

Editorial

Subjectivity and the body: Introducing basic forms of self-consciousness

The conception of self-consciousness currently prevailing in cognitive sciences is linked to the notion of self-representation. In such a case, the subject observes his/her physical or mental state, thereby obtaining an internal image of him/herself. However, philosophical investigations of self and self-consciousness allow the determination of more primary forms of self-consciousness. In particular, the following three properties deserve close scrutiny and are recurrently tackled in the contributions to the present special issue:

- (1) Any conscious act has not only an *object* but also and necessarily a *subject*. In other terms, any conscious act is characterized not only by its *object*-directedness (intentionality) but also by its *subject*-relatedness (subjectivity).
- (2) The subjective (subject-related) and intentional (object-directed) dimensions of experience are *intertwined* with each other as dimensions correlatively constituting a *single* act of consciousness.
- (3) The subjective (subject-related) dimension of consciousness is paradigmatically (even if it might not be necessary) anchored to the subject's *body*, in particular to the sense of bodily anchoring one's first-person perspective.

The nine papers and related commentaries that are presented here develop these points in the attempt to underline that (1) subjectivity is *specific* and fundamental to our understanding of consciousness and self and (2) it can be studied empirically within the framework of cognitive sciences.

Very recently, preoccupations about basic forms of self, self-related processes and self-consciousness arose in theoretical and empirical work. One consequence of the vividness of this development is that this field of research suffers from terminological discrepancies, and the current special issue is no exception. Pre-reflexivity and pre-reflectivity are sometimes used interchangeably to describe primary forms of self-consciousness, ironing out the specificity of their respective meaning. Even more problematically, pre-reflexive and pre-reflective forms of self-consciousness are also sometimes confused with *non-conscious* implicit self-related processes. To clarify which issue is specifically under investigation, beyond any particular terminological choice, some questions are relevant to consider. These questions can be structured as summarized in Fig. 1. Note that the point here is not terminological but conceptual: the proposal which follows does not merely intend to clarify terms, since authors might disagree with the terminological choice proposed here and give their own definition of the same terms. The intention is rather to propose a framework which is intrinsically coherent and relevant to consider *different* forms of *primary* self-consciousness, which should be considered as *specific*, independently of the name they are tagged with.

A first question concerns whether the state under consideration involves consciousness and self-consciousness. It is important to note that this obvious question has no obvious answer. Determining whether a state is conscious is easy only when one considers spontaneously reportable contents of consciousness. However, there is more to self-consciousness than that, including the subjective structure of consciousness, which is an *experiential* dimension even if it does not figure in the content of spontaneous verbal reports.

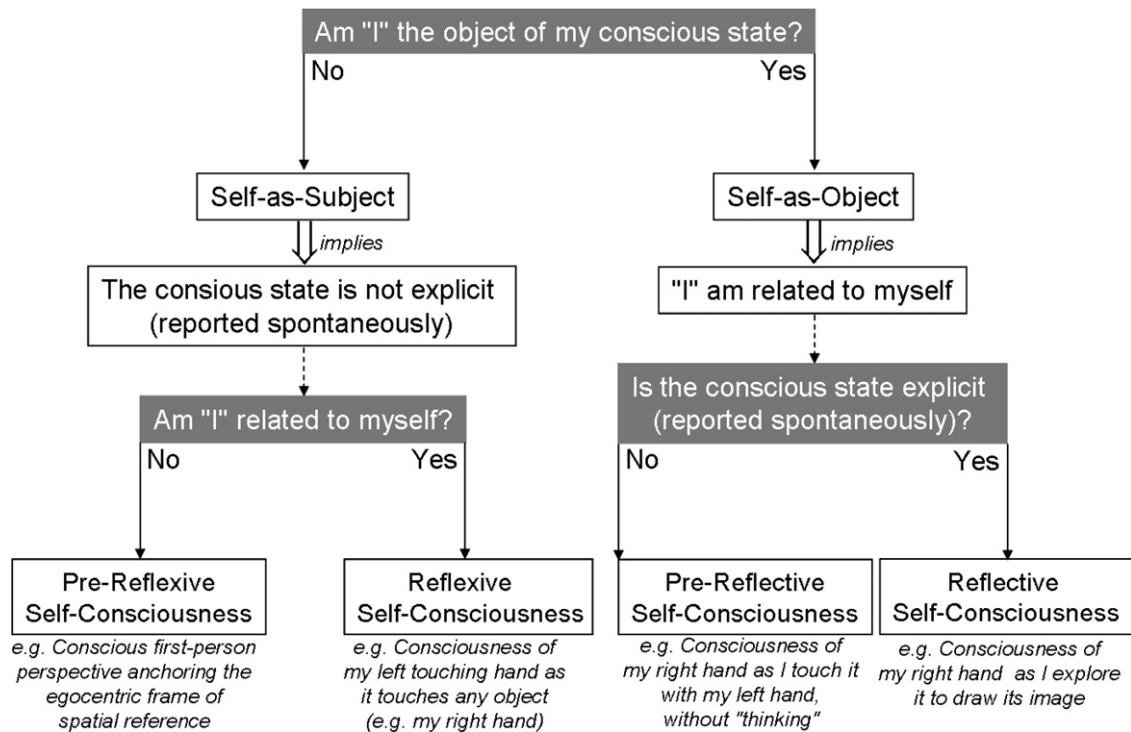


Fig. 1. Four forms of self-consciousness.

