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# Self-as-Subject and Experiential Ownership

Caleb Liang

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In what follows, I investigate the distinction between the sense of self-as-object and the sense of self-as-subject, and propose an account that is different from Shoemaker's immunity principle. I suggest that this distinction can be elucidated by examining two types of self-experience: the sense of *body ownership* and the sense of *experiential ownership*. The former concerns self-as-object: whether a body part or a full body belongs to me. The latter concerns self-as-subject: whether I represent myself as the unique subject of experience. A key point is that misrepresentation can occur not only in the sense of body ownership but also in the sense of experiential ownership. Then I examine the most relevant neuroscientific accounts of the sense of self-as-subject, including Damasio's account of the core-self, Panksepp's affective neuroscience, neural synchrony, and the sub-cortical-cortical midline structures. I argue that none of these successfully explains the neural basis of the sense of self-as-subject. In order to make progress, I suggest, the first step is to look for and then to study the various conditions in which one can pursue the "Wittgenstein Question".

## Keywords

Body ownership | Core-self | Experiential ownership | Immunity principle | Neural synchrony | Self-as-object | Self-as-subject

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## 1 Introduction

This paper investigates a central form of self-consciousness from an interdisciplinary perspective: *the sense of self-as-subject*.<sup>1</sup> How philosophers understand this form of consciousness has been influenced by two ideas. One is Wittgenstein's distinction between "I"-as-object and

"I"-as-subject. In the *Blue Book* (1958), he says that: "there is no question of recognizing a person when I say I have toothache. To ask 'are you sure it is *you* who have pains?' would be nonsensical". The other is Shoemaker's immunity principle. Developing Wittgenstein's distinction, Shoemaker (1968) argues that we are "immune to error through misidentification relative to the first-person pronouns (IEM)". Many consider IEM to be solely addressing semantic

<sup>1</sup> Here I will focus on the minimal sense of self-as-subject, which means that the sense of self-as-subject does not require exercising conceptual capacities and can be transient. It is contrasted with the "narrative self" or "autobiographical self", which involves episodic memory and persists through time (Gallagher 2000).

or conceptual issues. But for philosophers of mind, it decisively sets apart two types of self-consciousness. When one is conscious of oneself-as-object, error is always possible; however, when one is conscious of oneself-as-subject, a particular sort of mistake about *who* the subject is becomes impossible.

The first goal of this paper is to propose an alternative explication of the sense of self-as-object and the sense of self-as-subject. I aim to provide an account that is both phenomenologically precise and empirically useful. The distinction, I will suggest, can be better understood as two types of self-experience: a sense of body ownership and a sense of experiential ownership. I will argue that sometimes it makes perfect sense to ask a subject “are you sure it is *you* who feels pain?” For brevity, I will call this type of question the “Wittgenstein Question”. I will also argue that IEM, or at least some versions of it, faces counterexamples from empirical research. The second goal of this paper is to examine empirical accounts related to the sense of self-as-subject. There are currently many neuroscience programs devoted to self-consciousness, and recently some researchers claim to have explained the neural mechanisms of the sense of self-as-subject. Investigating these programs will reveal how philosophy can contribute to neuroscience in understanding this target phenomenon.

I discuss the sense of body ownership in section 2, and explain how it helps to clarify the sense of self-as-object. Section 3 introduces the notion of experiential ownership. I use this notion to specify what it is like to experience the self-as-subject. A crucial claim is that *being* the subject of an experience does not imply experiencing oneself *as* the subject of experience. If this is correct, at least some forms of IEM fail. Consequently, if we want to talk about a sense of self-as-subject we need more empirical studies. Section 4 examines Damasio’s account of the core-self and Panksepp’s affective neuroscience. Both claim to explain the neural basis of the sense of self-as-subject, but I argue that they only address the sense of self-as-object. In section 5, I criticize two proposals that some neuroscientists use for explaining the sense of

self-as-subject: neural synchrony and subcortical-cortical midline structures (SCMS). The overall positive lesson we can take from these accounts will be presented in the final section.

## 2 Body ownership and self-as-object

The sense of body ownership concerns whether a body part or a whole body is experienced as belonging to me. For example, I am now typing this paper with two hands, and I have a sense that the two hands are mine. To clarify this concept of self-experience, three distinctions will be very useful. One is between the *fact* of body ownership and the *sense* of body ownership (Dokic 2003; de Vignemont 2011). The former is a biological fact about the anatomical structures of one’s body. The latter is a conscious experience of the fact of body ownership. As the syndrome of somatoparaphrenia indicates, these two aspects are dissociable. A prominent feature of somatoparaphrenia is that patients deny that parts of their body, e.g., a hand, belongs to them (Vallar & Ronchi 2009). Their sense of body ownership fails to match up with the facts—namely, that that the hand is theirs.

In healthy subjects, the sense of body ownership can also be mistaken. In the rubber hand illusion (RHI), participants experience a fake hand as belonging to them. The set-up is simple: The subject’s own hand is blocked from view. The subject sees a rubber hand in front of her, clearly distinct from her own real hand. The experimenter uses paint brushes to touch the real hand and the rubber hand either synchronously or asynchronously (Botvinick & Cohen 1998; Tsakiris & Haggard 2005). In the synchronous condition, many subjects report that they feel as though they are being touched on the rubber hand rather than on their real hand. More interestingly, many subjects feel as if the rubber hand were their own hand.<sup>2</sup>

Another form of misrepresentation involves the full body—an illusion that induces some interesting aspects of out-of-body experience

<sup>2</sup> Proprioceptive drift is another aspect frequently associated with RHI: many subjects judge (by proprioception) their real hand as being located closer to the rubber hand, rather than as where it really is. But Rohde et al. (2011) have recently shown that this aspect can be dissociated from the feeling of the rubber hand as one’s own.

(OBE) (Lenggenhager et al. 2007).<sup>3</sup> In experiments of this type, the subject wears a three-dimensional head-mounted display (HMD), and a stereo camera stands two meters behind her. The scenes registered by the camera are transmitted to the HMD such that the subject sees the back of his virtual body in front of her. Then the subject's back is stroked either synchronously or asynchronously with the virtual body. In the synchronous condition, many subjects feel as if the virtual body were their own.<sup>4</sup>

The second distinction is between the first-personal sense and third-personal sense of body ownership. In daily experience, the sense of body ownership is often first-personal as well as pre-reflective (Legrand 2007, 2010). That is, by proprioception and somatosensation, I can experience the body as mine *from the inside* without watching it or reflecting upon it (de Vignemont 2012). Consider simple activities such as walking. When I talk to someone while walking, my attention can be fully absorbed in the conversation. In this case, I don't pay any attention to my leg movements. Still, due to the firing patterns of muscle spindles in my legs, I implicitly experience that my legs take turns entering into the stance phase (touching the ground) and the swing phase (leaving the ground) to move my body forward. In contrast, the sense of body ownership can sometimes be third-personal and reflective. When looking at a

monitor in an airport showing the image of my body, I may wonder whether the body that I see is mine. In this case, instead of experiencing it *from the inside*, I consider my body from the third-person point of view. That is, the body is treated as the object of visual experience, attention, or reflection.<sup>5</sup> In the rest of this paper, I will use "the sense of body ownership" to indicate the first-personal sense of the term.<sup>6</sup>

These two distinctions have been suggested before. But now I want to propose a third distinction to help elucidate what we mean when we talk about the sense of self-as-object. This third distinction refers to the difference between a sense of body ownership and a sense of self *as a physical body*.<sup>7</sup> The former relates to questions like "Is this my hand?" and "Is that body mine?", whereas the latter concerns issues such as "What am I?" and "Am I a physical object?" This distinction marks two notions of bodily self-consciousness: experiencing a body part or a full body as one's *own*, on the one hand, and being conscious of oneself *as a physical body* on the other. Conceptually, the sense of *having* a body and the sense of *being* a body are different notions.<sup>8</sup> However, they are closely related *experientially*. I suggest that experien-

<sup>3</sup> Cf. Ehrsson (2007) for a different OBE experiment.

