’ than the ordered or determined state. One sense points to the additional epistemic effort that is required to conceive of the primordial state and to the unavoidable relation of this conception to the actual current state. If we look at the room and want to imagine how it was before we moved into the house, we proceed to mentally empty it of furniture, an operation that involves *more* than mere looking at what it is. But the result is not some primordial emptiness but a relative one, the room-empty-of-furniture, as opposed to the room empty of light, air, radio waves, wallpaper, etc. The other sense in which the primordial state is ‘more’ follows from the realization of this relative aspect of any conception of emptiness. Through this relativity we realize that what was there before the order or determination that we are interested in was an inexhaustible infinite of other processes, events, and even orders and determinations that had escaped

us (how many of us sincerely think first of radio waves when we try to imagine an empty room?).

The richer, undetermined situation constrains its future determinations but does not provide any certainties about them. For Bergson, a truly novel event is one for which its possibility, formulated positively as the possibility of a *specific* actuality and not negatively as a *general* absence of impossibility, is conceivable for the first time only with that very actuality. The novel event retroactively ‘writes itself in the past’ as having been specifically possible, even perhaps to be expected because with hindsight that possibility coheres with whatever we knew about the past state of affairs. The specific and positive possibility of *Hamlet* cannot be said to have existed before Shakespeare conceived and wrote the play, as if someone examining possible combinations of themes, characters, and plots could have come up with a conception of *Hamlet* before *Hamlet* without conceiving the play in that very act. We can only say that *Hamlet* was not impossible before Shakespeare, i.e. that there were no impediments to its conception, and even that statement can only be made after the fact and not before, short of conceiving of *Hamlet* (actualizing it).

For our purposes, the main implication of taking the Bergsonian view is that the underdetermined intentional configuration, even when we are not engaged in any overt activity, however vaguely specified, is *not* an empty landscape as is typically conceived in causal theories but instead a rich and largely undefined, but not ineffectual, reservoir of traces, tendencies, capacities, risks, and opportunities for sense-making.

What is the relation between this undetermined intentional reservoir and those reflectively crystallized and therefore determined intentions that pervade the Cartesian mode of causal thinking? Here it would not be correct to simply propose that the determined intentions correspond to what we have called manifested intentionality because they are actualized in some form (a stance, a feeling, or some explicit awareness), while the underdetermined reservoir corresponds to the virtual configuration of tendencies, capacities, etc. Intentions are often manifested in pre-reflective, implicit forms, and the misconception of the causal view is to neglect those at the expense of explicitly manifested (sometimes even propositional) intentions. It is in how these two forms of intentionality and their actualized manifestations relate where we must explore the consequences of the Bergsonian reversal of less for more.

We can take the richer (*because* less determined) intentionality as corporeal in correspondence to what Merleau-Ponty describes as the

tacit cogito, the pre-reflective, bodily founding term of expressive, reflective subjectivity (Merleau-Ponty, 1945/2012). He describes the relation between the two forms of intentionality (corporeal and reflective) using the Husserlian term *Fundierung*. On the one hand, we have what he calls the founding term: the primordial, pre-reflective, intentionality of the lived body (i.e. the Bergsonian reservoir, the Jonasian self-concern of life, the enactive core forms of sense-making). On the other, we have the founded forms of reflective consciousness. The two forms stand in a mutual but asymmetric relation.

The founding term... is primary in the sense that the founded term is presented as a determination or a making explicit of the founding term, which prevents the founded term from ever fully absorbing the founding term; and yet the founding term is not primary in the empirical sense and the founded is not merely derived from it, since it is only through the founded that the founding appears. (*Ibid.*, p. 414)

It is noteworthy that Merleau-Ponty has grouped together both determination and explicitation as marking the passage from bodily to reflective intentionality, weakening in this way an ontological/epistemic distinction. The reason for this is that the 'entity' that becomes determined is precisely the new form of epistemological appropriation or clarity that we obtain as we query our partially expressed, partially known bodily engagements with the world. A virtual configuration which is actualized only in a pre-reflective mode (body intentionality) becomes determined as an object of experience or knowledge through an act of sense-making. The epistemic appropriation is the becoming explicit of the virtual configuration, which so far had only be actualized implicitly in the body. Merleau-Ponty also sees this process as one that cannot 'fully absorb' the multiple and concrete pre-reflective bodily projects, i.e. again a Bergsonian notion of determination as impoverishment.