If the state under investigation is appropriately recognized as *non-conscious*, then one might investigate implicit, automatic self-relevant processes. Some of these states might be “reflexive” in the sense that the system is related to (part of) itself. Following this terminology, autopoietic systems described in biology are implicitly reflexive in the sense that their processes of production regenerate and realize the network of processes that produced them. Such reflexivity must be tagged as *implicit* in the sense that it is not describing any conscious state.

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In self-conscious states, the “self” might be the intentional object of this state, or not. In Wittgenstein’s terms, one needs to differentiate the I-as-subject from the I-as-object. For example, when I look at my image reflected in a mirror, the *perceived self* corresponds to the I-as-object, while the *perceiving self* corresponds to the I-as-subject. In this case, the perceived self is experienced as anchored to the perceiving self, but such anchoring may be simply suppressed when one stares at one’s eyes in the mirror for a prolonged period (a couple of minutes). One then may experience vividly a self-alienation between the I-as-subject and the I-as-object.

The I-as-object can be accessed by reflection or not. *Reflection* is here simply defined as high-level cognitive states such as thinking about oneself, judging one’s personality, scrutinizing one’s physical aspect, etc. When entertaining such states, one is able to spontaneously report the intentional object he is conscious of as being oneself.

Pre-reflective states correspond to those states which are sometimes described as minimally or elusively conscious. This is the case, for example, when the subject is conscious of being anxious without thematizing it enough to be able to articulate it in verbal reports. Nonetheless, he can have a retrospective access to it. For example, the finally relaxing subject might report “I’ve been anxious the whole day”, basically meaning “I’ve been pre-reflectively conscious of myself as anxious the whole day”.

Note that a similar description can be made not only for one’s own mental/physical states but also for non-self objects of perception. For example, when you perceive a spider stuck behind a transparent

window, you might scrutinize the spider, its hairy legs, and the complexity of the geometric figures drawn on its body. Doing so, you do not attend to the transparent window *per se*: you do not look at it, but through it. Nonetheless, the content of your conscious state is not only, reflectively, the spider but also, pre-reflectively, the transparent window: you perceive the spider as behind the window; you perceive the window as that through which you perceive the spider. In this sense, the window is pre-reflectively perceived as the medium of your reflective perception. Similarly, your gloved hand might perceive the texture of an object (reflectively given) through the fabric of the glove (pre-reflectively given), and the blind man might perceive the irregularities of a surface (reflectively given) through the resistance of his stick (pre-reflectively given).

Returning to the case of *self*-consciousness, it is important to note that both pre-reflective and reflective states of consciousness of oneself-as-object imply a scission of the self, between the observed self-as-object and the observing self-as-subject. Given such scission, consciousness of oneself-as-object is incomplete as it implies consciousness of oneself-as-subject.

The I-as-subject avoids such object/subject self-scission as it does not figure in the content of consciousness as its intentional *object*. Rather, and as Wittgenstein's terminology makes clear, the self is here specifically the *subject* of conscious experience. In turn, there are two ways to be conscious of oneself as subject. The first is *reflexive* in the sense that one is conscious of *oneself*-as-subject. The second is *pre-reflexive* in the sense that one is conscious of some intentional *object* as experienced by oneself-as-subject.

Following this terminology, *reflexive* self-consciousness is, for example, one's consciousness of one's hand as one reaches and grasps a rose. In paradigmatic cases, one attends to the grasped rose, not to the grasping hand. Nonetheless, one is fully conscious of one's hand as getting closer to the rose, and the hand figures specifically "as-subject" (vs. as intentional object) in the content of the conscious experience.

Pre-reflexive self-consciousness structures any conscious experience. For example, it is vivid in one's experience when one looks at the surface of the water down below, before taking a plunge into the sea. The diver perceives water at a certain distance from himself, even if he does not himself figure as such in the content of his conscious experience. Nonetheless, pre-reflexive consciousness of oneself-as-subject structures this conscious content (here spatially: the sea is perceived as "down there", that is, as "from here" where the diver is himself located).

