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Making enactivism even more pragmatic: The Jamesian legacy in Shaun Gallagher's enactivist approach to cognition

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Abstract The article outlines some similarities between the perspectives adopted by Shaun Gallagher and William James. In particular, assuming that the issue of representation in cognitive systems provides a valuable starting point and testing ground for verifying James' possible contribution to enactivism, we argue that there is a considerable degree of similarity between Gallagher's and James' non-representational models of direct perception. Furthermore, we propose that by combining James's theory of time and spatial perception with Gallagher's Husserlian-inspired theory of retentional-protentional structure, we can strengthen the theoretical assumptions of enactivism, integrating elements taken from phenomenology and aspects of Jamesian pragmatics. Understood in this way, James' enactive theory of action and perceptual causality provides a promising opportunity for an innovative and coherent enactivist research program.
KEYWORDS: Enactivism; Pragmatism; 4E Cognition; William James; Shaun Gallagher

Riassunto *Rendere l'enattivismo ancora più pragmatico: l'eredità jamesiana nell'approccio enattivista alla cognizione di Shaun Gallagher* – In questo lavoro si pongono in evidenza alcune somiglianze tra la prospettiva enattivista di Shaun Gallagher e la psicologia di William James. In particolare, assumendo che il tema della rappresentazione nei sistemi cognitivi fornisca un valido punto di partenza e un terreno di prova per verificare il possibile contributo di James all'enattivismo, ritengo che esista una notevole assonanza tra l'antirappresentazionalismo di Gallagher e la teoria della percezione diretta di James. Sostengo inoltre che attraverso una combinazione della teoria del tempo e della percezione spaziale di James con la teoria di Gallagher della struttura ritentivo-protensiva di ispirazione husserliana sia possibile rafforzare i presupposti teorici dell'enattivismo, integrando elementi tratti dalla fenomenologia con aspetti pragmatisti. La teoria jamesiana dell'azione e della causalità percettiva sembra fornire una promettente opportunità per un innovativo programma di ricerca in ambito enattivista.
PAROLE CHIAVE: Enattivismo; Pragmatismo; 4E Cognition; William James; Shaun Gallagher

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In *Where's the action? The pragmatic turn in cognitive science* Engel and colleagues witnessed to a "pragmatic turn" in cognitive science, i.e., the shift from a representation-centered perspective to a paradigm that focuses on the understanding of cognition as "enactive". The article formalized a change of perspective that had been taking place in the cognitive sciences since the end of the twentieth century and which considered that pragmatists were basically right about the nature of knowledge and experience. In general, the pragmatic turn paradigm suggests that cognition is fundamentally grounded in action, that is, «fundamentally action-bound, subserving the planning, selection, anticipation, and performance of actions».[1] The use of the term "pragmatic", taken from the action-oriented perspectives developed by Peirce, James, Dewey, and Mead, aims to stress the conjecture that cognition is a form of practice, namely a skillful activity that implies a continuous interaction with the natural and social world.

Despite the various versions of the pragmatic turn in the cognitive sciences,[2] as a common background many assume that cognition is action-oriented. Therefore, cognition should not be considered a producer of veridical representations but rather as a capacity to generate structures of action. In this respect, the pragmatic turn is reflected in enactivist theories of cognition.[3] In particular, on a historical-theoretical level, pragmatist authors are seen as forerunners, at least in part, of enactivism. Peirce, James, Dewey, and Mead's theories are, in fact, largely consistent with the enactivist arguments that cognition is a matter of dynamical regulation between brain, body, and environment. Indeed, many authors agree that the roots of enactivism lay not only in phenomenology but also in pragmatism.[4] In fact, as for phenomenologically inspired enactivism,[5] a pragmatist non-reductionist approach to cognition allows not only the rethinking of the meaning of mind and brain, but the very concept of nature, not accepting a mechanistic definition of nature as presupposed by science.

Among the enactivists, Shaun Gallagher highlighted on various occasions the contribution that pragmatists and neo-pragmatists can make to cognitive science,[6] maintaining that pragmatism supports an integrative approach to cognition which strengthens the enactivist-extended model on several points.[7] In particular, by deepening Dewey's theory of organic circuit as well as his notions of "situation" and "organism-environment", he argues that they offer a way to elaborate a theory of the extended mind based on enactivist principles. Accordingly, nature can only be understood through the cognitive capacity we have to investigate it, namely through experiencing our transactions with it.[8] This capacity calls into question a teleological perspective on the organic relation between organism and environment, in which the thinking process is only one of several remarkable processes of embodied experience, whose main principle is continuity. It is in the continuity of experience that cognitive operations grow out of organic activities. Moreover, the conceptual tool of the organism-environment relationship helps to alleviate the tension between enactive, embodied, and extended cognition as it highlights the intertwining of mind, body and world in action, and the emergence of "higher" cognitive functions from perceptual, motor and affective functions.[9] In his analysis, Gallagher also took into consideration the work of William James both in *The inordinance of time* (1998) and, more recently, in an article in which he examined James' concept of the "warmth and intimacy" of bodily self-consciousness. In particular, the 1998 volume compares James' notion of time with Husserl's, contending that though both authors agree in attributing to consciousness a temporal structure, James' account of the specious present falls into a "cognitive paradox," for it involves the idea that succession can only be represented in momentary simultaneity. Husserl, on the other hand, escapes the paradox thanks to his concept of intentionality. *The body in social context* (2012) examines James' concept of the "warmth and intimacy" of bodily self-consciousness related to recent attempts to reformulate bodily self-consciousness in strictly neural terms, and argues that both James' and neuroscience's perspectives ignore the social aspects of the self and the role they play in accounting for bodily self-awareness and its various perturbations.

Gallagher focuses more on dissonances than on similarities between his and James' proposals. Admittedly, James did not pay much attention to the notion of "situation" and to the role that organism-environment interaction plays in cognition compared to other pragmatists, such as Dewey and Mead.[10] Nevertheless, my claim is that upon closer examination, there are many elements that testify to a possible Jamesian legacy in Gallagher's enactivism. Considering the possible synergies between James and Gallagher, I will argue, can provide an enriched conception of enactivist philosophy.

In what follows, I outline some similarities in their perspectives. In particular, assuming that the issue of representation in cognitive systems provides a valuable starting point and testing ground in order to verify James' valuable contribution to enactivism, I argue that there is a considerable degree of similarity between Gallagher's and James' non-representational models of direct perception. To do so, I compare Gallagher's Husserlian-inspired theory of intrinsic time and James's theory of time and spatial perception. This theory is part of James' psychological functionalism, which he summarized in the masterpiece *Principles of psychology* (1890). In particular, assuming an evolutionary, strongly anti-dualist, non-reductionist naturalism,[11] James's functionalism

claims continuity between action, perception, cognition, arguing that perception and cognition are part of the more comprehensive motor process involved in action.[12] I then maintain that James' theory of action and causality might be considered a kind of forerunner of Gallagher's enactivism. Moreover, I maintain that James' functionalist conception of "space-*relations*" can contribute to further highlight the strict connection of relations and direct perception, and to avoid any recourse to models of unconscious inference in perception, thus contributing to get a better enactivist account. In more general term, my claim is that through a combination of Jamesian non-representational functionalism and Husserlian-inspired theory of retentional-protentional structure, it is possible to strengthen the theoretical assumptions of enactivism, integrating elements taken from phenomenology with Jamesian pragmatic aspects.