The *Fundierung* relation between the two forms of intentionality can also be appreciated in the relation between bodily being-in-the-world (practically oriented, skilful, adaptive) and explicit 'acts' uncritically conceived in the classical sense as discrete events with clear boundaries and conditions of satisfaction (I decide to close the window, I get up and close it, it is now closed). The relation is therefore relevant to our purposes, as neither acts nor intentions should be seen as discrete, causally linked events, but as time-extended aspects of bodily being-in-the-world. We should note that, via Merleau-Ponty's breaching of the epistemic/ontological divide in the case of the *Fundierung* relation, we can already start to doubt whether any

reasonable sense of retroactive determination of intentions must necessarily be *only* narrowly epistemic (i.e. obtaining knowledge without significantly altering the thing we are cognizing about). Such a narrow sense is of course possible (e.g. a suitable *a posteriori* narrative that makes explicit my then implicit body intentionality), but the analysis up to this point indicates the possibility that it could in some cases be more than that.

Note also that Merleau-Ponty grants bodily intentionality a founding priority but not an empirical (causal) one. The founded term in the relation can feed back into the founding undercurrent by the sedimentation of practices, the learning of new skills, and so on (Ravaisson, 1838/2008). This is possible because each act can alter its own foundations (not merely reveal them), and it is only when those alterations predispose the body to repetitions that a habit establishes itself in this particular mode of relation to the world. The related terms are therefore continuously modulated by the relation they sustain — as the act of walking and the laying down of the proverbial enactive path.

What this tells us is that even if we don't conceive of intentions and acts as discrete, casually linked events there is an inner logic that relates both terms as aspects of corporeal intentionality. The inner relation flows both ways, so that the intentional aspect — the rich intentional reservoir — is permeable to modification by actualized action.

We reach then a more sophisticated perspective on the problem. 1) The efficacy of intentions involves elements of the virtual as well as actualized manifestations. 2) The original state prior to a determined intention (the core intentionality of precarious, concernful life) is already intentional in a rich sense, and so the body is capable of engaging in action before specific intentions reach their full determination. 3) The relation between bodily intentionality and its explicitation/determination, be it in the form of explicit acts or reflective consciousness, is mutual (leaving intentional aspects open to ongoing alteration by the very acts they found).

One can argue that even within this perspective a strong ontological retroactivity of intentions is still inconceivable since the act, however undetermined, must have certain conditions for it to count as such, and these must cohere with its intention, however undetermined. This may but need not happen strictly prior to the overt act but apparently it could never happen after the act, because the act itself is an actualization of the intention. This argument, which makes sense from a methodological individualistic standpoint, loses its strength as we regard the process of social interaction.

4. The Tentative Intersubjective Present

Social interaction is not merely a co-presence or even the occasional mutual influence between two or more autonomous sense-makers. It is an *engagement*, the dynamical mode that occurs when the co-regulation of the mutual coupling between the participants acquires itself a form of autonomy (De Jaegher and Di Paolo, 2007; see also, for example, Goffman, 1963, for a classical statement of the same point). Interactions have a life of their own and their constituent processes are patterns of coordination, breakdown, and recovery of coordination. Interactive acts are therefore social acts: their initiation, completion, conditions of satisfaction, and motivations span the participants involved. Moreover, these acts play a role in sustaining the interaction without necessarily being individually intended for such a role.