<sup>4</sup> The relationship between body-part and whole-body representations for body ownership is a controversial issue. Clearly they are not the same. The issue is: are they fundamentally different? Or is the difference only a matter of degree? As an anonymous reviewer points out, during the rubber-hand illusion, one's self-location and global body ownership are unaffected. However, during full-body illusions these aspects are affected and misrepresented because they concern the whole-body. Some researchers might therefore think that there exist some fundamental differences between body-part and whole-body representations for body ownership. One can also reasonably hypothesize that the neural mechanisms that are responsible for hand ownership do not need to involve brain regions that process leg or trunk representations. However, in my opinion more interdisciplinary studies would be required to really solve this issue. My current position is that, regarding the sense of body ownership, the difference between body-part and whole-body representations is a matter of degree. First, conceptually speaking, there doesn't seem to be a sharp distinction between body-part and whole-body representations. Second, if we consider the experimental set-ups of the rubber hand illusion and of the full-body illusions (either Lenggenhager's version or Ehrsson's), the differences between them seem to be a matter of degree as well. Of course, these are not arguments yet. I have recently designed a set of experiments precisely to deal with this issue, and I hope to be able to say something about it soon.

<sup>5</sup> Are there borderline cases between the first-personal and the third-personal experiences of one's own body? I think so. For example, to use the above example again, if one of my legs suddenly hurts a little bit, I may be able to continue my conversation without disruption, but I have to pay attention to proprioception in order to walk normally. In this case, I submit, the distinction between the first-personal and the third-personal senses of body ownership is not sharp. However, this will not affect my proposal below regarding the relationship between the sense of full-body ownership and the sense of self-as-object.

<sup>6</sup> Both the first-personal and the third-personal senses of body ownership are involved in RHI and OBE. On the one hand, the fake hand or the virtual body that the subject sees is the object of visual awareness, which is experienced as standing apart from their visual perspective. In addition, by filling in the questionnaires after the experiment, the subject makes explicit judgments about body ownership. This is the third-personal sense of body ownership. On the other hand, during the experiment, the synchronous touch and proprioception causes the subject to feel as if "it is my body that is being touched". This is the first-personal sense of body ownership, which can be indirectly measured by skin conductance response (SCR). In RHI and OBE, both the third-personal and the first-personal senses of body ownership are prone to misrepresentation.

<sup>7</sup> Here, "physical body" is broadly construed such that it can refer not only to a physical object but also to a biological organism or a flesh-and-blood person.

<sup>8</sup> A Cartesian dualist might say that, although I experience a particular body as mine, I fundamentally conceive of myself *as a thinking being* rather than as a physical body. For the purpose of this paper, we can set Cartesianism aside.

cing ownership of a full body provides a sense of self as a physical body. When I engage in daily activities, there is not only a sense that this body is mine but also a sense that I *am* a physical body. Consider ordinary experiences like eating, running, bleeding, standing behind a desk, etc. These experiences involve a sense of body ownership, i.e. what it is like to *have* a body. But I also experience what it is like to *be* something that is eating, running, bleeding, etc. That is, I have a sense about *what* I am, or a sense of myself as a physical body that is doing these things.

I suggest that the sense of full-body ownership helps us to understand the sense of self-as-physical-body.<sup>9</sup> The sense of self-as-physical-body, in turn, helps us to specify what it means to be conscious of the self-as-object.<sup>10</sup> When I experience these hands as mine, there is a sense in which I am implicitly aware of myself *as* a physical body such that these two hands *are parts of me*. The proposal here is that I am conscious of myself-*as-object* when I am conscious of myself as a physical body. This holds not only in cases where I take myself as an object of vision or attention, such as seeing myself in a mirror. It holds even when I experience myself as a body from the first person perspective.<sup>11</sup>

<sup>9</sup> The idea is that we know how to conduct empirical research in order to study the sense of full-body ownership which, as Blanke and Metzinger suggest, is connected with the following features: (i) the global sense of identification with a physical body as a whole (self-identification); (ii) the sense of being situated in a specific place (self-location); and (iii) the sense of possessing “a point of projection functioning as its origin in sensory and mental processing (weak 1PP)” (2009, pp. 7–8). Together, these features characterize what Blanke and Metzinger call minimal phenomenal selfhood (MPS), defined as “the conscious experience of being a self” (2009, p. 7). It is my view that these three features articulate what it is like to be a self *as a physical body*. In this regard, the sense of full-body ownership helps us to understand the sense of self-as-physical-body. Also, thanks to the recent findings of the RHI and the OBE experiments, we have now better ideas regarding how misrepresentation may occur in the sense of body ownership. This, in turn, suggests that the sense of self-as-physical-body can involve misrepresentation as well.

<sup>10</sup> In my account, “the sense of self-as-physical-body” serves as a conceptual bridge between “the sense of full-body ownership” and the “sense of self-as-object”. Experientially, the sense of full-body ownership and the sense of self-as-physical-body are closely related. I deliberately leave open whether these two notions denote the same or different experiences. I think more interdisciplinary work will be required to fix this issue.

<sup>11</sup> My proposal here is very different from what might be called the Pre-reflective Account of self-consciousness (Legrand 2006, 2007, 2010, 2011; Gallagher 2005; Zahavi 2005). According to this account, self and body are constitutively tied together, and body can provide a sense of self-as-subject, i.e., one can experience one’s body-*as-sub-*

ject. Pre-reflectively experiencing the self as a physical body would correspond to the sense of body-as-subject rather than as-object. The difference between my view and this account centers on whether the notion of object in “self-as-object” is construed as a physical body or as an “intentional object of consciousness”. I contend that the sense of self-as-subject is different from the sense of body-as-subject. Experiencing the self as the subject of experiences is not the same as experiencing the self as a perceiving or acting body. I address these issues in another paper.

Let me draw some remarks made by Wittgenstein to support this proposal. Consider his examples of “I”-as-object: “My arm is broken”, “I have grown six inches”, “I have a bump on my forehead” (1958, p. 67). These examples clearly refer to the speaker’s body. This fits my suggestion that consciousness of self-as-object can be understood as consciousness of self-as-physical-body—I have the sense that I am a body that has a broken arm or that has grown six inches. Now consider his examples of “I”-as-subject: “I see so-and-so”, “I try to lift my arm”, “I have toothache” (1958, pp. 66–67). As indicated by his own italicization, the use of “I”-as-subject is about *who* the perceiver, agent, or the subject is. But notice that these examples refer to the speaker’s body *as well*. What does this tell us? My interpretation is that it implies that the idea of *who the subject is* should not be regarded as the same as the idea of *what* does the perceiving, lifting, or undergoes toothache. The sense of self-as-subject is not equivalent to the sense of self-as-physical-body.