1 Gallagher's embodied non-representational model of action

Among the seven background assumptions that characterize the enactivist approach, according to Gallagher, one is about the non-representational nature of cognitive processes.

> Cognitive processes acquire meaning in part by their role in the context of action, rather than through a representational mapping or replicated internal model of the world.[13]

This assumption correlates to Gallagher's rejection of the need to resort to any form of representationalism, even minimal, for any account of action. Chapter 5 of *Enactivist Interventions* is entirely dedicated to contending that representation plays no role in any aspect of the action as deliberation, planning, or expression of intentions, and that successful learning and action require neither propositional mental representations, nor semantically interpretable brain representations.[14]

In order to illustrate his argument, Gallagher takes into account some models of minimal representations – including Rowlands' pre-intentional acts (PIAs) and Clark and Grush's Minimal Robust Representation (MRR). He points out that they face the same problematic issue, namely: once we attribute to minimal representations the decouplability constraint according to which we can take them "offline" and imagine or remember an action or context, we are saying nothing about representation *in action.*[15] In claiming that the MRR, for instance, is decoupleable, Clark and Grush characterize it as an inner state which is independent of constant physical linkages with the extra-neural states and which is involved in the neural circuitry used for predictive purposes in a forward emulator.[16] However, according to Gallagher, it is difficult to understand how a constituent part of the action, such as the motor control aspect can be considered as independent from the object or situation it represents. In other words, to think that anticipations emulated can be separated from perceptual and proprioceptive input involve a decoupled process.

> To think that the anticipatory emulator involves a decoupled process is to think that such anticipations can be detached from perceptual and proprioceptive input, which they clearly cannot be.[17]

Now, if an emulation process does not work representationally in action, why should the same process become representational when performed offline? The same is true with Rowlands' PIAs and his interpretation of decouplability as a form of misrepresentation, according to which if something is representational, it can misrepresent the object or situation from which is decoupled.[18] More specifically, PIAs are deeds, namely acts that have a purpose for intentional action and that can have representational status. However, they are not representational in exactly the same way that internal representations are. They satisfy almost the same constraints of internal representations, namely «informational, normativity, misrepresentation, decouplable, and combinatorial constraints», but not the explanatory constraint.[19] In effect, deeds do not play a role in explaining (producing, guiding) behavior because they *are* behavior.[20] For Rowlands, normativity, misrepresentation, and decouplability constraints are strictly intertwined. In particular, the decouplability condition is derivative upon the misrepresentation condition in the sense that it is merely a way of stating that condition: when the agent misrepresents something, the PIA (or deed) is said to be decoupled. And for the same reason that deeds satisfy the normativity constraint, having a history that provides them with a function by which they are typed independently of the specific nature of their immediate environment (though not of their environment in general), they should also satisfy «the relevant form of the decouplability».[21] In other words, deeds are decouplable because they can misrepresent what *ought* to be done.[22]

According to Gallagher, however, it is not clear that decouplability can be reduced to misrepresentation. In fact, assuming that misrepresentation is a way of being decoupled from action does not imply that all forms of decoupling are misrepresentations. For example, someone may imagine an action that he should not do; if that involves a decoupled "directive" representation (as someone like Millikan would say), this does not mean that he would be misrepresenting anything.[23]

In more general terms, Gallagher maintains that representationalism is just «a scientifically abstract way» to think about the action process and that representation is just «a concept under

which one still needs all the explanation to be made».[24] So that whatever can be regarded as representation is the result of an *interpretation*. Moreover, it is not an interpretation made by the acting agent but rather by the scientist making an abstraction from the neural, motor systems. In the case of MRR, for instance, we have what James already indicated as the psychologist's fallacy,[25] according to which the representationalist confuses her own standpoint with that of the (neural, motor) systems about which she is making her report, even though the brain, the agent, and the scientific observer are three perspectives that are not entirely congruent in their relations with the environment, and in their causal mechanisms. The rejection of representationalism may also involve a pragmatic argument, according to which, given the great confusion surrounding the notion of representation, it turns out to be much easier to explain action in non-representationalist terms. And if the phenomenon of action can be explained in non-representationalist terms, the concept of representations is then at best redundant.[26]

Gallagher, hence, proposes to replace representation by «a form of dynamical perception/affordance-based online intelligence»[27] embedded in an extended-body-environment system that generates action through complex causal interactions. In particular, he maintains that the agent's acquired skills are retained not as representations but as dispositional embodied responses to the solicitations of environmental situations. Our subpersonal processes are hence shaped by the relevant aspects of the environment in which our intentional life is keyed, so the "frame problem" is, in this sense, solved by intuitive and emotionally informed responses rather than by a network of representations.

This perspective might also solve the difficulties related to Rowlands' constraint of decouplability as a form of misrepresentation. We can get things wrong on a non-representational affordance model not because our representation of the world misrepresents it, but because the world itself is ambiguous in the light of the particular perspectives from which it appears to us. Gallagher uses the example of climbing a mountain. A mountain can appear to me climbable from a particular perspective and distance, whereas, once I get closer to it, I discover that it is not climbable. From a representationalist view I explain that my original representation of the mountain was wrong. On the contrary, on the embodied non-representationalist view, I discover that from a different perspective, i.e., a difference in the details of how I am coupled to the environment, I am able to more finely attune to climbing possibilities relative to my embodied skills. This does not mean that a representationalist cannot provide a representational description of the same situation, but that it is redundant since the non-representational dynamical account tells us everything important. If the landscape in front of me affords me the opportunity to act, then the situation – that is, the system that includes both neural and extra-neural elements – is «already organized for action and there seems no reason to reduplicate it representationally».[28]

Part of what explains the organism-environment attunement involves a temporal/dynamic retentional-protentional structure, namely a coherent trajectory that is held together in the perception-action structure through an online pragmatic retentional maintenance of the relevant aspects of the experienced environment, a protentional aspect as an implicit feature of my end-oriented immediate interaction with the environment, and the evolving movements forming the dynamic state of the system. In other words, if perception and cognition are enactive, then their intrinsic temporal structure should be such as to permit this enactive character.[29]

2 Husserlian-inspired "intrinsic temporality"

The notion of the retentional-protentional structure, also referred to as "intrinsic temporality",[30] comes to Gallagher from the Husserlian concept of the "living present",[31] which denotes a form of ordering of experience without which nothing could be perceived, as well as «a timelessness of form in which time is constituted».[32] Accordingly, Husserl distinguishes three momentary aspects of an enduring act of consciousness:[33] *primal impression* that allows for the consciousness of an object simultaneous with the current phase of consciousness; *retention* that retains previous phases of consciousness and their intentional content; *protention* that anticipates experience which is just about to happen.