The regulation of interactive turns, for instance, is mostly co-authored and often finely attuned to context. Gestures and utterances sustain a coordination that is not individually determined, let alone explicitly intended, but emerges from a co-regulation that moves the interaction forward. Listeners can back-channel with nods and short utterances ('uhuh', 'right', 'mhm') and so skip turns, show interest, and fuel the speaker's flow (see, for example, Goodwin, 1986; Bavelas, Coates and Johnson, 2000). Interpersonal distance is negotiated according to context and degree of acquaintance (Hall, 1966). If two people are asked to turn a heavy horizontal crank to a desired position from opposite sides of a table (without any other means of communication) functional roles emerge after a while, whereby one of them invests more energy in starting the movement of the crank and the other in braking it (Reed *et al.*, 2006). All of this is done unconsciously like many other examples of coordination and we only take notice when something breaks down. For instance, if the flow of an interaction is artificially tampered with, other things staying the same, the result is frustrating and immediately noticeable even for young babies (Murray and Trevarthen, 1985). Many bodily movements and attitudes are regulated during interaction not necessarily following an individual pre-existing intention, but as the joint enactment of interactive skills. This means that social interactions can, and often do, take unexpected turns; they are open and can generate novel situations without anybody involved foreseeing them.

Corporeal coordination satisfies norms and motivations although not always those of the individual, who nevertheless can be sensitive to something going wrong when a breakdown occurs. Interactive norms belong to a shared space of meaning, a source of co-regulated

heteronomy which cannot be individually owned since the success, failure, and repair of the co-regulation necessitates the coordinated moves of several participants. This is what is sometimes experienced as the ‘pull’ of an interaction, the falling into relational patterns that are not necessarily anybody’s intention (phone conversations that start trailing off at the moment of saying goodbye but still take a long time to end, the estranged relation between parent and teenager that keeps turning sour precisely as a result of each party being over-careful not to revisit past confrontations, and the mundane dance of the narrow corridor that keeps two people walking in opposite directions engaged in interaction precisely because they attempt to get out of it).

This pull of the interaction, its heteronomy, can sometimes contrast with individual intentions and this is the primordial tension of participatory sense-making. It is not a tension between the different intentions of the various participants, but a tension between individual and interactional autonomies (Cuffari, Di Paolo and De Jaegher, 2014). Nor is it the same as the basic tension of needful freedom of the organic body, but it does have similar aspects. An agent engaged in interaction must constantly navigate an uncertain landscape, not only because other autonomous agents are involved, but also because the relational patterns of interaction have a tendency to sustain themselves and therefore can, so to speak, get under our skins.

Social interaction is a space of participatory sense-making (orientation, joint action, joint perception, shared interpretation, etc.) where mere moves can be converted into acts as they enter into the economy of co-regulated interactive activity. This largely unreflective activity belongs to a synergy of bodily intentionalities. The other can move my body thanks to the attunement tendencies of my intercorporeal skills (think of the immediate reorientation of sense-making that occurs when, unexpectedly, a voice calls out your name). In either soliciting or signifying our bodily responses, we co-author acts of social coordination. Such acts fulfil conditions of motivation and normativity not necessarily obtained ‘within’ any participant (and yet inexistent without the participants). Since such co-authored acts still involve my body, they can modulate my bodily intentionality, opening the possibility of inviting in me a response of acceptance or rejection.

A way of seeing this is to consider again Merleau-Ponty’s *Fundierung* model. The interactive situations described above provide enough evidence of bodies modulating each other’s corporeal intentionality (as when maximal grip is jointly attained in the case of unconscious adjustments to interpersonal distance). In contrast, other models require access to the other to be always in a mode more related

to the founded form of intentionality (e.g. Husserl in *Cartesian Meditations*, 1960) and in modern cognitivist versions even in a reflective or inferential mode. Such access is possible, but the interactive situation shows it is not primordial (see also Gallagher, 2008), and that instead an understanding between bodies can obtain without founded intentionality mediating it. Undoubtedly, thanks to the *Fundierung* relation, there can be an effect on reflective, avowed intentionality in each participant, and conversely there is a route for founded intentionality to filter through and modulate the dance of the bodies. In addition, and even more radically, during social interaction bodies can literally move each other.