Towards the end of *The Blue Book*, Wittgenstein makes two important remarks. First, “we can perfectly well adopt the expression “this body feels pain”, and we shall then, just as usual, tell it to go to the doctor, to lie down, and even to remember that when the last time it had pains they were over in a day” (1958, p. 73).<sup>12</sup> His point is that we should not construe the thing that suffers pain as a Cartesian immaterial ego. The notion of body in the expression

<sup>12</sup> Just before this, Wittgenstein says: “Let us now ask: ‘Can a human body have pain?’ One is inclined to say: ‘How can the body have pain? The body in itself is something dead; a body isn’t conscious!’ And here again it is as though we looked into the nature of pain and saw that it lies in its nature that a material object can’t have it. And it is as though we saw that what has pain must be an entity of a different nature from that of a material object; that, in fact, it must be of a mental nature. But to say that the ego is mental is like saying that the number 3 is of a mental or an immaterial nature, when we recognize that the numeral ‘3’ isn’t used as a sign for a physical object” (1958, p.73).



‘this body feels pain’ can perfectly well refer to a physical object, i.e. to a person or to a biological organism that can consciously feel pain. Wittgenstein states this point from the third-person perspective. But there is no reason why this point cannot be formulated from the first-person perspective. That is, by “this body” I can refer to myself. As I suggested above, I can experience my body *from the inside*. Someone else can tell me to go to the doctor or to lie down, etc. In this case, I can be aware of myself as *having* a body that is in pain (a sense of body ownership), and I can have a sense of myself *as* a body that is in pain (the sense of self-as-physical-body).

This brings us to Wittgenstein’s second remark: “The kernel of our proposition that that which has pains or sees or thinks is of a mental nature is only that the word ‘I’ in ‘I have pains’ does not denote a particular body, for we can’t substitute for ‘I’ a description of a body” (1958, pp. 73–74). My interpretation of this remark is that, even when it is my body that is in pain, there remains a difference between saying “I have pains” and saying “this particular body feels pain”. When Wittgenstein says that “the word ‘I’ in ‘I have pains’ does not denote a particular body”, this remark can apply to the speaker’s body considered *from the first-person perspective*. The reason why we can’t substitute for “I” a description of a body is *not* because my body has to be described from the third-person point of view or that it has to be treated as an intentional object of consciousness. Rather, the reason we can’t substitute for “I” a description of a body is that the “I” in “I have pains” captures the sense of *who* feels pains, while “a particular body” captures the sense of *what* feels pains. This difference, then, marks two different types of self-consciousness. In the former case, I am conscious of myself as the subject of pain experience. In the latter case, I am conscious of myself *as the body* that feels pain. I do not mean that this is the only possible interpretation of Wittgenstein’s remarks. My claim is that it is a plausible interpretation, according to which the sense of self as subject of experience is

distinct from the sense of self as a physical body, even when the body is characterized from the first-person perspective.

So far I have suggested an empirical approach to understanding the sense of self-as-object. The sense of full-body ownership provides theoretical and experiential grounds for understanding the sense of self-as-physical-body, which, in turn, helps to explicate the sense of self-as-object. This means that we can understand consciousness of self-as-object by studying the sense of full-body ownership. This fits Wittgenstein’s and Shoemaker’s assertions that the “I”-as object allows misrepresentation. The main advantage of my approach, however, lies in the fact that we know how to conduct empirical research on the sense of self-as-object. Now, in cognitive neuroscience there are plenty of exciting studies on full-body illusions and their neural mechanisms (Lenggenhager et al. 2007; Petkova & Ehrsson 2008; Ehrsson 2007; Ehrsson 2012; Ionta et al. 2011; Blanke 2012; Serino et al. 2013). A philosophical account will certainly benefit from looking at these. But what about the sense of self-as-subject? In the next section, I will appeal to the notion of experiential ownership in order to capture this basic form of self-consciousness.

### 3 Experiential ownership and self-as-subject

The sense of experiential ownership is not about ownership of body parts or a whole body, but about whether I represent myself as the unique *subject* of experience. As I am typing, for example, I do not only experience tactile sensations in my fingers. I also have a sense that I am the one who is having these tactile sensations. This corresponds to Wittgenstein’s assertion: “To ask ‘are you sure it is you who have pains?’ would be nonsensical.” In this section, I will (1) illustrate that the sense of experiential ownership is different from the sense of body ownership; and (2) draw two distinctions to explicate the sense of experiential ownership. I will then (3) describe some varieties of the immunity principle (IEM); and (4) provide two counterexamples against two major forms of

IEM. We will see that, *pace* Wittgenstein and Shoemaker, we need another way of articulating the distinction between the sense of self-as-object and the sense of self-as-subject.

Moro et al. (2004) describe two patients with somatoparaphrenia. These patients suffered not only from somatoparaphrenia but also from hemispatial neglect and tactile extinction. They denied ownership of their left hand, in which they had no sensation, and their left visual field was lost. So far, we might think that these cases involve only misrepresentation of body ownership. But there is more. When the researcher moved the patients' left hand to the right-hand side so that they could see it, their tactile sensation was restored. But despite representing themselves as the subjects who felt the sensations, the two patients still denied the ownership of their left hands (2004, p. 440–441). This shows that it is possible to have the sense of experiential ownership without the sense of body ownership. The two types of self-experience are conceptually and empirically dissociable.

To clarify the notion of experiential ownership, let me begin with the point that every phenomenal state has a *what*-component and a *who*-component. The *what*-component includes the representational content and the phenomenal character of that state. The *who*-component ties the *what*-component to a unique subject. The basic assumption here is that every phenomenal state has one and only one subject. The sense of experiential ownership is exclusively about the *who*-component—it concerns whether one experiences oneself as the subject of a phenomenal state. I will now draw two distinctions to further clarify this point.

The first distinction is between the *fact* of experiential ownership and the *sense* of experiential ownership. When a subject experiences a phenomenal state, there exists a *fact* that he is the subject of that state. This fact of experiential ownership is constitutive of every conscious experience—i.e. every experience has a unique subject. For every conscious experience, we can ask “Who is the subject of that experience?” and there exists a fact of the matter. For example, right now it is me, not you, who is ex-

periencing lower-back pain. The fact of experiential ownership is objective in that it refers to a biological fact about whether a subject undergoes a phenomenal state.