As Husserl argues in his 1905 *Lectures on the Phenomenology of the Consciousness of Internal Time*, the immediately experienced present is based on a *primary impression*, namely «something absolutely unmodified» and

> over against which there stands the continuum of modifications in primary memorial consciousness [i.e., retention].[34]

The primary impression is then the primal source of all further consciousness that passes over into retention and extends. It forms the "rough" now[35] within which a "finer" now is distinguished from degrees of the immediate past and future surrounding it as *fringes*, circumstances fused to the contents of perception.[36] As he puts it:

> if we relate the use of the word "perception" to the differences in givenness with which temporal objects present themselves, the antithesis of perception is the primary memory and the primary

> expectation (retention and protention) that occur here; in which case, perception and nonperception continuously blend into one another. [...] if we call perception the *act in which all "origin"* lies, the act that *constitutes originally*, then *primary memory* is *perception*. For only in primary memory do we see what is past, only in it does the past become constituted – and constituted presentatively, not re-presentatively.[37]

Gallagher notes, however, that in the *Bernauer Manuskripte* (1917-1918), Husserl changed his mind about primal impression. If in 1905 he considered the primary impression as a starting point to define retention and protention, in the *Bernauer Manuskripte* he considers it as

> the point of intersection between the retentional and protentional tendencies that make up living present.[38]

More specifically, as highlighted by Gallagher, the point of departure for Husserl's analysis in the *Bernauer Manuskripte*, rather than the primal impression is the current protensional anticipation that has yet to be realized. The primal impression is conceived as the fulfillment of a previous protention so that the present now consists of a protentional completion. Gallagher also notes that occasionally Husserl does not even mention the primary impression.[39] He furthermore points that although, on the one hand, the notion of an isolated primal impression seems to be merely an abstraction, on the other hand, there must be something like a limit or division between the aspects of retention and protention that characterize our experience, though they need to be differentiated.

Analyzing the *Bernauer Manuskripte*, we find that the originality of the "present now" is reprogrammed in a more complex form than in the 1905 lectures, by the consideration that the "present now" is such only under the "past nows".[40] Husserl focuses here on the modifying continuum created by the continuous crossing of retentions and protentions. This is also evident in his reiterated use of terms like *continuum* and *interrelation /intertwining* [*Verflechtung*].[41] The word *Verflechtung*, in particular, plays a key role for the dynamic and genetic perspective in which retentions and protentions exert their influence on the "present now" and on each other, and from which the temporal course is constituted as a process dominated by passive tendencies and anticipations.[42]

Gallagher, however, prefers to replace Husserl's notion of "primal impression", that he identifies with "primal presentation", with the term "primal enaction" to point that consciousness is not a passive impression even in its seemingly most basic aspect. In particular, with "primal enaction" Gallagher means to signify «a process that begins as the very basic activity involved in the initial moment of any particular action, and continues as the ongoing point of action actuality».[43]

The protention-primal enaction-retention model applies to action and non-conscious motor processes, as well as to consciousness. It relates to non-conscious motor processes of the retentional aspect of body schema and the anticipatory aspects of motor control.[44] Based on the retentional-protentional structure, the organism is capable of organizing its behavior temporally, keeping track of how previous movements have brought it to its current state. More specifically, a conscious sense of movement is generated[45] through the action which has a unity in time recognised and integrated into the intentional structure of the action itself. This unity is composed of the retentive tracking of the details of the body and environment experienced by the subject as part of the structure of the action in progress and of the protensional anticipation that indicates the direction of the action towards its completion.[46] Thence, a ubiquitous intrinsic temporality characterizes human experience and action. Temporal order is the product of a retentive function that orders information according to a pragmatic scheme, and allows the emergence of action and our consciousness of action thanks to the concurrent participation of distributed regions of the brain and their sensorimotor incorporations.

The integration of different neuronal correlations involves a process of integration of different scales of duration directly relevant to the protensional processes of intrinsic temporality. Gallagher takes up Varela's distinction to identify three relevant timescales: (1) The elementary timescale, measured in milliseconds, which corresponds to neurophysiological processing; (2) The integration timescale, measured in seconds, which corresponds approximately to the living present; (3) The narrative timescale, measured in durations greater than the living present, which corresponds to the narrative identity of the self and involves semantic and episodic memory.[47]

Within the elementary timescale, the intersensory integration across sense modalities with different processing times takes place. At the integration scale these subpersonal processes are integrated through the mechanism of synchronization of mutual connections between separate brain regions, organized in dynamic networks. Phenomenologically, the integration scale corresponds to the "living present", the level of a fully constituted cognitive functioning; at the motor level it corresponds to a basic action.[48]

3 The perception of time and space. James's anti-representationalism between Husserl and Gallagher

Now, Gallagher's Husserlian-inspired concept

of retentional-protentional structure is fully consistent with James' analysis of internal perception of time developed in chapter XV of *Principles of psychology* (1890) and perception of space extensivity developed in chapter XX.[49] To better understand this affinity, it is useful to look at the distinction that James makes in his *Principles* between perceptions and concepts as, respectively, referring to sensations and images as far as simple objects are concerned. While "concept" is a synonym of all that is mediated, the term "perception" stands for what is immediate or simply perceived, namely for sensation, feeling and intuition and expressions such as sensory experience. Sensations are continuous, while concepts are discreet as regards their meaning.

Almost twenty years later, in *Some problems of philosophy* James still contends that the characters of perceptual stream are «duration, intensity, complexity or simplicity, interestingness, excitingness, pleasantness or their opponents».[50] Back to the *Principles*, the experience of time and space is already given in the unity of perceptual process, within which attention discriminates the interrelated parts. This means that conscious perceptions are supposed to respond to changes in the brain stimulated by environmental forces are supposed to respond to the changes of the brain awakened by outer forces. The original experience of space and time is always of something already given as a unity, within which attention afterwards discriminates the parts in relation to each other.[51]

We therefore have a direct acquaintance with the world around us, our process of knowing is rooted in the world, and we feel a native sensory *intimacy* with it – against any intellectualistic attempt to introduce radical distinctions – like abstractions and representations. In other words, the first kind of knowledge we experience is the *direct presentation* of things to our perception, an experience that we have personally, and that is the only knowledge we can have of the world and its relations. Sensations are rich enough to be organized to form an orderly world. The immediate sense of time is thus what allows us to have the sense of projection and retrospection in the continuity of time: it is a *flow* of time related to our feeling of some concrete form of *changing process* – «an outward or inward sensible series, or a process of attention or volition».[52]

This flow of time is what James calls the *specious present*, namely the experience of a *duration block* as a synthetic datum composed of a «vaguely vanishing backward and forward fringe».[53] On this point, Husserl agrees with James' idea of the practically cognized present as not like a "knife-edge", but rather like a "saddle-back" that has a certain breadth on which we sit perched, and from which we look in two directions into time.[54] He argues that a duration cannot even be posited «without the presence of intentions aimed at the temporal context».[55] And the temporal context is the "living present", in which what James called the "stream of consciousness" is given. Although James's concept is not explicitly called into question, it does run through Husserl's following words:

> the life of consciousness flows continuously and does not merely piece itself together link by link into a chain. Rather, everything new reacts on the old; the forward-directed intention belonging to the old is fulfilled and determined in this way, and that gives a definite coloring to the reproduction.[56]

Drawing all this back to Gallagher, we may see in his structure of action composed of the retentive tracking of body and environment's features a sort of "perspective projection" of the past elements upon the perception-action structure.[57] This structure involved the perception of succession as part of body-schematic processes in which the current motor state is charged with a retentional component that dynamically organizes sensory-motor feedback.[58]