The *Fundierung* model could still be seen as remaining too much within the sphere of immanent intentionality, although it is Merleau-Ponty's goal to transcend it by providing an alternative ontological grounding for intersubjectivity, language, and thought. Interactive (and ultimately communal) intervention in the founded/founding relations between corporeal and reflective intentionality alter the possibilities of expression and sedimentation between these forms and can help explain a subject's integration into a culture. But the synergic movement of bodies affecting each other in coordinated interactional structures fit even better with Merleau-Ponty's reversibility model (1968). Accordingly, interactive coordination (and breakdowns) would most immediately affect the pre-personal layers of reversible seeing, touching, perceiving that reverse not just within a unitary body, but also between bodies. 'The handshake too is reversible... Why would not the synergy exist among different organisms, if it is possible within each?' (*ibid.*, p. 142). Thus, there are at least two loci for direct interactive intervention which do *not* pass through the Husserlian sphere of ownness (or its representational cognitivist off-spring) but nevertheless affect it: one locus is on both mediating arcs of the *Fundierung* relation within a single body and another locus lies in the direct and pre-personal mutual movement/affection between bodies.³

The co-authored passage of determination/explicitation between a social act and my own intentions as a participant in a social interaction may sometimes take the shape of an 'internal' resolution of a potential breakdown by seeking in the virtual possibilities of my bodily intentionality those whose determination *cohere* with the social act I participate in. Consider for instance the act of giving. A single person

[3] See also the relevant discussion on the passage between the *Fundierung* and reversibility models in the case of Merleau-Ponty's thinking about language in Dillon (1988).

cannot carry it to completion. This act involves an initiation by one party, the giver or receiver, who orients the other's sense-making (usually through an offer or a request) and can only be completed by a conjugate and appropriately timed action (handing in/receiving). However, in the flow of an ongoing interaction, individual moves may be re-signified by subsequent responses. My open hand gesture to facilitate a turn switch in a conversation may be contextually interpreted by the other as a request for an object I have been repeatedly referring to, and responded to as such in a context-appropriate matter, for instance, placing the object in my hand. It is only at this point, after my interactive act has had its effect on the other, that out of the richness of the virtual configuration of tendencies, capacities, etc. a clear intention *may* be crystallized and appropriated (I *was* asking for that object). This intention is installed into my possibilities for personal sense-making by the other's completion of my interactive gesture which turns it into a jointly performed act. It does not alter the actual past, but its virtual configuration, in other words its meaning.

How could this happen? Consider an intention-in-action in its intensive aspects, for instance, what we could call a commitment to the execution of the act, to its specific properties, timing, effective and expressive qualities, consequences, and so on. What is this commitment prior to the execution of the act if not the sense the body makes of the virtual field of local (situated) counterfactual possibilities, i.e. the virtual neighbourhood of my situation marked by recent traces and current tendencies? In other words, the intensity given by how strongly I intend my action to be this or that way, how committed I am to it, depends on details of my world-situatedness such that alternative configurations of this situatedness may or may not alter my action — the less they do so, the more intense my intention is.⁴

Now, this commitment may or may not be expressed in the act itself, but it does make a real difference as the act is subjected to hermeneutic

[4] In an illustration of the value of minimal models of embodied cognition as facilitators of intuitions, it turns out that this notion of commitment can in fact be measured in dynamical simulation models of minimal cognition. When a simulated agent must make a choice between alternative behaviours, it is possible to systematically gauge the effect of variations (say in the environment or the body) on the final choice made by the agent. One can explore this effect over time and find counter-intuitively that commitment to a choice is not a monotonic quantity that increases progressively as the time for execution approaches but that instead it can fluctuate in complex ways (Beer, 2003). Alternatively, one can 'freeze' time just before the simulated agent has made its choice and ask the question 'what if things had been slightly different?' and then quantify the effect of changes to the environment on the decision — the larger the effect, the less the connotation or the commitment to the action that is nevertheless actualized (Iizuka and Di Paolo, 2007; Di Paolo and Iizuka, 2008).

interpretation or as it concatenates with other acts or as I resist or give in to factors that tend to deviate me from my goal. The virtual configuration prior to the act's execution marks the subsequent actuality of the act itself and its consequences.