When a subject experiences herself *as* the unique subject of a phenomenal state, she has the *sense* of experiential ownership, i.e. she experiences herself as the subject of that state. This aspect is captured by the Wittgenstein Question: “Are you sure it is you *who* has pains?” When a subject answers this question, she relies on her sense of experiential ownership. When I have a tactile sensation, I experience *what it is like for me* to undergo that sensation. The *what-it-is-like* aspect, i.e., the phenomenal character, belongs to the *what*-component. The *for-me* aspect refers to the subjective sense that I am the one who is having the sensation.<sup>13</sup>

The fact of experiential ownership and the sense of experiential ownership are two different aspects of experiential ownership: the *factual* aspect and the *subjective* aspect. These are not numerically different states or events that can be detached from a phenomenal state. Rather, they are two ways of characterizing the *who*-component of that state. The factual aspect addresses whether a subject experiences a phenomenal state; the subjective aspect concerns whether the subject is conscious of the factual aspect. But many philosophers do not see that these two aspects are not the same. To sustain this distinction, I will later argue that the factual aspect of experiential ownership can be misrepresented, which means that sometimes the Wittgenstein Question can be perfectly intelligible. Misrepresentation, as I shall explain, happens when the subjective aspect fails to match the factual aspect of experiential ownership.

The second distinction is between the first-personal sense and third-personal sense of experiential ownership. Suppose I experience a phenomenal state—say, lower-back pain. Not only do I experience the phenomenal character of the pain but also, *in the very same experience*, I have the sense that it is *me* who is experiencing that particular pain. This sense of

<sup>13</sup> For other views about the *for-me* aspect, cf. Kriegel (2009) and LeGrand (2007).

experiential ownership is first-personal, since it is part of the pain experience rather than resulting from a separate act of reflection. I experience a sense of experiential ownership by experiencing the pain without requiring any further attention or introspection.

Now suppose I participate in an experiment where several subjects receive tactile stimulations in a random order and everyone is simultaneously scanned with fMRI equipment.<sup>14</sup> Later, using the fMRI data on my somatosensory cortex, I can judge whether it was me who experienced a particular stimulation a few minutes ago. In this case, the sense of experiential ownership is considered from the third-person point of view, where the sense of experiential ownership is the content of a further judgment or reflection rather than an integral part of the respective phenomenal states.

I suggest that the sense of self-as-subject is captured by the first-personal sense of experiential ownership. Being conscious of oneself-as-subject just *is* to experience oneself as the subject of a phenomenal state. This implies that the sense of self-as-subject is exclusively about the *who*-component of a phenomenal state—no parts of the *what*-component belong to it. The sense of self-as-subject concerns whether I experience myself as the subject of a phenomenal state and nothing else. For the rest of this paper, I will use the term “the sense of experiential ownership” strictly in the first-personal sense.

Can one’s sense of self-as-subject go wrong? Following Wittgenstein and Shoemaker, most philosophers believe that the answer to this question is negative. According to Shoemaker, “in being aware that one feels pain one is, tautologically, aware, not simply that the attribute *feel(s) pain* is instantiated, but that it is instantiated *in oneself*” (1968, pp. 563–564; emphases in original). Hence, when I consciously feel a sensation, I *cannot be wrong* about whether it is me who feels it. This immunity (IEM) is widely considered to be a conceptual truth.<sup>15</sup>

<sup>14</sup> The method used here is called hyperscanning; cf. Montague et al. (2002).

<sup>15</sup> Also, when specifying the “I”-as-subject, Shoemaker remarks that “not every self-ascription could be grounded on an identification of a presented object as oneself” (1968, p. 561). Because identification of

I want to argue, however, that both Shoemaker and Wittgenstein are wrong. IEM is not a conceptual truth, and sometimes it makes perfect sense to ask the Wittgenstein Question—namely, “Are you sure it is you who is having a so-and-so experience?” Using my own terms, I will argue that the *sense* of experiential ownership can misrepresent the *fact* of experiential ownership. First, let me briefly mention some varieties of IEM. (1) Pryor (1999) distinguishes between *de re* misidentification and *which-object* misidentification.<sup>16</sup> *De re* misidentification is false identification of two particular objects. It occurs when a mental state that *a* is F involves an assumption that  $a = b$ , but in fact  $a \neq b$ . For example, when looking in the mirror, I misidentify someone else as myself (Pryor 1999, p. 276). A mental state enjoys *de re* immunity just in case it is not possible for the state to be in error through *de re* misidentification. In the case of *which-object* misidentification, one makes an existential generalization that there is something that is F based on suitable grounds, but misidentifies *which thing* is F (Pryor 1999, p. 281). For example, when listening to a symphony orchestra, I can tell that one of the trumpet players is slightly out of tune, but I misidentify which one it is. A mental state enjoys *which-object* immunity just in case it is not possible for the state to be in error through *which-object* misidentification. (2) De Vignemont (2012) recently distinguished bodily immunity from mental immunity. Mental immunity concerns whether certain self-ascriptions of mental states, including thoughts, judgments, or sensations, etc., enjoy IEM. By contrast, bodily immunity is not about mental states but about bodily properties. It concerns whether certain self-ascriptions of bodily states enjoy IEM, e.g. “my legs are crossed”.<sup>17</sup>

the self requires that when ascribing a mental state to oneself, e.g. “*a* is F”, one needs to demonstrate both “*b* is F” and “ $a = b$ .” But “*b* is F” would in turn require both “*c* is F” and “ $b = c$ ”, and hence generates an infinite regress. This, Shoemaker argues, shows that the sense of self-as-subject must be identification-free.

<sup>16</sup> Although disputed (Coliva 2006), many still consider this distinction useful.

<sup>17</sup> Other varieties of IEM have been proposed in the literature. For example, Shoemaker (1968) distinguishes between circumstantial and absolute immunity, and between *de facto* and logical immunity (Shoemaker 1970; cf. also Coliva 2006). Pryor (1999) distinguishes between relative and absolute immunity. The former refers to im-

My target is a form of mental immunity that I call *experiential* immunity. *Experiential* immunity concerns phenomenal experiences. It is a form of *relative* immunity—that is, it is relative to first-personal access to phenomenal states, such as introspection, somatosensation, proprioception, etc. Experiential immunity is then the phenomenon that, when I am aware of a phenomenal state through first-personal access, I cannot be wrong about whether it is me who feels it. Experiential immunity can be construed as *de re* or *which-object* immunity. In the following section, I present counterexamples against both versions of experiential immunity. This will show that the sense of self-as-subject can be erroneous.

Bottini et al. (2002) describe a somatoparaphrenia patient (“FB”) who has lost tactile sensation in her left hand and insists that her left hand belongs to her niece. They conducted the following tests on the patient, each involving several trials: (i) FB was blindfolded and told by the researcher that her left hand would be touched. Then the researcher actually touched the dorsal surface of her left hand. The result was that FB always reported feeling no sensation. (ii) FB was again blindfolded and was told that her *niece’s* hand would be touched. The result in this case was that, when the researcher touched the dorsal surface of her left hand, surprisingly, FB reported feeling the touch.<sup>18</sup> The relevance of this case to IEM lies in the fact that, since FB was blindfolded during these tests, she relied on internal and first-personal access (e.g., introspection, somatosensation, proprioception) to determine whether or not she felt the touch. The perplexity lies in the difference between tests (i) and (ii). For the researcher, the only difference between the two

was the verbal cues given to FB before touching her hand. The remaining conditions were the same. But for FB, the difference was dramatic. Why is it that FB felt nothing when she expected that she herself would be touched, but felt the sensations when she expected that her niece would be touched? What is the best description of this strange phenomenology?