However, following James, it is not possible to solve the "mystery" of time cognition only relying on how a succession of external changes affects the brain. This reductionist view, in fact, still stands on the doorstep of cognition. One can certainly describe the duration in neural terms as «a cumulation of brain-processes overlapping each other, of which the fainter ones are dying phases of processes which but shortly previous were active in a maximal degree», so that together with events' duration form our intuition of the specious present with its content.[59] Nonetheless, it cannot be inferred from this description that the intuition of the specious present is the result of brain processes alone, it can merely state «the most *elemental* form of the psycho-physical conjunction».[60]

Consistent with this idea is Gallagher's claim that dynamic temporal integration does not necessarily preserve an objective linear sequence reflecting neural events. The processes that define the scale of integration correspond more to the living present, which indicates, in a way «very similar to James's notion of the specious present», a time span that integrates some ongoing indeterminate elemental processes.[61] In the specious present, contents are in constant flux, so that an event directly perceived as immediately past and the same event remembered at a later moment are not the same psychic fact. Although it depends upon cognitive functions, the specious present does not have to represent succession simultaneously. Perception depends on the persistence of sensations, however, there is the possibility to perceive a succession of events in a duration that is not necessarily cogni-

tively paradoxical for it does not require a durationless act of consciousness. This process might be better explained referring to James's distinction between *sciousness* and *con-sciousness.*[62]

Sciousness is what we perceive directly through the physiological adjustments as well as the sense-consciousness of our present body. Thus, each part of the perceived succession can be regarded as a bit of *sciousness* (or immediate knowledge), which as part of the anticipatory process of the next "bits of sciousness" is accompanied by a certain emotional *feeling.*[63] The vague aspect of this duration is difficult to reproduce in conceptual terms. On this point, again, Husserl is very close to James in arguing that the progressing retention in a living fading away cannot be modalized.[64] Perception is also determined by the anticipatory intentions which are concordantly harmonizing and sense-giving.[65] Accordingly, protention is an anticipatory meaning to be interpreted «as an *intentio* directed into the future», whether it is a projection of an ego or an egoless tendency toward what is arriving from the future.[66]

Now, if according to James the perception of time's flow depends on our *sciousness* of a changing process, what about our perception of moving body? Analogous to time's flow, a body movement is a change, a process, and our first temporal and spatial acquaintances are synthetic.[67] In chapter XX of the *Principles*, James describes spatial extensivity as a sensational element given together with our actual experience. In this perspective, he aims to offer an exhaustive description of original space sensations in sensationalistic terms. His idea that when we change the direction of attention there are certain quasi-motor sensations in our head that seem to involve three dimensions[68] may be echoed by Gallagher's claim that reality out there is *ambiguous* in the light of the particular perspectives from which it appears to us. Related to this idea is James' description of *real space*, an interesting topic that would contribute to enactivism. In particular, for James, an extensive quality characterizes sensations in the shape of a primitive, vague, undetermined, and unordered simple total vastness.[69] The problem of ordering our feelings in space is in the first instance a problem of distance and direction. This orientational conception, besides getting really close to enactivism, is strictly related to the Jamesian category of space-*relations*.

Unlike Helmholtz (1867), a forerunner of the contemporary Bayesian paradigm of active inference, according to which the mind would interpret and evaluate sensations through a sort of "unconscious inference", James maintains that spatial relations are facts of the same order with the facts they relate and that except for relations of magnitude, all other spatial relations are pure sensational objects.[70] In other words, there is no unconscious reasoning in perception;[71] instead, the nature of relations is strictly connected to James' idea of direct perception, that is, the continuity existing between our psychological functions and our dealings with the natural and social environment. This continuity is at the roots of the anticipatory mechanisms in the sensory-motor systems.[72]

We can paraphrase Gallagher saying that neither space-*relations* nor *relata* are discrete or decouplable in the body-schematic processes.

4 Action and causality. James' non-reductionist enactivism

Moving a step further, Gallagher's enactivist non-representational model, according to which «subpersonal body-schematic processes operate on the same dynamical model reflected in experience»[73] seems to be in line with James' idea that our relations to the world are sensibly *felt*. Our feelings, for James, are our way of grasping reality, and sensations and perceptions are our bonds with concrete reality, they are what put us directly in contact with the world. Our consciousness is to a certain extent coincidental with perception, that is, with «what we are paying *attention* to and all the *fringes* we sensibly *feel* and mnemonically *imagine* around us».[74] In other words, the raw materials of the reality, though not available to be reconstructed through inner representations and logical inferences, are affectively connected to our spatial relationship with our natural and social world.[75] There is no original internal division between perceptual and nonperceptual experiences. Rather, in its passing, the immediate experience is «*something to act on*, at its own movement».[76]

In this perspective, action turns out to be a core issue in James' *Essays in radical empiricism.*[77] Against the inferentialist perspective, in *The experience of activity*, James aims at tracing the original meaning of activity back to our concrete experience of activity. More specifically, he focuses on complex activity-situations arguing that part of the activity already has a defined direction, it comes with a desire and a sense of goal, and it is complicated by difficulties that it overcomes or succumbs to, and «with the efforts which the feeling of resistance so often provokes».[78] It is clear that the matrix of our conception of activity is perceptual, and relies on the experience of how an activity is concretely performed. For this reason, he argues that in the experience of activity the *percipi* is the *esse*. There is a complete activity in the agent's original and first intention as well as in his feeling.[79] Among the consequences of James' hypothesis of the perceptual stream is a reduction of the nucleal self to a collection of physiological minimal reflex activities and of the body as the center of the world experienced:

> The world experienced (otherwise called the "field of consciousness") comes at all times with

> our body as its center, center of vision, center of action, center of interest. Where the body is is "here"; when the body acts is "now"; what the body touches is "this"; all other things are "theres" and "thens" and "that's". These words of emphasized position imply a systematization of things with reference to a focus of action and interest which lies in the body; and the systematization is now so instinctive (was it ever not so?) that no developed or active experience exists for us at all except in that ordered form. So far as "thoughts" and "feelings" can be active, their activity terminates in the activity of the body, and only through first arousing its activities can they begin to change those of the rest of the world. The body is the storm center, the origin of coordinates, the constant place of stress in all that experience-train. Everything circles round it, and is felt from its point of view. The word "I", then, is primarily a noun of position, just like "this" and "here". Activities attached to "this" position have prerogative emphasis, and, if functions have feelings, must be felt in a peculiar way. The word "my" designates the kind of emphasis. I see no inconsistency whatever, in defending on the one hand "my" activities as unique and opposed to those of outer nature, and on the other hand in affirming, after introspection, that they consist in movements in the head. The "my" of them is the emphasis, the feeling of perspective-interest in which they are dyed.[80]

This long quote shows what may be called James' embodied, embedded, and enacted theory of action and perceptual causality. According to James, causality is one of the forms in which the perceptual continuity of our experience is manifested. On the perceptual level, concrete causal relationships are «the way some fields of consciousness introduce other fields»,[81] namely the co-conscious transition.[82] His perceptual view of causality does not deny the possibility of perceptual errors that are usually made, for example, when we attribute a direct causal power to certain things without considering all the more complex chains of causal succession.

