

were underestimated and pleasant pictures overestimated (Angrilli et al. 1997; Droit-Volet & Gil 2009). This opposite direction of the valence effect as a function of arousal suggests that two different mechanisms are triggered by arousal levels: an attention-driven mechanism for low arousal, and an emotion-driven mechanism for high arousal (Droit-Volet & Gil 2009). This raises the possibility that the interplay in arousal-valence, and possibly also attention, is the cause of the inconsistencies in empiric evidence shown above.

« 12 » To conclude, a schematic causal relationship between affect, action and time-consciousness was proposed and put to empirical test. While psychiatric disorders show a similar schematic causation between these phenomena, this is not the case for meditation. One possible explanation of the inconsistency is the question of the finer-grained effect of the interplay between arousal and valence.

« 13 » As a response to the target article, I outlined some interdisciplinary aspects by searching for exact causality that can be empirically tested and integrated. The empirical inconsistencies presented here draw the scientific attention back to the importance of affect in Varela's account of time-consciousness, suggesting that while current work mostly focuses on understanding the role of perception and action, more work is needed to consider the role of affect and its sub-components.

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The Transcendental Character of Temporality and the Buddhist Contribution to Time-Consciousness

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> **Upshot** • Enriching the parallel between transcendental phenomenology and enactivism, I briefly discuss the compatibility of the Buddhist perspective with Gallagher's contribution to time-consciousness. Grounded in his meditative practice and heartfelt engagement with Buddhist philosophy, Varela de-constructed representationalism and its underpinning metaphysical dualism, building up the generative concept of enaction. His approach has been deeply inspired by Madhyamika Buddhism, which describes time-consciousness as that double illusion that frames phenomena as either becoming or permanent.

« 1 » Shaun Gallagher's target article, centered around Francisco Varela's continuation of Edmund Husserl's work on time-consciousness, elaborates on the embodied approach pioneered by Varela. The rigor of this analysis starts with the definition of Husserlian distinguishable-yet-inseparable moments: retention, primal impression, and protention. Then, towards the conclusion, the author intertwines them with an enactive approach to temporality, based on the mutual interdependence of such a threefold structure of time-experience. The precision and clarity of Gallagher's article leave almost no space for critiques, re-enhancing a neglected theme in contemporary literature. Even though time shapes our lives with both intense and empty moments, it recedes ephemerally from our analysis, as we try to catch its essence. The implications of the target article retrieve classical unadulterated philosophical questions and deserve some further considerations.

"Knife-edge" present transcendental deconstruction

« 2 » Gallagher's article sets the stage of the "knife-edge present" deconstruction from its very beginning (§2): "Consciousness must in some way grasp more than the punctual now." Then, in his enactivist account of time-consciousness (§§29–36), Gallagher points out the interdependency of primal impression, retention, and protention: "Our experience of the present is always dynamic [...] in such a way that a focus on any one of the three components in isolation runs into an abstraction" (§29). Considering each factor *per se* reciprocally presupposes the other two factors in a circular way: "[I]f primal impression is part of the structure of the living present, it is itself structured in its relations to retention and protention" (§33). This brings Gallagher to discuss time-consciousness's phenomenological "fractal character": as each block is acknowledged, it collapses into the "following." As we grasp a primal impression based on protention, it ends being held in retention, and so on; retention dissolves into protention, as "every living is living towards" (Husserl 1991: 313).

« 3 » Nowadays, Immanuel Kant's philosophy finds little attention with respect to this theme. In Kant's framework, any fact, to become meaningful, must match our *a priori* structure, which in turn pre-determines it (Kant 1990). Given that the transcendental structure constitutes only selected aspects of the phenomenal world, time as an inner form of intuition cannot become the direct object of our conscious attention. Nonetheless, we perceive and conceive of things only insofar as they unfold in time. Husserl relied on Kantian refined conception, considering time neither as an objective fact existing in the world nor as a private, subjective projection. He inherited from Kant the view that both spatiality and temporality are *a priori* empty intuitions permeated by sensorial, *a posteriori* ones. Kant argued that the properties that we can assign to the object are nothing but the very preconditions for knowing the object itself, overturning the relationship between the knowing subject and the experienced object. However, he did not formulate a phenomenological reduction of time-consciousness, as Husserl did.

With phenomenology, Husserl turned Kantian time from a pure intuition – as a non-empirical representation – into a living, dynamic phenomenon that relies on the horizon of experience. Moreover, Husserl developed phenomenological methods, such as the *epoché*, in order to reduce experience to its minimal, invariant character. Building upon this, Varela then situated time-consciousness in an embodied process. Enactivism reminds us that we cannot access the objects *per se* but only those aspects of objects that are co-constituted by our ongoing cognitive activity (§17). This a priori structure is grounded in the embodied retention of all previous successful couplings, and circularly shapes and is shaped by its affordance possibilities.