My view is that, during test (ii), FB misrepresented her tactile sensations as belonging to someone else, namely her niece. For the sake of argument, Shoemaker and I can agree on the following claims: (1) for every phenomenal state there must be a subject who experiences it; (2) every phenomenal state is in principle available to first-personal access (Shoemaker 1996); (3) every phenomenal state is experienced by the one who has first-personal access to that state. The crucial point is that (1)–(3) do not imply that (4) every phenomenal state is, from the first-person point of view, *represented as* experienced by the one who has first-personal access to that state. In FB’s case, (4) fails. FB fails to represent from her first-person perspective that she is the owner of the sensations. During test (ii), the factual aspect of her experiential ownership of the tactile sensations was intact when she was told that her niece would be touched, i.e., she was indeed the one who felt the tactile sensations. What went wrong was her sense of experiential ownership. Although FB felt the sensations, she misrepresented this fact as it being her niece who felt them.<sup>19</sup> This shows that it is empirically possible for a subject, while being aware of a phenomenal state via a first-personal

<sup>19</sup> Shoemaker describes IEM as follows: ‘The statement ‘I feel pain’ is not subject to error through misidentification relative to ‘I’: it cannot happen that I am mistaken in saying ‘I feel pain’ because, although I do know of someone that feels pain, I am mistaken in thinking that person to be myself’ (1968, p. 557). Based on this description, some might insist that the self-ascriptions involved in IEM must be propositional in form, i.e. judgments, beliefs or statements. However, I contend that this restriction is unnecessary. What is crucial for IEM is that the self-ascriptions are based on first-personal grounds such as introspection, somatosensation, and proprioception, etc. As Bottini et al. have stated: “The patient was blindfolded and instructed to say ‘yes’ when she felt a touch and ‘no’ when she did not feel any touch” (2002, p. 251). So when FB said “yes” during test (ii), there is no reason why this wouldn’t count as a self-ascription. Applying Shoemaker’s description to FB’s case: I am mistaken in reporting ‘yes’ during test (ii) because, although I do know of someone that feels the sensations (via first-personal access), I am mistaken in my thinking about who that person is. Shoemaker’s IEM can be violated.

munity relative to certain rational grounds G, and the latter immunity by every possible ground. Regarding judgments and beliefs, Coliva (2006) suggests a distinction between immunity relative to the subject’s own rational grounds and immunity relative to background presuppositions.

<sup>18</sup> Test (ii) was conducted for four sessions, and FB reported feeling touches in 70%, 70%, 100%, and 80% of the trials respectively. As Bottini et al. observe: “her tactile imperceptions dramatically recovered” (2002, p. 251). To test if FB was just guessing, she was again blindfolded and told that her right hand (which is normal) would be touched. But actually the researcher did not touch her right hand. The result was that FB never reported feeling sensations—i.e., she passed the catch trials.



method, to commit a *de re* error regarding who the subject of that state is. Hence, *de re* immunity fails. Using my own terms, the sense of experiential ownership can misrepresent the fact of experiential ownership.<sup>20</sup>

The second case against Shoemaker's IEM is the "body swap illusion" (Petkova & Ehrsson 2008, figure 6). This involves agentive experience—I experience myself as someone who is doing something. In an experiment, subjects wore a head-mounted display (HMD), and stood face-to-face with the experimenter, who wore two closed-circuit television (CCTV) cameras. The images registered by the CCTV cameras were transmitted concurrently to the subjects' HMD, such that through the HMD the subjects saw their own body facing themselves. Both the subjects and the experimenter extended their right hands, took hold, and then squeezed synchronously for two minutes. Twenty college students participated in this experiment. The authors describe their phenomenology: "after the experiment, several of the participants spontaneously remarked: 'I was shaking hands with myself!'" (2008, p. 5)

This strange phenomenology indicates that the subjects' agentive experience was mistaken. It was the experimenter who was shaking their hands, not the subjects themselves. Again, Shoemaker and I can agree that: (1) for every agentive experience there must be a subject who experiences it; (2) every agentive experience is in principle available to first-personal access; and (3) every agentive experience is experienced by the subject who has first-personal access to it. However, (1)–(3) together do not imply that: (4) every agentive experience is, from the first-person perspective, *represented as* experienced by the subject who in fact has first-personal access to it. In this case, *which-object* immunity fails because (4) was violated by

those who experienced the strange phenomenology in the body swap illusion. They were aware that there was someone having the agentive experience of squeezing their hands, but they misrepresented themselves as the subject of that experience.<sup>21</sup>

As such, it is possible for the subject of a given conscious experience, while being aware of that experience via a first-personal standpoint, to be mistaken about who the subject is.<sup>22</sup> Thus Wittgenstein is wrong: it would make perfect sense to ask FB and the body-swap subjects: 'Are you sure that it is *you* who is having a so-and-so experience?' And Shoemaker is wrong, too: experiential immunity is violated both in FB's case and in the body-swap illusion. One's sense self-as-subject can be mistaken—that is, the sense of experiential ownership can misrepresent the fact of experiential ownership. Therefore, since both the sense of self-as-object and the sense of self-as-subject can involve misrepresentation, Shoemaker's IEM fails to distinguish between them.<sup>23</sup>

21 Again, one might wonder whether the misrepresentation in this case was about the judgment rather than about the sense of experiential ownership. My reply is that since the subjects were normal college students, their reportability was not in question. So it is plausible to assume that their reports that "I was shaking hands with myself" were based on their subjective phenomenology, and more specifically on their sense of experiential ownership. Hence it was their sense of experiential ownership that committed misrepresentation.

22 There are at least two other (possible) cases of misrepresentation of the sense of experiential ownership. One is *voice ownership*: an illusion in which a stranger's voice, when presented as the auditory concomitant of a participant's own speech, is perceived as a modified version of one's own voice. "It felt as if the voice I heard was my voice" (Zeng et al. 2011). The other is *perception ownership*: A twenty-three-year-old male (DP) suffered from right inferior temporal hypometabolism (Zahn et al. 2008). The authors of a study on this male described his sensations as follows: "It appeared to him that he was able to see everything normally, but that he did not immediately recognize that he was the one who perceives and that he needed a second step to become aware that he himself was the one who perceives the object."

23 Let me briefly compare my position with other views. First, following Shoemaker, Coliva (2000) states that "If a subject is introspectively aware of pain, this just means that she is feeling pain [...] it is a matter of *conceptual truth* that if a subject is introspectively aware of a certain mental state, then she herself is having it and, therefore, that *mental state is her own*" (my emphasis). In contrast to Coliva, my account rejects IEM as a conceptual truth. From the fact that a subject experiences a mental state it does not necessarily follow that the subject represents herself as the one who experiences that state. I take the possibility of misrepresentation to be an important feature of the sense of experiential ownership. Second, Legrand (2007) emphasizes that consciousness of self-as-subject is pre-reflective, meaning that it is not an object of intentional consciousness. She says that the self-as-subject "is neither an external object (for example, it is not my body that I can observe in

20 One might object that the mistake that FB made was about the judgment of experiential ownership, not the sense of experiential ownership. My reply is that since FB was blindfolded, her report was based on first-personal grounds, i.e. on introspection. In addition, FB passed the catch trials mentioned in. As Bottini et al. have stated, FB "did not show any other sign of mental deterioration on the Mini Mental State Examination" (2002, p. 251). Therefore, no evidence suggests that her reports were unreliable. These considerations support the idea that the mistake was FB's sense of experiential ownership rather than her judgment. For other objections and responses, cf. Lane & Liang (2011).