Just like Gallagher, James disputes direct causal linearity which, especially in living organisms, is very difficult to verify. Therefore, it would be a fallacious argument to infer from errors due to perceptual localization that perceptions are entirely false.

The meaning of causality goes back, according to James, to the original perceptual experience of a personal activity-situation. In the construction of activity, he argues, the primary agent is taken as the most real causal agent, the one responsible for the action, but the problem is to identify what the most primary agents are. As mentioned, in actions performed by living organisms, chains of causal succession are complex, so it is quite difficult to identify the real primary agents. This is the case, for instance, for actions underpinned by processes of brain cells whose excitation activate in advance of the visible performance of action, as shown by Libet's well-known experiments on free will.[83] But James' aim is to clarify how the recognition of the 'real' causal agent is based on assumptions that, for the current state of science, are not supported by unquestionable scientific evidence. On the contrary, they are based on assumptions that condition any interpretative choices.

What is the practical difference if I say that certain nerve cells are active in producing the activity, instead of naively saying that *I* act, or that action is the result of a conflict between ideas? Commenting on the physicalist perspective, according to which nerve cells are causal agents and the consequent motor discharges are the action performed, James maintains that activity as the overall result of this process is indifferent to the brain agent. There is no guarantee that given the same causal agent, similar results will be repeated in the future. Brain cells are part of the causal process, but James contends that they cannot be considered as the exclusive causal agent:

> My mistakes, impotencies, perversions, mental obstructions, and frustrations generally, are *also* results of the activity of cells.[84]

James' argument does not aim to delegitimize the physicalist perspective; rather, he stresses that the continuity we perceive in our activity is not easily demonstrated at the physiological level of analysis. Many causal sequences – neural, muscular, and *instrumental* – that remain entirely unknown to perception should be taken into account.

On this issue, James anticipates Gallagher's criticism of the interpretations of Libet's experiments. Libet shows that before conscious intention appears, voluntary acts are initiated by unconscious cerebral processes and that motor action and the sense of agency depend on neurological events happening before our conscious awareness to decide or to move.[85] Free will would be the exercise of inhibition of action, taking place during the approximately 150 milliseconds of brain activity after we become aware of our decision and before we move.[86] Gallagher argues that the problem of mental causality, as stated by Libet, leads us to explanations that are elaborated in representational terms of beliefs and desires, i.e. in processes that are best characterized in terms of a space of reasons.[87]

More specifically, Gallagher argues that the common understanding in theories that support an epiphenomenal perspective of free will can be traced back to what we have learned about motor control of the body. In a very Jamesian mood, he then distinguishes two questions underlying this common understanding but requiring two different answers. With respect to movement or locomotion,

the first question is *how* does our motor control work? The second question is *where* shall we go? As Gallagher maintains, while the best answers to the question of motor control indicate that most control processes happen at a «subpersonal, unconscious level in the elementary timescale»,[88] the second question concerns free will and requires a different answer. Any decision to move is already influenced by the agent's initial conscious decision to achieve an end in view – which in Gallagher's example is to catch a lizard for the lizard collection. In this example, action is not well described in terms of making bodily movements, but rather as attempting to achieve an end. The latter spans over a larger timeframe than the Libet's experimental framework of milliseconds. In Libet's setting, anticipations are part of the online process of action, and as such they register the trajectory of the action from present to future:

> I suggest that the temporal framework for the exercise of free will is, at a minimum, the temporal framework that allows for the process to be informed by a specific type of consciousness. This consciousness is not the sort described by the reflective theory, according to which my reflective regard would be focused on how to move my body in order to achieve a goal. I am not at all thinking about how to move my body – I'm thinking about catching the lizard. My decision to catch the lizard is the result of a consciousness that is embedded or situated in the particular context defined by the present circumstance of encountering the lizard, and the fact that I have a lizard collection. This is an embedded or situated reflection, neither introspective nor focused on my body. It is a first-person reflective consciousness that is embedded in a pragmatically or socially contextualized situation.[89]

Gallagher's explanation of causal action perfectly fits with the aspects of the Jamesian view of activity we have stressed. For James, the very nature of consciousness is impulsive and, in a non-representational fashion, action is «the natural immediate effect of feeling [...]. It is so in reflex action, it is so in emotional expression, it is so in voluntary life».[90]

5 Conclusions

A combination of James' psychology and enactivist perspective to multi-level cognition contributew to strengthen the theoretical assumptions of enactivism. Both in his psychology and in his philosophy of mind, James denied the ontological mind-body dualism, accepting instead a «*functional* dualism of consciousness and content».[91] His idea of the synthetic unity of time-space succession, which he could draw from his account of the psychological continuity between *sciousness* and *consciousness*, aimed to preserve real continuity between perception and consciousness in action. He committed himself to show how perceptions and concepts are intertwined in our ordinary experiences and what risks are involved in excluding the somatic-physiological component from any understanding of activity. However, he also strongly challenges the physicalist view for which everything concerning action can be understood by referring to neural activation.[92]

Both James and Gallagher focus on the problem of explaining how we are dynamically coupled to the world. Their perspectives make it possible to acknowledge consciousness and the nervous system as interacting phenomena and to maintain the complexity of their relationships with environment. Thanks to their methodological pluralism, both James and Gallagher allow an integration of different perspectives: physicalist, mentalist and phenomenalist. James' pluralistic methodological approach is updated in Gallagher's postulate of the embodied mind analyzable from both a first-person perspective – through which the phenomenological nature of the lived body is considered– and a third-person perspective – through which the brain-body-environment unit is explained.

Furthermore, James' description of "space-*relations*" offers to Gallagher's perspective something that can contribute to advance his enactivism. In fact, highlighting the strict connection of relations and direct perception, James maintains that a continuity exists between our psychological functions and our dealings with the natural and social environment, and this continuity is at the roots of the anticipatory mechanisms in the sensory-motor systems. Going the other way, what we find in contemporary enactivism that is missing in James (at least as a point of emphasis) is social or intersubjective interaction – something that Dewey and Mead does offer, and what Gallagher focuses on in his works.

Notes

[1] Cf. B. VON ECKARDT, *What is cognitive science?*; P. GODFREY-SMITH, *Complexity and the function of mind in nature*; T. ROCKWELL, *Neither brain nor ghost: A nondualist alternative to the mind-brain identity theory*; M. JOHNSON, *The meaning of the body: Aesthetics of human understanding*; M. JOHNSON, *Embodied mind, meaning, and reason: How our bodies give rise to understanding*; R. MENARY, *Cognitive integration: Mind and cognition unbounded*; S. GALLAGHER, *Intersubjectivity in perception*; S. GALLAGHER, *Philosophical antecedents to situated cognition*; S. GALLAGHER, *The body in social context: Some qualifications on the "Warmth and Intimacy" of bodily self-consciousness*; S. GALLAGHER, *Pragmatic interventions into enactive and extended conceptions of cognition*; S. GALLAGHER, *Enactivist interventions: Rethinking the mind*; A. CHEMERO, *Radical embodied cognitive science*; A.K. ENGEL, *Directive minds:*

How dynamics shapes cognition; J. SCHULKIN, P. HEELAN, *Action and cephalic expression: Hermeneutical pragmatism*; J. SCHULKIN, *Pragmatism and the search for coherence in neuroscience*.