From passive to active perception and action

« 4 » Consider the Husserlian example of the temporal succession of melody (§2): the unitary, punctual essence of “duration blocks” of individual tones A-B-C. While the duration-blocks, in themselves, do not possess melody, if considered independently, melody arises out of the interplay of past retentions and occurring protentions as we listen to the blocks in continuation. Music is more likely to create temporal form while unfolding in time and co-originating with it: a melody is a melody only as it unfolds in time, and time does not exist outside of that melody. According to Husserl, the intentional act of hearing *each* appearing singular tone is simultaneously intertwined with the dynamic interplay of the “coming-to-be” and “about-to-be.” Overcoming Franz Brentano’s isomorphism, Husserl conceived a transcendental reconstruction of time as a somewhat passive immanent character of experience itself. Following the *epoché* reduction, the diachronic succession can be deconstructed in its transitory components, all immanent to the intentional bond: “[M]y retentional awareness of the just-passed note is not itself just past; it is part of the present structure of consciousness” (§9).

« 5 » Given that the threefold structure of time-consciousness unfolds through intentionality, the author concludes that consciousness itself, “is not simply a passive reception of the present; it is not simply

self-affective. It *enacts* the present” (§34). As our attention is driven towards the present moment, the linearity of the succession is undermined by the self-referential enactive character of the temporal stream: “[F]or Husserl temporal experience is not itself an object occurring *in* time, but neither is it merely a consciousness *of* objective time; rather it is itself a form of temporality” (§9). Embedding perception into action, Varela (1999a: 272) shows how the *act* of viewing a multistable image “gives temporality its roots in living itself” (§16). The anticipatory apprehensiveness of the “not-yet” thus becomes complementary to the retention of the “just-past,” showing how we are “active perceivers, rather than passive listeners” (§16). Similarly, recalling James Gibson’s notion of affordance, Gallagher depicts intentionality as an embodied spatial protention in the action towards objects (§35). The “not-yet,” far from being a mere absence, is full of enactive possibilities that will be fulfilled or not “as our enactive perception trails off in retention.” In Khachouf, Poletti & Pagnoni (2013), we discuss, from an “embodied-transcendental” perspective, how the predetermined enactive architecture of an autopoietic organism dynamically structures its ecological niche, defining its *Umwelt*, intentional affordances, and world-view.

« 6 » Time-consciousness may relate to various inertial phases in the recollection of stored contents, enabling the interpretative activity of the sensorial input flow, in a self-referential predictive anticipation (Gallagher & Allen 2016). For example, the localized activity associated with face processing biases subjects before the detection of a face rather than a vase during a decision task on Rubin’s ambiguous vase-face figures (Hesselmann, Kell & Kleinschmidt 2008). This finding fits with Varela’s idea of conscious self-referentiality as an embodied hierarchical process: in his hypothesis, neural dynamics unfold at multiple temporal scales. In Guido Hesselmann et al.’s example, the phase synchrony of neural discharges is first hypothesized to occur at lower levels within scattered sensorimotor assemblies, associated with the “pure present” character of the ongoing experience. These neural discharges are in turn recruited by higher-order assemblies

that integrate their activity. The hierarchical inclusion of these assemblies in larger dynamic structures could represent a stage associated with the phenomenological threefold structure of the “living present” (Varela 1999a). Thus, Varela described the “living present” as a pre-narrative “pure present” encircled by a horizon of retention and protention, associated with higher-order neural phase synchronies unfolding at multiple temporal scales and modifying the present act of perception as “just past.” The transient phase locking of cell assemblies in neural synchronization goes conjointly with that constant modification of the present (Varela 1995, in §20).

Time-consciousness in Buddhism and the problem of dualism

« 7 » Acknowledging certain weak spots in Husserl’s methodology, Gallagher (1998) maintains that pre-noetic and hermeneutical factors (such as embodiment, language, historical effect, and intersubjectivity) should be integrated into it. Literature, art, cognitive psychology, and social sciences, he argues, may be useful in overcoming intrinsic limitations of phenomenology, as they all encompass extra-intentional dimensions. However, to adequately meet this transdisciplinary challenge, Gallagher admits that new radical paradigms might be needed. These paradigms should involve the minimum of interactions between methodological reductions and metaphysical assumptions.