Note that whereas pre-reflectivity and reflectivity may characterize both self- and non-self states of consciousness (see above), pre-reflexivity and reflexivity as defined here characterize only *self*-consciousness. This is so because these terms are used here to characterize the *specificity* of consciousness of oneself-as-subject and this subject is irreducible to any object (to non-self objects and even to the self-as-object).

To get a better grip on the distinction between pre-reflexive, reflexive, pre-reflective, and reflective states of consciousness, consider an addition example. You are perceiving a picture of your face, and this picture is subtly blurred. The picture and what it pictures form the content of your reflective state. In this particular case, it is a form of reflective self-recognition (as you recognize the pictured face as yours). The subtle blurriness is also part of your conscious state, but pre-reflectively, as you do not notice it as such. This pre-reflective content might become reflective, when you notice the blurriness as such. Then, the content of your perception becomes "blurry picture of my face". What remains present throughout these experiences is the fact that you perceive the picture from your first-person perspective. This corresponds to a form of pre-reflexive self-consciousness: the experience of yourself as the subject of your own perception. For example, you might have a hard time recognizing the people surrounding you in the picture, and to get a more detailed view, you might bring the picture closer to you (the perceiving subject). For that, you obviously do not need to determine where you are standing relative to the picture (you do not need any consciousness of yourself-as-object), but you need to be pre-reflexively conscious of yourself as anchoring the perceptual perspective. This pre-reflexive experience might become reflexive, for example, as you attend to clear the picture from its blurriness. You might consciously experience the accommodation of your perception, in the attempt to extract more details from this picture. In such a case, you might vividly experience yourself-as-subject, bodily anchored (at least anchored as an "oculomotor" perceiver), and actively participating in the constitution of the object of your perception. The vividness of this experience does not imply that it is reflective, since it does not imply that the self is taken as-object. Rather, the specificity of this form of consciousness is that one is conscious of

oneself-as-subject. Such reflexive state might lead you to realize that in fact the picture is not blurry, only your perception is. Putting on your glasses, you can go back to the reflective observation of the picture.

Given their respective characteristics, pre-reflexive and reflexive forms of consciousness of oneself-as-subject, on the one hand, and, pre-reflective and reflective forms of consciousness of oneself-as-object, on the other hand, cannot be reduced to each other and must be accounted for in their specificity. Therefore, it is both surprising and penalizing that current research on self-consciousness mostly limits its scope to consciousness of oneself-as-object. The present issue intends to redress this balance by engaging cross-disciplinary work where conceptual, experiential, clinical, and empirical considerations constrain and enrich each other. In particular, this collaborative work brings together experts in philosophy, cognitive neurosciences, psychiatry, and neurology to tackle three main issues: (1) the subjective *structure* of consciousness, (2) the subjective *content* of consciousness, and (3) the pathological perturbations of self-consciousness and forms of minimal self-consciousness resisting in pathology.

Dorothee Legrand first specifies that conscious experience is paradigmatically structured as a subjective and embodied experience of the world. Consciousness of oneself as experiencing the world from one's perspective is first described in a phenomenological framework. This first step is then exploited to investigate in a new light the neurophysiological mechanisms underlying this basic form of self-consciousness. While most empirical investigations focus on the content of self-representation, consciousness of the self-as-subject would be anchored to integrative mechanisms leading perception and action to functionally depend on each other, thereby modulating one's perceptual experience of the world relatively to one's subjective perspective.

Helena De Preester pursues the investigation of the subjective structure of consciousness from a different and complementary perspective. As she underlines, when considered at all, subjectivity is investigated as constituting one's experience of the world, which leaves mostly unexplored how subjectivity itself comes to be constituted: How is the subject of experience constituted, given that it is irreducible to any object of representation? Intending to answer this question, she underlines the role of the interoceptive "in-depth body" in the constitution of the subjective dimension of experience. She exploits Husserl's phenomenology to develop her view and contrasts it with more classical but more restricted representationalist models of consciousness.

Diego Cosmelli and **Evan Thompson** focus on a specific aspect of the subjectivity of experience: its temporal flow. Just as self-consciousness is not reducible to consciousness of the particular object which turns out to be oneself, time-consciousness is not reducible to the experience of a particular representational content, time. Rather, just as conscious experience is structured subjectively, it is structured temporally. And just like its subjective structure, the temporal structure of consciousness is not refractory to empirical investigation. Rather, as this paper forcefully illustrates, it is precisely a fine-grained phenomenological description of the structure of consciousness (here the temporal flow of visual experience as highlighted by binocular rivalry) which allows a constructive investigation of its underlying neurophysiological mechanisms (here the temporal dynamics of cortical activity).

The three papers in this first set concern the *structure* of experience as fundamentally subjective and bodily constrained. The following three papers investigate another aspect of subjective experience: its *content*. Two related contents of experience are relevant to consider in studying self-consciousness as physically anchored: consciousness of one's surrounding environment (the world I act in) and consciousness of one's body (the body I act with).