[2] A.K. ENGEL, A. MAYE, M. KURTHEN, P. KÖNIG, *Where's the action? The pragmatic turn in cognitive science*, p. 206. The various versions of the pragmatic turn can be traced back to two main interpretative lines about cognition. A reductionist physicalist interpretation of the pragmatic turn based on neuroscientific and artificial intelligence studies. The most distinctive feature of this interpretation is the findings in support of the need for a «radical change in how we conceive of the functional significance of neural activity patterns» (*ibid*., p. 206). And a non-reductive naturalistic interpretation of the pragmatic turn that embeds action, perception, affection, and cognition in a holistic view of brain, body, and environment. For a recognition of the first interpretation line cf. J. SCHULKIN (ed.), *Action, perception and the brain*; A. K. ENGEL, K. J. FRISTON, D. KRAGIC (eds.), *The pragmatic turn. Toward action-oriented views in cognitive science*. For the other perspective cf. R. MADZIA, M. JUNG (eds.), *Pragmatism and embodied cognitive science*; R. MADZIA, M. SANTARELLI (eds.), *Pragmatism, cognitive science and the sociality of human conduct*.

[3] For an overview of the varieties of enactivism cf. D. WARD, D. SILVERMAN, M. VILLALOBOS, *Introduction: The varieties of enactivism*.

[4] Cf. M. JOHNSON, *The meaning of the body: Aesthetics of human understanding*; E.A. DI PAOLO, M. ROHDE, H. DE JAEGHER, *Horizons for the enactive mind: Values, social interaction, and play*; R. MENARY, *Our glassy essence: The fallible self in pragmatist thought*; E.A. DI PAOLO, T. BUHRMANN, X.E. BARANDIARAN, *Sensorimotor life: An enactive proposal*; S. GALLAGHER, *Enactivist interventions: Rethinking the mind*.

[5] Cf. F.J. VARELA, E. THOMPSON, E. ROSCH, *The embodied mind: Cognitive science and human experience*; E.A. DI PAOLO, *Autopoiesis, adaptivity, teleology, agency*; E. THOMPSON, *Mind in life: Biology, phenomenology and the sciences of mind*; S. GALLAGHER, D. ZAHAVI, *The phenomenological mind. An introduction to philosophy of mind and cognitive science*.

[6] Cf. S. GALLAGHER, *Enactivist interventions*; S. GALLAGHER, *Pragmatic interventions into enactive and extended conceptions of cognition*; S. GALLAGHER, *The body in social context*; S. GALLAGHER, *The inordinance of time*; S. GALLAGHER, K. MIYAHARA, *Neo-pragmatism and enactive intentionality*.

[7] Cf. S. GALLAGHER, *Enactivist interventions*, p. 60.

[8] Cf. S. GALLAGHER, *Philosophical antecedents to situated cognition*.

[9] Cf. S. GALLAGHER, *Timing is not everything: The intrinsic temporality of action*. On Dewey and enactivism cf. also M. CRIPPEN, *Dewey, enactivism, and greek thought*; M. JOHNSON, *Cognitive science and Dewey's theory of mind*.

[10] This does not mean that he entirely underestimates the social dimension. Just consider the role played by the "social self", in the consciousness of Self (W. JAMES, *Principles of psychology*, pp. 281-283) as well as his definition of "habit" as «the enormous fly-wheel of society» (*ibid*., p. 125), or the notion of "activity-situation" in *The experience of activity* (in W. JAMES, *Essays in radical empiricism*, pp. 79-95).

[11] Cf., among others, C.D. GREEN, *Darwinian theory, functionalism, and the first American psychological revolution*; R.M. CALCATERRA, *William James's naturalism within the common project of pragmatist philosophy*; C.E. BUXTON, *American functionalism*, pp. 113-140.

[12] James' functionalism was later developed by the representatives of the Chicago School of functionalism, John Dewey, George Herbert Mead and James Angell (cf. J.R. SHOOK (ed.), *The Chicago school of functionalism*). It has to be noted that Jamesian-inspired functionalism differs from the functionalist theories developed since the 1950s in the philosophy of mind. Though there are a number of differences among functionalist theories, all focus on mental states, assuming that they are determined as such by the role they play in the cognitive system of which they are part, and in particular by their causal relations to sensory stimulations, to each other, and to behavior (for an introduction to the different versions of functionalism see J. HEIL, *Philosophy of mind. A contemporary introduction*, ch. 6.; J. LEVIN, *Functionalism*, in: E.N. ZALTA (ed.), *The Stanford encyclopedia of philosophy*. For an overview about the debate on different versions of functionalism see N.J. BLOCK, *Functionalism*; N.J. BLOCK, *Troubles with functionalism*). Among the different versions of functionalism, that which is somewhat comparable to Jamesian-inspired functionalism is the one that can be called Fodorian-inspired psychofunctionalism, according to which mental states and processes are entities defined by their role in a cognitive psychological theory to be postulated by a scientific explanation of human behavior. But even if this theory has among its antecedents the psychological behaviorism that emerged out of the Chicago School of functionalism – John Watson, whose doctoral thesis supervisor was Angell, called his behaviorism «the only consistent and logical functionalism» (J. WATSON, *Psychology as the behaviorist views it*, p. 166) –, the difference with James' functionalism is profound. Among the many distinctions, the most important for the purpose of this article concerns the different approaches to "representation". Unlike Fodorian-inspired functionalism, which treats states of mind as mentalistic or semantic representations of reality (cf. J. FODOR, *Representations. Philosophical essays on the foundations of cognitive science*; K. STERELNY, *The representational theory of mind: An introduction*), James did not consider it relevant for experimental psychology to investigate the question of the representational nature of the mind, as it was a vestige of a psychology that focused on mental content rather than on psychophysiological processes related to afferent sensory stimulation.

[13] S. GALLAGHER, *Enactivist interventions*, p. 6.

[14] Cf. S. GALLAGHER, *Are minimal representations still representations?*.

[15] S. GALLAGHER, *Enactivist interventions*, p. 91. Gallagher's anti-representationalism is in line with the basic intuition of the different versions of enactivism, according to which action and perception are united without any representational mediation between them. This stance is actually much debated both outside of and within enactivism. In particular, the debate concerns both the possibility of admitting a representational nature of processes at the neural level, and the possibility of distinguishing between intention and mental representational ability. For instance, there are some authors who, while endorsing the basic intuition

of identity between action and perception, arguing that this unity is empirically corroborated, stress that perceptions do require some form of representational mediation (B. NANAY, *Empirical problems with anti-representationalism*; G. FERRETTI, M. ALAI, *Enactivism, representations and canonical neurons*). Other authors, on the other hand, try to maintain the anti-representationalist enactivist position by proposing to distinguish intentionality, understood as a characteristic of embodied organisms directed towards objects and states of affairs, from representation understood as a characteristic of mental states and their respective underlying mechanisms (T. SCHLICHT, *Does separating intentionality from mental representation imply radical enactivism?*). There are also authors who dismiss the issue of the representational nature of cognition by shifting the focus to predictive processing models of cognition that, while maintaining a mechanistic perspective of the brain, offer a new understanding of cognition in terms of a hierarchical predictive processing architecture (A. CLARK, *Whatever next? Predictive brains, situated agents, and the future of cognitive science*; K. FRISTON, *The free-energy principle: A rough guide to the brain?*; J. HOHWY, *The predictive mind*). It should also be mentioned that the debate between representationalists and anti-representationalists is often fuelled by a basic confusion about what is meant by representation (cf. K. AIZAWA, *The enactivist revolution*). We cannot deal with the various aspects of the debate here, yet it suffices to mention that the enactivists' anti-representationalist position is about the impossibility of admitting a representational nature of the neural processes that stand between action and perception.