« 8 » In the enactivist approach (§17), intentionality is accompanied by prereflective awareness (Depraz, Varela & Vermersch 2000), which in turn is embedded in situated physiological processes (Lutz & Thompson 2003). Varela methodologically dissolved any objective, metaphysical stance on “a mind-independent reality,” showing the impossibility of being able to describe consciousness “within nature as it is supposedly described by our best scientific theories” (Bitbol 2002). Neurophenomenology encourages a transdisciplinary integration of extra-intentional, pre-noetic factors, starting by “clearing out” researchers’ minds. In fact, these factors can be considered as directly immanent in one’s mind, given that it actively maintains intentional bonds with socio-cultural constructions

such as language. Incorporating these factors as being co-produced with the experience, the Buddhist contemplative practice, which is grounded in body-awareness, is supposed to unveil the intentional characters immanent to time-consciousness. As reported in Gallagher's article, Buddhism brought Varela to frame our immediate experience as a dynamical interconnection "within a finite segment of time" (§22). Later, in §24, referring to the double intentionality, Gallagher quotes Varela's consideration of a "pre-reflective sense of the experiencing self": certainly, Varela accessed it personally, scrutinizing Buddhist philosophy and practicing meditation.

« 9 » Following Varela's example, neurophenomenology can be intended as a radical constructivist research program, matching the conceptual analysis with a profound, embodied, existential commitment (Vörös & Bitbol 2017, this issue). With respect to time-consciousness, meditation seemingly suspends the self-confirmatory loop of the predictive, transcendental process, including Gibsonian affordances (Khachouf, Poletti & Pagnoni 2013). In Buddhism, unreleased-stored reactions, often referred to as dispositions (Skt. *samskaras*) held in deep storehouse consciousness (Skt. *alaya vijñāna*), are said to push forth attachments and consequent existential suffering (Skt. *dukkha*). The retention of these salient memories is said to show up through individual inclinations to act (Skt. *vr̥ttis* and *vasanas*). That is why meditation is said to help us get rid of past impressions, purifying the ongoing dependent origination of time-consciousness.

« 10 » Buddhist interdependent origination addresses time-consciousness and related problems head-on. For example, with refined logical arguments, Nagarjuna attempted to show how time has no self-existence, since it can never be grasped (Garfield 1995). In a less analytical way, Dogen defined being-time as a unified, co-emergent pure activity, since Being unfolds itself as beings, and time unfolds Being as beings (Kim 2000). In Dogen, Being and time are the activity of space-awareness, based on "forgetting oneself." Such an interpretation takes on its full meaning only following the "letting-go" gesture, reclaimed by Varela himself. Forgetting the "specious-present,"

time structure can be reabsorbed into minimal activity. Letting-go both time-impression and concept, the Buddhist soteriology aims at getting rid of recorded retentions, which keep us in the threefold circle of retention-primal impression-protection, determining our personal worldview and thirst/desire (Skt. *trishna*), marked by karmic influences impressed in our beliefs and in our dualistic worldview. Dualism starts with the (pre-reflective) attitude separating ourselves from the supposed "external world"; hence, the core sense of "I" exists only insofar as its evidence is supported in its auto-confirmatory process based on salient retention-protection cycles that determine self-attachment.

« 11 » In both Hinduism and Buddhism, primary existential craving is said to shape this transcendental activity, building up the condition of suffering (Skt. *dukkha*), as impermanence (Skt. *anitya*) and self-emptiness (Skt. *anatman*) go unrecognised. Contemplative practices are supposed to allow that acknowledgement through refined analysis of the ongoing experience. Clearly, time-consciousness is radically at stake there and has to deal with our ego-centered interpretative framework. Considering the gap between the three components of time-consciousness, Madhyamika philosophers proposed a refined conception of time, filling the gap between the act of knowing and perceiving (Garfield 1995). As in Husserlian *epoché*, the attempt of Buddhist meditation is to collapse all interpretative inclinations towards the noetic side of intentionality. Trying to overcome the subjective dimension, its endeavor is to abandon ego-centered action-perceptions, a principle that was crucial in determining Varela's own worldview.

Conclusion

« 12 » Considering the contemporary recurrent naïve reduction of temporality to a linear discrete process through which neurophysiological data can be interpreted, time-consciousness in all its phenomenological complexity deserves more nuanced elucidations. In both his deconstructive and generative intentions, Gallagher's works (e.g., Gallagher & Varela 2003; Reinerman-Jones et al. 2013; Øberg, Normann & Gallagher 2015) bring important contributions

to the constructivist approach, enriching transdisciplinary research. Neurophenomenology still deserves a deeper philosophical integration of phenomenology and meditation in order to access and reframe transcendental processes' dynamics.

« 13 » Time-consciousness shows fruitful connections with many research topics, e.g., the predictive confirmations of the narrative-self in integrative clinical practice. Autobiographical-identity is sustained by self-referential thoughts triggered by past memories and consistent anticipatory patterns (Gallagher 2000). As reclaimed by Khachouf, Poletti & Pagnoni (2013: 8), the Default Mode Network (DMN) activation could be related to an activity that is "being prepared for the future." This may be especially useful for what concerns the function of the DMN in enacting and looking out for environmental confirmation of an autobiographical-based model of narratives. Finally, as recommended in a conclusive footnote (§38), the complementary interplay of micro-phenomenology and meditation could improve Western scrutiny of consciousness's micro-dynamics (Petitmengin et al. 2017).

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