I propose that this distinction can be made clearer by looking again at the sense of body ownership and the sense of experiential ownership. As I suggested in the last section, the sense of self-as-object can be understood in terms of a sense of self-as-physical-body which, in turn, can be understood via a sense of full-body ownership. Hence, when one experiences full-body ownership, one is conscious of oneself-as-object. In this section, I have suggested that we take an empirical approach to understanding the sense of self-as-subject. We can understand the consciousness of self-as-subject by studying the sense of experiential ownership.<sup>24</sup> In the

the mirror) nor an internal object [...] I am simply looking outside at the external world, and within this single act of consciousness I pre-reflectively experience myself-as-subject” (2007). I agree that the sense of self-as-subject is often implicit rather than explicit. But Le-grand’s view neglects the distinction that I draw between the fact and the sense of experiential ownership. This is indicated by the fact of her embracing IEM. The fact of experiential ownership can be secured simply by looking outside at the external world, but whether one’s sense of experiential ownership is correct is another issue.

<sup>24</sup> What is the relationship between the sense of body ownership and the sense of experiential ownership? The short answer is that the former presupposes the latter, but a full treatment would require another paper. Here, let me draw on Metzinger’s Self-model Theory of Subjectivity (2003, 2008) to briefly address this issue. According to this theory, PMIR (phenomenal model of the intentionality relation) is a phenomenal experience that represents the relation between a subject and an object component. For example, I take a bite of an apple. The PMIR contains a subject component (I), a relation component (tasting), and an object component (the apple). But I want to propose a revised version of PMIR. Since the PMIR is a complex phenomenal property experienced by a subject, it would sometimes be legitimate to ask who is experiencing this particular PMIR. Does the subject attribute the sense of experiential ownership of this PMIR to him or herself? My proposal is that PMIR consists of three components: (1) the sense of experiential ownership; (2) intentional relations; and (3) an object component. On this view, PMIR already involves the sense of experiential ownership as the subject component, which is distinct from intentional relations and the object component. This revised version of PMIR helps to unpack the phenomenological structures of the sense of body ownership as follows. The subject component is served by the sense of experiential ownership. The object component can be one of the following: my hand, a rubber hand, someone else’s leg, my whole-body, or a virtual body, etc. The intentional relations include vision, touch, proprioception, location, motion, introspective awareness, affective feelings, and so on. Four quick remarks are relevant here. First, the sense of body ownership is itself a phenomenal state, about which (2) and (3) specify the *what*-component. The *who*-component of the sense of body ownership is characterized by (1) the sense of experiential ownership. Hence, the sense of body ownership presupposes the sense of experiential ownership. Second, it is (1) and (2) that generate the sense that (3) is part of my body. Third, the difference between the sense of body-part ownership and the sense of full-body ownership lies in (3), while (1) and (2) may remain the same. Finally, based on my proposal in section 1, the sense of self-as-physical-body can be understood in terms of the following structure of PMIR: (1) the sense of experiential ownership; (2) intentional relations; and (3) a whole body. And the sense of self-as-object can be understood in terms of the same structure of PMIR as well.

next two sections, I examine some of the most relevant empirical accounts about the sense of self-as-subject. I argue that none of them are satisfactory. The reasons for this will be valuable when we consider where to go from here.

## 4 Core-self and affective-self

For animals, many biological values, such as finding food and shelter, avoiding predators, etc., have to do *homeostasis*—namely maintaining overall physiological states within the range required for survival (Damasio 1999, 2010; Panksepp 1998, 2005). To explain this, both Damasio and Panksepp propose that the brain has distinctive emotion systems and self-systems (the “proto-self” and the “core-self”). These inter-connected systems regulate homeostasis by integrating external information from perception with internal information from the body.<sup>25</sup> Despite their differences, Damasio and Panksepp share the following views: (1) emotions and homeostasis play essential roles in explaining how the sense of self is generated in the brain; (2) the key brain areas related to the self involve not only cortical but also sub-cortical regions, especially the brain stem possessed by both humans and many animals; (3) those brain areas are crucial, because multifarious types of neural information are integrated in those regions and provide representations of the whole body; (4) both Damasio and Panksepp believe that their accounts explain not only the sense of self-as-object but also the sense of self-as-subject. In the following I elucidate these points and then examine whether their goals are achieved.

According to Damasio, animal brains have what he calls the proto-self system, which is “a dynamic collection of integrated neural processes, centered on the representation of the living body” (2010, p. 9). The neural processes of

<sup>25</sup> Both Damasio and Panksepp distinguish between emotions and their neural substrates, on the one hand, and feelings (Damasio) or affective feelings (Panksepp), on the other. Emotions refer to innate patterns of neural and physiological responses to environmental events. Feelings (or affective feelings) refer to phenomenal consciousness of emotions (Damasio 1999, p. 42, p. 55; Damasio 2010, pp. 108–110; Panksepp 1998, pp. 48–49; Panksepp 2005, p. 32). The emotion-systems closely interact with the self-systems to regulate and manage homeostasis.

this system represent “moment by moment, the most stable aspects of the organism’s physical structure”, on the one hand, and “the externally directed sensory portals”, on the other (2010, p. 190). This generates *primordial feelings* that “reflect the current state of the body” and “provide a direct experience of one’s own living body, wordless, unadorned, and connected to nothing but sheer existence” (2010, p. 21, p. 185). The proto-self system and primordial feelings account only for the sense of self-as-object (2010, p. 9, p. 202). The sense of self-as-subject is generated when an animal interacts with the environment such that a neural representation of the interaction is generated in the brain (2010, pp. 9–10, p. 91, p. 202). By interacting with external objects, the current state of the body and the proto-self system are modified. This modification activates the core-self system, which enhances attention to external objects and “engenders a sense of ownership” (2010, pp. 202–203). This is closely related to the sense of experiential ownership discussed above. It is part of what Damasio calls *core consciousness*, which “displays [...] moment by moment, that you rather than anyone else are doing the reading and the understanding of the text” (1999, p. 10).

Damasio’s key idea is that the brain produces not only first-order representations of external objects and of the body (2010, p. 76, p. 84, pp. 91–97), but also *second-order representations* of the relationship between objects and the organism (1999, pp. 169–170; 2010, pp. 71–72, p. 181). These are “the source of the sense of the self in the act of knowing” (1999, p. 169). When the core-self is *felt* (1999, p. 172), i.e. when the second-order representations become conscious states (2010, p. 248), core consciousness emerges. This includes a minimal sense of self-as-subject, a transient sense that “it is you [...] doing the seeing” (1999, p. 169; cf. 2010, p. 168), or the sense that I am the subject of current experiences (cf. 2010, p. 185, p. 203, p. 209). As we can see, this account is highly relevant to our current investigation.