[16] MMR is an inner emulator circuit which permits the identification «within the system specific states and/or processes whose functional role is to act as *decoupleable surrogates* for specifiable (usually extra-neural) states of affairs» (A. CLARK, R. GRUSH, *Towards a cognitive robotics*, p. 8).

[17] S. GALLAGHER, *Enactivist interventions*, p. 92.

[18] Rowlands' theory of deeds as representational (see M. ROWLANDS, *Body language*; M. ROWLANDS, *Representing without representations*) incorporates and synthesizes, somewhat, Clark's action-oriented representations (AORs) (cf. A. CLARK, *Representational trajectories in connectionist learning*; A. CLARK, *Being there: Putting brain, body and world together again*) and Dretske's Representational Theory (F. DRETSKE, *Naturalizing the mind*). In particular, deeds are «things we *do* rather than things that *happen to us*» (M. ROWLANDS, *Representing without representations*, p. 137). To better explain what he means with "deeds", Rowlands distinguishes between intentional, sub-intentional, and pre-intentional acts. While sub-intentional acts are non-intentional movements of which we are not aware and which serve no purpose connected to action (e.g., movements of tongs or fingers), pre-intentional acts (PIAs) are deeds, namely acts that have a purpose for intentional action. In other words, deeds are «things we do precisely because we have general antecedent intentions we wish to satisfy» (*ibidem*).

[19] M. ROWLANDS, *Representing without representations*, p. 142.

[20] *Ibid*., p. 140.

[21] M. ROWLANDS, *Body language*, p. 166.

[22] Rowlands follows Millikan's theory of pushmi-pulliu representations, according to which «misrepresentation is best understood by embedding the theory of intentionality within a theory of function that allows us to understand, more generally, what malfunction is» (R.G. MILLIKAN, *Pushmi-Pullyu representations*, p. 186).

[23] Cf. S. GALLAGHER, *Re-presenting representation*.

[24] S. GALLAGHER, *Enactivist interventions*, p. 106.

[25] W. JAMES, *Principles of psychology*, p. 196.

[26] Cf. S. GALLAGHER, *Enactivist interventions*, p. 106.

[27] *Ibid.*, p. 87.

[28] *Ibid.*, p. 98.

[29] Cf. S. GALLAGHER, *Action and interaction*, p. 34.

[30] *Ibid.*, pp. 25ff. Cf. also S. GALLAGHER, *Timing is not everything: The intrinsic temporality of action*.

[31] Cf. E. HUSSERL, *On the phenomenology of the consciousness of internal time* (1893-1917); E. HUSSERL, *Die Bernauer Manuskripte uber das Zeitbewusstsein* (1917-18); E. HUSSERL, *Analyses concerning passive and active synthesis.*

[32] E. HUSSERL, *Analyses concerning passive and active synthesis*, p. 486. The doctrine of time is perhaps Husserl's most historically important research, but also the most controversial, as pointed out by Wolfgang W. Fuchs. In particular, according to Fuchs' metaphysical understanding of Husserl's doctrine of time, which differs from Gallagher's more psychologistic interpretation, in his phenomenological research on time, Husserl actually contradicts the move he intended to make of this thought as in accord with the metaphysics of presence, revealing the co-primordiality of presence and absence within the ultimate strata of the constitutive process. See W.W. FUCHS, *Phenomenology and the metaphysics of presence. An essay in the philosophy of Edmund Husserl*, pp. 58-73.

[33] E. HUSSERL, *On the phenomenology of the consciousness of internal time* (1893-1917), p. 40. Cf. S. GALLAGHER, *Action and interaction*, pp. 27-29.

[34] *Ibid.*, p. 70.

[35] *Ibid*, p. 42.

[36] Cf. *ibid.*, p. 172. Fuchs pointed out that in primal impression we grant that "now" as an epistemological priority, that is as the source of every consciousness of a temporally enduring object. In other words, in primal impression the bodily presence of the object is given in bodily self-presence (cf. W.W. FUCHS, *Phenomenology and the metaphysics of presence*, pp. 64-65).

[37] *Ibid.*, pp. 42-43.

[38] S. GALLAGHER, *Action and interaction*, p. 34.

[39] See E. HUSSERL, *Die Bernauer Manuskripte uber das Zeitbewusstsein* (1917-18), p. 8: «Each constituting full phase is the retention of a fulfilled protention, which is the horizon boundary of an unfulfilled and for its part continuously mediated protention».

[40] *Ibid.*, pp. 11-15.

[41] *Ibid.*, pp. 6-8.

[42] See on this point also S. GALLAGHER, D. ZAHAVI, *Primal impression and enactive perception*. Fuchs highlights that Husserl contradicts himself, giving precedence to primary impression over retention, and subsequently pointing to retention as the living horizon of the now, so that the present and the past and the future are considered as coprimordial (cf. W.W. FUCHS, *Phenomenology and the metaphysics of presence*, pp. 68-70). A critical discussion of this interpretation by Gallagher and Zahavi can be found in C. HOERL, *Husserl, the absolute flow, and temporal experience*. Hoerl also argues for a representationalist reading of the structure of

temporal experience in Husserl.

[43] S. GALLAGHER, *Action and interaction*, p. 35.

[44] See S. GALLAGHER, *Time in action*, p. 423. In my opinion, however, as much as Husserl's vocabulary of the original source points and impressions remains unchanged, he implements an essential substitution of the term *Urimpression* by *Urpräsentation*, thus removing the unpleasant connotation of a passive frame of reality in the consciousness that the term *impression* can suggest and further approaching a phenomenologically-based enactivism. The *Urpräsentations* are linked to a double horizon of retentions and protentions, in a perspective within which the original impression continues to have an undisputed role as a constitutive centre. Both protentions and retantions assume a key role within the continuous modification of the retentional modification and, conversely, the effects of the retentions fall within the content determination of the protentions. In this new analysis, the *Urpräsentation* is not a rising nucleus of the consciousness of time, but a mere intersecting point where the continuum of reciprocal retentional and protentional changes intertwine/inter-relate.

[45] Cf. *ibid.*, p. 420. Cf. also A. BERTHOZ, *The brain's sense of movement*.

[46] Cf. S. GALLAGHER, *Enactivist interventions*, p. 99.

[47] Cf. S. GALLAGHER, *Action and interaction*, pp. 29ff.; F.J. VARELA, *Brain time, cognitive time*. On Husserl and Varela see S. GALLAGHER, *The past, present and future of time-consciousness: From Husserl to Varela and beyond*.

[48] Cf. S. GALLAGHER, *Action and Interaction*, p. 30: «An experiential event arises, flourishes, and subsides in the flow of consciousness in a structure that integrates experiential phases into and across cognitive acts and basic action activity. This is precisely where the retention/primal-impression/protention process does its work and forms an incompressible living present».