Manos Tsakiris, **Simone Schütz-Bosbach**, and **Shaun Gallagher** focus on the experience of the body itself: How does it feel to be one's own body? What are the neurocognitive determinants of the perception of one's and others' body and action? To answer these questions, the authors present a set of neuroscientific experiments allowing the investigation of the respective role of afferent and efferent information in grounding different forms of experience of the body: the experience of one's body as one's own (body ownership), the experience of one's action as controlled by oneself (agency), and the experience of others' body. They illustrate the importance not only of clearly differentiating these forms of experience of the body but also of considering how they are functionally related to each other, at both the phenomenological and empirical levels.

Yann Coello and **Yvonne Delevoye-Turrell** tackle body consciousness beyond the sense of ownership and agency. They underline that perceptual and motor awareness of one's action (e.g., movement direction and force) may differ from each other, as attested by contrasted results obtained in perceptual judgement and reproduction paradigm. Moreover, they show that consciousness of one's body is not reducible to such states but also appears as structuring spatially one's experience of the surrounding world. In particular, the

authors show that the perception of a particular point as reachable is not only determined by the properties of one's visual and motor systems, but is also functionally modulated by one's transient ability to act, and the subjective experience associated with such ability.

Dorothee Legrand, Claudio Brozzoli, Yves Rossetti, and Alessandro Farnè complete the investigation of the primary form of self-consciousness involved in spatial cognition by studying how the subject represents the area closely surrounding his body (peripersonal space). The behaviour demonstrated by some particular brain-damaged patients (suffering from Extinction) shows how the representations of the bodily subject and the space it anchors are determined in a multisensory and sensorimotor manner. The representation of peripersonal space and of the perceiver's body are correlatively modified and modulated in a functional manner. These representations do not depend on any objectifying consciousness of oneself and of one's body, but may nonetheless be relative to the experience of oneself as the origin of egocentric spatial reference.

The different contributions introduced so far all articulate conceptual and empirical investigations of subjectivity. The last three also illustrate how neuropsychological inquiries can be fruitfully exploited in an attempt to shed light on normal forms of bodily self-consciousness and their intertwining with consciousness of the (social and physical) surrounding world. The three contributions that will be presented now illustrate the reverse relationship by developing how the investigation of basic forms of self-consciousness proves to be useful for clinical studies.

Michel Cermolacce, Jean Naudin, and Josef Parnas underline the relevance of the notion of minimal self to understand schizophrenia. They recall that the first-person perspective does not define any internal mental realm. First it is not disembodied, and second it is embedded in the external world. They detail this view by relying on two particular examples of schizophrenic patients. The first illustrates an alteration of a primary sense of self which affects as well the sense of evidence of others and the world. The second describes a case of voice hallucinations which are bodily anchored and related to a self constituted narratively.

Steven Laureys, Fabien Perrin, and Serge Brédart complete this clinical approach of psychiatric cases by adopting an empirical perspective on neurological cases. They differentiate different levels of reactions to self-perception, from automatic to conscious, and investigate them in severely brain damaged patients (i.e., coma, vegetative state, and minimally conscious state). Since behavioral cues are unavailable in such cases, the authors exploit the patients' brain reaction to the presentation of self-related stimuli, such as one's name and one's face. In particular, they investigate "self-related" components in electrophysiological and neuroimaging studies. This work stresses the methodological problems one faces when studying minimal states of consciousness and sheds light on empirical ways to investigate non-verbally reportable states of self-consciousness.

Claire Petitmengin, Vincent Navarro, and Michel Le Van Quyen also take up the challenge of solving methodological problems linked to the investigation of primary forms of consciousness. To that aim, they exploit the resource of both phenomenological and neurological investigations, in the particular case of epilepsy. On the one hand, they use interview techniques designed to bring to the fore what usually remains in the background, i.e. the elements of one's experience which are not mentioned in spontaneous verbal reports (here: subjective signs of a forthcoming epileptic seizure). On the other hand, they analyze the dynamics of brain activations correlated with these reports. This application of the neurophenomenological methodology has an impact not only at the neuronal and phenomenological levels but also at the therapeutic (developing non pharmacological therapy for epilepsy) and theoretical levels (renewing the consideration of the "gap" between brain and mind).

All together, this set of nine papers and related commentaries integrate theoretical, empirical, and clinical arguments to closely consider forms of self-consciousness that constitute the basis of one's experience of oneself and the world. All these articles originate from talks and discussions presented at the first conference "ESPRA" (Pre-Reflexive Subjective Experience and Action, December 2005, Paris, France) and all these presentations have then been further elaborated in a collaborative and interdisciplinary approach, in order to propose integrative developments to the reader.

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