Damasio emphasizes that the most crucial neural structures related to the proto-self and the core-self systems are found in the subcor-

tical regions, especially the brain stem (2010, p. 195, p. 205).<sup>26</sup> They include, among others, the nucleus tractus solitarius (NTS), the parabrachial nucleus (PBN), the periaqueductal gray (PAG), the hypothalamus, and the superior colliculus (2010, pp. 98–99, pp. 191–192; 1999, pp. 180–183). Why are these neural structures so critical for the core-self and core consciousness? According to Damasio, core consciousness results from *integration* of interoceptive, proprioceptive, and exteroceptive information, which produces second-order representations (2010, p. 76, p. 97, pp. 190–196, p. 199, p. 203, pp. 206–209). The brain areas just mentioned receive input from many other regions, which process information about external objects and internal bodily conditions (2010, p. 78, p. 80, pp. 84–85, p. 94, pp. 99–100, pp. 207–209). Thus it is in these areas that integration is thought to take place. Integration in those areas constitutes core consciousness because they provide neural representations of the organism’s *whole body* (2010, p. 68, pp. 94–97, p. 209, pp. 244–245), and the integration is implemented by neural synchrony in the gamma range (2010, p. 20, pp. 86–87).

Panksepp points out seven basic innate emotion-systems in mammals: seeking, rage, fear, lust, care, panic, and play.<sup>27</sup> These emotion-systems generate affective feelings, which characterize how animals respond to environmental challenges. Panksepp & Northoff (2009) also postulate that the proto- and core-self systems monitor and regulate homeostasis. The proto-self is ‘the most ancient form of coherent body representation’, and the core-self gives rise to “affective consciousness”.<sup>28</sup> Both systems are

<sup>26</sup> For Damasio, the cortical areas that are important for the core self include insular and somatosensory cortices (2010, pp. 205–209).

<sup>27</sup> According to Panksepp, emotions and affective feelings are internally generated by neuronal mechanisms to respond to life-challenging events. The neural systems of emotions compute and monitor homeostasis by evaluating an organism’s adaptation to the environment. Each emotion system refers to a specific neural network, mainly in the subcortical areas.

<sup>28</sup> Panksepp and Northoff prefer to use the expressions “proto-SELF” and “core-SELF” to emphasize neural mechanisms rather than mental phenomena, but this emphasis need not concern us here. They describe the relation between core-SELF and affective consciousness as follows: “What is subjectively experienced here is the relation of one’s body to the incentives in the environment as well as internally generated emotional arousals—the core-SELF thus enables the organism to access this relation in terms of subjective experience, e.g., a primitive form of phenomenal consciousness, which at this level is essentially affective” (2009, p. 196).

causally mediated by what they call affective *self-related processing*, which integrates interoceptive information from the body and exteroceptive stimuli from the environment. The main mechanism that underlies this processing is a subcortical-cortical midline system (SCMS) (2009, p. 197). The subcortical parts of this network include “the Periaqueductal gray (PAG), the superior colliculi (SC), and the adjacent mesencephalic locomotor region (MLR), as well as preoptic areas, the hypothalamus, and dorso-medial thalamus (DMT)” (2009, p. 201). On the superior colliculi (SC) and the periaqueductal gray (PAG), they tell us that:

The colliculi and the PAG are among the most richly connected areas of the brain; both receive afferents from several exteroceptive sensory regions (occipital, auditory, somatosensory, gustatory, and olfactory cortex) and, at the same time, afferents from other interoceptive subcortical regions. In addition, the PAG and the colliculi are connected with the cortical midline structures (CMS). (2009, p. 201)

Like Damasio, Panksepp and Northoff believe that the SC and the PAG play important roles in instigating the core-self system because they are the central areas where exteroceptive sensory information and interoceptive bodily information are integrated. They suggest that, due to anatomical convergence and neural synchronizations within the SCMS, “an archaic scheme of the *entire body* may be constituted in brain regions as low as the medial brainstem” (2009, p. 202; my emphasis).

Panksepp and Northoff claim that their theory explains what philosophers call the ‘experiential self’ and the ‘primitive form of selfhood’ (2009, p. 209). Self-related processing “intrinsically integrates affectivity, appropriateness and belongingness, and the phenomenal dimension of mineness into the *ownership of experience*” (2009, p. 199; my emphasis). This comes very close to the sense of experiential ownership that I discussed above. They consider self-related processing by the SCMS to be the mech-

anism not only of affective consciousness but also of the sense of self-as-subject.

In sum, Damasio, Panksepp and Northoff suggest that the sense of self-as-subject can be explained by full-body representations implemented by neural synchrony or by the SCMS. Now the key issue is: Do their accounts really specify the neural mechanisms that produce the sense of self-as-subject? Or do they specify only the mechanisms of the sense of self-as-object, i.e., of consciousness of oneself as a physical body interacting with the world? I argue that they address only the sense of self-as-object; they do not really provide a genuine account of the sense of self-as-subject.<sup>29</sup> Below I raise this theoretical issue; empirical arguments will follow in the next section.

Damasio claims that core consciousness is constituted by a second-order neural representation of the relation between animal and the environment. But this seems to require more explanation. Yet an explanation is not really provided by Damasio. I can agree that, for the sense of self-as-object, one must not only represent the external world, but also the body. But we cannot assume that the same account will automatically apply to the sense of self-as-subject. The problem with Damasio’s account is that the theoretical link between full-body representation and the sense of self-as-subject is lacking. And Panksepp and Northoff’s account is afflicted with the same defect. It might be that full-body representations are part of the biological conditions *necessary* for generating the sense of self-as-subject. But since they are also necessary for the sense of body ownership and the sense of self-as-object, it is far from obvious whether they are *sufficient* for the sense of self-as-subject. Let me elaborate.

Consider the full-body illusion mentioned in section 1. According to [Blanke & Metzinger \(2009\)](#), this illusion contains three central features related to self-consciousness. The first is *self-identification*. When the subjects experienced OBE during the experiment, “they felt as if the virtual body was their own” (2009, p. 12). We can see that this feature turns on the ques-

<sup>29</sup> Cf. [Legrand \(2007\)](#) for a slightly different criticism of Damasio.



tion “Is that body mine?” rather than “Am I the one who is having this experience?” So self-identification is about the sense of full-body ownership rather than the sense of experiential ownership. The second feature is *self-location*, which concerns “where my body is located in space and time”. Again, this is about the spatiotemporal position of the body rather than the sense of experiential ownership. Blanke and Metzinger call the third feature a *weak first-person perspective*, defined as a geometrical point of projection and nothing more (2009, p. 8). So construed, even a camera could possess such a perspective. Hence, this feature does not specify the sense of self-as-subject, either.

The point is that, in the OBE experiment, the sense of experiential ownership is not in question and hence not measured. This means that explanations of the mechanisms of full-body representation or the sense of body ownership do not necessarily apply to the sense of experiential ownership. As such, self-related processing can help explain full-body representation *without* explaining the sense of self-as-subject. Damasio, Panksepp and Northoff neglect the theoretical gap between full-body representation and the sense of self-as-subject, hence their accounts do not really explain the sense of self-as-subject. They suggest that the sense of self-as-subject results from integration by neural synchrony in the brain stem or the SCMS. But it remains unexplained why and how this could be so. To investigate these worries, I examine in the next section the two major proposals by neuroscientists regarding the mechanisms of the sense of self-as-subject: neural synchrony and processing in the SCMS.