Let's come back to the interactive situation in which parts of my acts are moves in the social encounter, in accordance with an interactive normativity that I follow as long as I remain in the interaction but that may not be my own and may not even be explicit to me. It is in this situation that the consequences of my moves can sometimes be quite unrelated to the *intensity* of any prior intention. A thing said in passing, a wince, or a movement that may not yet be a gesture can acquire a momentous importance, which is reflected back to me through the others' moves, attitudes, and expressions. It may reveal something about myself that perhaps I don't hurry to deny (as in the hand-gesture-turned-request example above). I may then own such consequences of my interactive moves — make them properly *my* act. This happens by confronting the virtual configuration of my intention prior to the execution of my interactive gesture with a novel event, e.g. the other's response which re-shapes my gesture as a partial social act (remember that virtual capacities and tendencies are relational — here they are being put into a 'novel' relation). The novel event alters my past virtual configuration by inserting specific possibilities into it that at most could only have been said not to be impossible at the time but which did not exist at such. This past virtual configuration is *now* different from the sense I had initially made out of it, and different in a way that coheres with having intended to perform the social act in the first place.

This kind of retroactivity will not necessarily happen in social interaction, but it *can* happen. If it does there is a sense in which the virtual configuration that defined the intensity of my intention in the past has been altered (increased or decreased) through the participation of others.

It is difficult to venture an opinion on how widespread and frequent this phenomenon might be because the cases in which it can be identified rely on a person somehow retaining some awareness of some odd change in her intentions, i.e. retaining some trace of the un-transformed intentional state prior to the act and its retroactive modulation. This would be a case of imperfect retroactivity. Perhaps these infrequent occurrences are the only cases where social interactions have this retroactive effect, and the phenomenon could be a mere curiosity, which is nevertheless informative of the various forms in which social interaction can affect intentionality in participatory sense-making.

But it is conceivable that the phenomenon could be frequent and widespread because the more effectively it functions the less noticeable it is, making us literally unaware of how our intentional landscape might be constantly modulated and reconstructed in social encounters unless we were to undergo a complex process of self-examination.

Let us consider some examples. A clear mode, though I don't claim it is the only or the main one, in which a retro-modulation of individual intentions can take place during social interactions is via an interpretive move by another participant that recasts my own acts and offers a novel significance that I make my own. These situations can happen when participants share a long history of interaction and mutual adjustment. De Jaegher describes an example:

...a couple of days ago I was having dinner with my partner and a friend. At some point, I was cutting some cheese for myself. I noticed my partner looking at the cheese and thought I would offer him some, because it looked like he might want some. When I did so, he accepted it. I asked him whether he had wanted it while looking at the cheese before (i.e. while I had noticed him looking at it and he had noticed me looking at him and it), and he said that he had not really. The desire for cheese in this case only crystallised at the point of accepting the slice from me. This indicates that fresh intentions can sprout from interactions and that what may often happen is that we back-track, newly emerged meaning in hand, and 'stick' this meaning onto our previous actions. It may have looked like he wanted the cheese, since I noticed him looking at it before, but in fact, the desire only took shape at the point of receiving it. (De Jaegher, 2009, p. 549)

A similar example⁵ involves a tired couple at a party that has been going on for a long time. Across the distance they regard each other and at one point she raises her arm and with a finger touches her wrist close to her watch to alleviate some discomfort. Interpreting her move, he says: 'You're right, it's rather late and maybe we should leave', to which, looking back at her watch, she readily agrees realizing that she had been trying to convey the very message her partner interpreted in her move. A third example is what reportedly happens occasionally between experienced tango dancers which they describe as an experience of deep connection during the dance or as dancing as one. The leader sees his moves interpreted 'correctly' by the follower before they even have a chance to start forming. This could happen because the experienced follower is 'reading' the leader's body better or faster than he himself is. Before the founded