[49] In *Logical Investigations*, Husserl claimed that James helped his "release from the psychologistic standpoint" (E. HUSSERL, *Logical investigations*, vol. I, p. 324n). Since then, various authors have been interested in comparing their thoughts: A. SCHÜTZ, *William James' concept of the stream of thought phenomenologically interpreted*; A. GURWITSCH, *The field of consciousness*; B.W. WILSHIRE, *William James and phenomenology: A study of "The Principles of Psychology"*; J. WILD, *The radical empiricism of William James*; J.M. EDIE, *William James and phenomenology*; S. LEVINE, *James and phenomenology*. For an analysis of temporality in James and Husserl cf. H. ANDERSEN, R. GRUSH, *A brief history of time-consciousness: Historical precursors to James and Husserl*. For a perspective that instead focuses on Brentano's reading of Husserl and his position in the Stern-Meinong debate cf. M. SUMMA, *Spatio-temporal Intertwining. Husserl's transcendental aesthetic*, pp. 115-129.

[50] W. JAMES, *Some problems of philosophy*, p. 32.

[51] Cf. W. JAMES, *Principles of psychology*, p. 575.

[52] *Ibid*, p. 584.

[53] *Ibid,* p. 630.

[54] Cf. *ibid.*, p. 574. Cf. also J.B. BROUGH, *Translator's introduction*, p. xxviii.

[55] E. HUSSERL, *On the phenomenology of the consciousness of internal time* (1893-1917), p. 55.

[56] *Ibid.*, p. 56; see also, pp. 120-122.

[57] Cf. S. GALLAGHER, S., D. ZAHAVI, *The phenomenological mind*, p. 76. A perspective that is somewhat complementary to Gallagher's can be found in Fuchs' phenomenology of body memory, and in particular, in what he refers to as the procedural and situational forms of body memory. The procedural memory consists of sensorimotor and kinaesthetic faculties that, working in «the background without being noticed, remembered or reflected upon», allow the subject to select the sensory stimuli functional to performance by mediating the experience of familiarity and contiguity in the succession of events. Situational memory, on the other hand, extends the boundaries of implicit memory to space and situations that involve the subject (cf. T. FUCHS, *The phenomenology of body memory*, pp. 12-14. In line with Fuchs is Michela Summa's proposal to refer to Husserl's concept of *Typus* to indicate the synthetic connection of the sensitive data that make up the body memory (M. SUMMA, *Body memory and the genesis of meaning*).

[58] S. GALLAGHER, *Enactivist interventions*, p. 100.

[59] W. JAMES, *Principles of psychology*, p. 598.

[60] *Ibidem*.

[61] S. GALLAGHER, *Action and interaction*, pp. 31-32.

[62] W. JAMES, *Principles of psychology*, pp. 290-291.

[63] *Ibid.*, p. 582.

[64] E. HUSSERL, *Analyses concerning passive and active synthesis*, p. 156.

[65] *Ibid.*, p. 139. On this point cf. also F. J. VARELA, *The specious present: A neurophenomenology of time consciousness*.

[66] E. HUSSERL, *Analyses concerning passive and active synthesis*, p. 124. We find similar aspects in Gallagher and Varela's claim that protention involves a projective sense of what the subject is about to do or experience. Cf. S. GALLAGHER, F. VARELA, *Redrawing the map and resetting the time: Phenomenology and the cognitive sciences*, p. 114.

[67] Cf. W. JAMES, *Principles of psychology*, p. 585: «in the time-world and the space-world alike the first known things are not elements, but combinations, not separate units, but wholes already formed»

[68] *Ibid.*, p. 779.

[69] *Ibid.*, p. 787.

[70] *Ibid.*, pp. 791-792

[71] Unconscious inference is either «*a useless metaphor, or a positive misleading confusion between two different things*» (*ibid.*, p. 756). For a similar view in the context of Bayesian predictive processing, see S. GALLAGHER, S., M. ALLEN, *Active inference, enactivism and the hermeneutics of social cognition*.

[72] See A. BERTHOZ, *The Brain's sense of movement*, p. 25.

[73] S. GALLAGHER, *Enactivist interventions*, p. 100.

[74] On James' notion of "fringes" and logic cf. E.B. MCGILVARY, *The "fringe" of William James's psychology: The basis of logic*.

[75] As Michela Bella argues, it follows «on the one hand, that we are gifted with *extended* sensations and on the other hand that *vagueness* and *uncertainty* are always bound up with perception and hence with our cognitive capacity» (M. BELLA, *Ontology after philosophical psychology. The continuity of consciousness in William James's philosophy of mind*, p. 53).

[76] W. JAMES, *Essays on radical empiricism*, p. 13.

[77] Both Heft (H. HEFT, *Ecological psychology in context: James Gibson, Roger Barker, and the Legacy of William James' radical empiricism*) and Chemero (A. CHEMERO, *Radical embodied cognitive science*) refer to these essays to highlight the Jamesian foundations of Gibson's af-

fordances theory, whereas Heras-Escribano (M. HERAS-ESCRIBANO, *Pragmatism, enactivism, and ecological psychology: Towards a unified approach to post-cognitivism*) shows the possibility to combine enactivism and ecological psychology in a single post-cognitivist research framework based on the common pragmatist assumptions of both approaches.

[78] W. JAMES, *Essays on radical empiricism*, pp. 82-83.

[79] *Ibid.*, p. 84.

[80] *Ibid.*, p. 86n.

[81] W. JAMES, *Some problems of philosophy*, p. 100.

[82] W. JAMES, *Essays on radical empiricism*, p. 25.

[83] Cf. B. LIBET, *Unconscious cerebral initiative and the role of conscious will in voluntary action*.

[84] W. JAMES, *Essays on radical empiricism*, p. 90 - italics added.

[85] Cf. B. LIBET, *Unconscious cerebral initiative and the role of conscious will in voluntary action*; B. LIBET, *The neural time-factor in perception, volition, and free will*; B. LIBET, *Neural time factors in conscious and unconscious mental functions*.

[86] In line with Libet's experiments, Haggard, whose work focuses on the association of intention with the actions that it causes, proposes a perceptual theory according to which the consciousness of action is «intertwined with the internal models thought to underlie movement control» (P. HAGGARD, *Conscious awareness of intention and of action*, p. 119).

[87] S. GALLAGHER, *Enactivist interventions*, p. 3.

[88] *Ibidem*.

[89] *Ibid.*, p. 145.

[90] W. JAMES, *Principles of psychology*, p. 1135. To face with the issue of consciousness, James proposes a neutral monism (EP). It is worth noting that recently Selberstein and Chemero take up this very proposal. See M. SILBERSTEIN, A. CHEMERO, *Extending neutral monism to the hard problem*.

[91] S. DE SANCTIS, *Atti del V Congresso Internazionale di Psicologia*, p. 155.

[92] W. JAMES, *Some problems of philosophy*, p. 109: «Perception has given us a positive idea of causal agency, but it remains to be ascertained whether what first appears as such is really such, whether aught else is really such, or finally whether nothing really such exists. Since with this we are led immediately into the mind-brain relation, and since that is such a complicated topic, we had better interrupt our study of causation provisionally at the present point, meaning to complete it when the problem of the mind's relation to the body comes up for review».

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