[5] I first heard Sanneke de Haan describe this example in a talk. The situation is a reworking of an example by Pierre Jacob and Marc Jeannerod.

layers of intentionality have even had a chance to form any notion or intuition in the leader (e.g. 'we now move into this space', 'now it feels as if leading this figure is right') the follower is already cohering with his unexecuted moves (adopting a suitable stance to move into the next figure, breathing in at the right second to ease the flow of her next move, and so on) and so she facilitates (and invites) their enactment, moving together as one body and incidentally calling into question the very notion of 'leadership' in a co-authored improvised dance.

There is no backward causation in any of these examples but there is a change in the virtuality of sense-making, a change in meaning. It is an extra determination of the virtual dimension of the past, which is changed by the further act of owning one's part in a social act. A deed becomes an action because it does follow reasons, only not our knowingly avowed reasons but those practically accepted by my engagement in the social interaction. To follow reasons in this context is simply to say that the virtual configuration of capacities, intensities, and tendencies in relation to the agent's viability (i.e. its intentional configuration) coheres with the actualization of some of this virtuality in acts and experience, and tend to produce a change in the virtual field which preserves viability.

The retroactive modulation of individual intentions described above cannot be discarded as merely a narrow epistemological effect, the revealing of some hidden information. To do this would be, as Bergson said, to confound the absence of impossibility with the positive, but initially unknown, possibility of a specific outcome. The retroactive modulation of intentions is a creative act, one of the many forms of co-authoring conceivable in participatory sense-making, and part of the unpredictability of social interaction. It is the act itself that inscribes its own possibility in the past, a virtual possibility that wasn't even seen by the agent herself, or, indistinctly, wasn't there as such in a positive sense.

Wouldn't we be in danger of sliding into too liberal a view of intentions, such that if we allow a strong sense of retroactivity at least in some social situations we could eventually attempt to recast anything as an intended act? The point is that, inexhaustible as virtual configurations can be, they are not arbitrary. They are situated in history and materiality and so, like liquid water making a poor paperweight, some capacities, tendencies, or potentialities are simply not there. So the answer is no. One could attempt to provide a narrative about disavowed intentions in somebody's action and the issue could be

contentious. But, in principle, there would be clear cases in which we could respond in the negative to such attempts.

The retro-modulation of intentions is not the same as the opportunistic modulation of an act in course, as when I kneel down to pick up a pen that fell to the floor and in the process I discover a coin nearby and I decide to pick it up as well. This is simply a case of adapting my coupling to the world by modulating the act itself. In the case of retro-modulation of intentions the actual movements involved in the act can remain unchanged but its significance changes thanks to how it feeds into the interactive flow in an initially unexpected manner.

Similarly, the situation we describe differs from cases in which the outcome of an action brings forth an unexpected result that happens to also be desired but which I didn't specifically intend to obtain at this point. The welcome effect makes me realize that I desire it now and possibly that I had a desire for it before, but not an explicit one. But in general we cannot say that the act was aimed at obtaining this effect. If in some circumstances we could affirm this, it would still be a case of realizing something I secretly intended, i.e. a narrowly epistemic retrospection. In contrast, what occurs in participatory sense-making is that individual acts run as it were along two braiding intentional paths, those of the individuals involved and those of the interactive autonomous dynamics, and there is an ongoing tension and ambiguity between these domains. The retroactive modulation of intentions is simply one particularly unintuitive way in which this ambiguity can get resolved. The event that triggers a retro-modulation of intentions is not simply an unexpected consequence of my action on the other, but an unresolved interactive tension that literally moves me to seek a resolution in how my intentions, in their virtual aspects, are retroactively coherent with the other's response.

In summary, the retroactive and intercorporeal determination of an individual intention is not just narrowly epistemic, even though it involves phases of reflection, re-signification, and appropriation. Here we reiterate that our departure point is twice removed from traditional analyses. Firstly, we start from a past state rich in virtual possibilities for regulation, not a void, intention-less state. Secondly, we consider the body as participant: its resources used in co-regulating engagement in interaction. It is the heteronomy to which we submit while we interact that (often literally) moves us. These moves themselves find a place within the multiple virtual tendencies that inform and shape regulation and simultaneously, after the fact, change their status from foreign into ours by becoming acts first and then inscribing an intention in the past.

5. Conclusion

If we accept the possibility that interactive processes can (sometimes) play constitutive roles in social cognition and participatory forms of sense-making in general (De Jaegher, Di Paolo and Gallagher, 2010), then we must admit that it is possible for such processes to intervene in the complex constraining relations between individual actions and intentions. This possibility implies the definitive abandonment of the linear-causal model of intentionality in favour of the enactive model sketched above.

While this may look like a lost battle for the autonomy of individual agency (we may be more determined even in our personal intentions by our social world than we care to admit), the intersubjective modulation of intentions that can take place in the thick, tentative present is only a possibility, an opening by which the social can visibly or invisibly affect the individual. At no point have we eschewed individual autonomy in our account. We need it in fact to establish the primordial tension of participatory sense-making, which is key to our argument.

This primordial tension, to repeat, is not a tension between people's intentions, although this is the way that challenges to individual autonomy or freedom are often discussed. According to Husserl in *Ideen II*, (1989, p. 281 [268]), the other appears as a source of constraints, obligations, etc. But the ego is the one that fully determines whether a demand or rule or thought or feeling external to it will be appropriated or not. This radically autonomous ego is the sole arbiter of how much of the social world is allowed in. It seems as if the only way to be authentically an ego is to resist or scrutinize all external influence. This sometimes finds an echo even in Heidegger (1927/1962) despite his rejection of transcendental solipsism. Submitting to others is often, for him, the road to conformity and inauthentic being, a submission to the illusions of the One that only serves to saturate my senses and hide from myself my own being-unto-death. At least on some readings there seems to be in Heidegger too an element of individual choice, a standing against, in the achievement of authentic being (this in *Being and Time*; things look bleaker for the subject in his later philosophy). It looks as if this freedom-asserting choice, like the scrutinizing and appropriation of external influences in Husserl, is an unconditioned self-achievement and is somehow not in itself enabled by my being immersed in a social world. It is self-evident, however, that I cannot get my tools for such an individual achievement, and even any conception of individual autonomy to aim towards, except from the social world, e.g. through mastering a language, engaging in

political activism, learning to meditate, or attending a class on Existentialism. The social world provides as much the illness of inauthenticity as its remedy and this is clear in other passages in Heidegger.⁶

From our perspective, it should be clear that the enactive approach does not conceive of authentic subjectivity as fully self-standing — an individual with overriding power and absolute responsibility for how she is herself affected by the social and material world. Instead it sees subjectivity as fragile and an ongoing achievement, which is nourished as much as challenged by sociality and materiality. If subjectivity is embodied and if we mean by body something like the Jonasian, enactive conception of the term, then not all social influences are filtered through individual intentionality. Instead they often operate on the body's precarious existence and feed its needs (in both senses: satisfying and perpetuating them) by altering it, moving it, and delimiting it, but also by enabling its biology, scaffolding it, and accompanying it.

The retroactive modulation of intentions in participatory sense-making, whether rare and merely a conceptual marker in the logical space of enactive theory or frequent and deserving of further study, would always involve an individual gesture of acceptance and appropriation of this relational social flow. The result can empower our own personal projects as well as constrain them.

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[6] Heidegger arguably does see the world of social practices as constitutive of individual meaning, and in consequence has a good claim as having avoided transcendental solipsism. But too much focus on the dangers of social conformity and too individualistic a recipe for overcoming them has made many thinkers sometimes miss this important move (see, for example, discussion in Dreyfus, 1991).

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