## 5 Neural synchrony and subcortical-cortical midline structures

Neurons in different brain regions may exhibit rhythmic firing patterns. This is called neural oscillation, the frequency of which can be recorded by an electroencephalogram (EEG). When a group of neurons fire together with the same oscillation pattern, they are in *synchrony*. Neural synchrony is considered to be a central mechanism of many cognitive functions. In the

case of conscious perception, multifarious types of visual information are processed in different brain regions, which need to be combined in order to produce coherent percepts. Many researchers suggest that transient synchronization in the visual system provides such a binding mechanism (Engel & Singer 2001; Singer 2004; Singer 2007; Koch 2004). In addition to vision, synchronization in the beta and gamma ranges is also found in the olfactory, auditory, and somatosensory systems, as well as in other brain areas that influence (or are influenced by) perception, such as the pre-frontal cortex, the motor cortex, and the hippocampus (Singer 2007).

However, if this is all there is to neural synchrony, it would not explain the sense of self-as-subject at all. What we are looking for is not the mechanism that explains what I consciously perceive, but the mechanism that produces the sense that I, rather than someone else, am the subject of these perceptions.<sup>30</sup> Thus, information integration by neural synchrony may explain the content of consciousness without explaining the sense of experiential ownership, i.e., it explains *what* one experiences rather than *who* the subject of that experience is. In the following I consider three recent developments that connect neural synchrony more closely with self-consciousness.

(1) Uhlhaas et al. (2009) recently suggested that there are high correlations between disorders of self-consciousness and abnormalities in neural synchrony. Symptoms of schizophrenia, epilepsy, autism, Alzheimer’s disease, and Parkinson’s disease are related to dysfunctions of synchronization. For example, correlations have been suggested between reduced or abnormal alpha- or gamma-band oscillations, on the one hand, and impaired visual binding, auditory hallucination in schizophrenia, and impaired linguistic and auditory performance in autism, on the other. The problem is that the sense of experiential ownership is not itself targeted in these studies. Researchers measured how abnormal neural synchrony relates to impaired cognitive performance, rather than to who the subject of the experience is.

<sup>30</sup> The sense of experiential ownership is not studied in Singer’s work on neural synchrony at all.

(2) Lou et al. (2010) used transcranial magnetic stimulation (TMS) to show that a medial paralimbic network is crucial for minimal self-consciousness.<sup>31</sup> This network may “bind conscious experiences with different degrees of self-reference through synchrony of high frequency oscillations” (2010, p. 185). They tested three conditions that represent different degrees of self-reference: maximal (“Self”), intermediate (“Franz”), and minimal (“Syl”). In each condition a set of adjectives were sequentially presented on a screen.<sup>32</sup> In the “Self” condition, the subject’s task was to make personal judgments concerning how well each adjective fitted him or herself. However, none of these conditions are about the sense of experiential ownership. Whether it was “I” who looked at the screen and made the judgments was not in question. Hence, the sense of self-as-subject was not measured by the reported patterns of synchronization.

(3) Kanayama et al. (2009) used EEG to investigate the rubber hand illusion (RHI), and found high correlation between the visual-tactile integration process and gamma-band synchrony in the parietal cortex. The stronger the subjects experienced the illusion, the higher the synchrony was. The authors suggested that RHI is caused by gamma band synchrony. In addition, a study of the full-body illusion by Lenggenhager et al. (2011) found high correlation between alpha-band oscillations in the sensorimotor cortex and the medial prefrontal cortex, on the one hand, and subjects feeling themselves to be located in space, on the other. Unfortunately, these studies do not really tell us about the sense of self-as-subject. In these experiments, what was misrepresented was the sense of ownership of a body part or a whole body. Whether “I” was the one who was experiencing the illusions was not in question. The synchronization reported by these studies can help explain the sense of body ownership, but not the sense of self-as-subject.

<sup>31</sup> Lou et al. (2010) suggest that this network includes the anterior cingulate, medial prefrontal and posterior cingulate, and the medial parietal cortices, connected via the thalamus.

<sup>32</sup> In the ‘Franz’ condition, the subject judged how well each adjective fitted a well-known German football star Franz Beckenbauer. In the “Syl” condition, the subject’s task was to decide whether each of the different sets of adjectives had an even or odd number of syllables.

As far as I know, no empirical study on neural synchrony really targets the sense of self-as-subject. We cannot explain the sense of experiential ownership simply by describing the mechanisms of content of conscious perception, cognitive deficits, or body ownership. The lesson here is that we need first to ascertain that the neural information being integrated by synchrony is *about* the sense of self-as-subject, and not just about representation of the organism’s bodily condition. Unless we know exactly how the integrating processes bring about that one represents oneself as the subject of phenomenal or conscious states, we cannot say that the mechanisms of the sense of self-as-subject have been found. As I will suggest below, the key here is to identify the right research question. And this is where philosophy can make contributions to neuroscience.

The second proposal regarding the mechanisms of the sense of self-as-subject, suggested by Panksepp & Northoff (2009), is self-related processing implemented in the subcortical-cortical midline system (SCMS). This mechanism is notably related to the so-called resting state and the default mode network. Researchers have found that some brain areas are highly activated in the resting state, i.e. when the subject is not actively engaging with its environment (e.g. lying quietly in a scanner with eyes closed but awake) (Raichle et al. 2001). Interestingly, the activations decrease significantly when the subject performs tasks that involve focusing on the external world. These brain areas constitute what is now called the default mode network.

How one should interpret the neural activities in the resting state and the default mode network, and how they relate to self-consciousness, are controversial issues. For example, Gillihan & Farah (2005) point out that different research programs on the self employ divergent methodologies and implicate a wide range of brain areas. Putting all the data together, we do not obtain a specific or unitary picture, because pretty much the entire brain is involved in processing the sense of self. This and other criticisms suggest that we should be

cautious when interpreting the alleged empirical evidence about the sense of self-as-subject.<sup>33</sup>

Still, many researchers maintain that resting state activities and the default mode network are closely related to the self (cf. Gusnard 2005; D'Argembeau et al. 2007). Northhoff et al. (2006) reviewed a vast number of imaging studies, and compared the processing of what they call self-related tasks and non-self-related tasks.<sup>34</sup> They found that the data indicate the same group of brain areas, including “the medial orbital prefrontal cortex (MOFC), the ventromedial prefrontal cortex (VMPFC), the sub/pre- and supragenual anterior cingulate cortex (PACC, SACC), the dorsomedial prefrontal cortex (DMPFC), the medial parietal cortex (MPC), the posterior cingulate cortex (PCC), and the retrosplenial cortex (RSC)” (2006, pp. 441–442). These areas constitute the cortical midline structures (CMS), i.e. the cortical parts of the SCMS. Compared with non-self-related tasks, when subjects perform self-related tasks their CMS reveal high activation across all domains (2006, p. 450). The authors suggest that the CMS correspond to the default mode network,<sup>35</sup> and that neural activity in the CMS constitutes “an experiential self that mediates ownership of experience” (2006, p. 441). “Ownership”, they claim, “describes the sense that I am the one who is undergoing an experience” (2006, p. 448), which makes this account directly relevant to our investigation.

Legrand & Ruby (2009) argue against Northhoff et al. that the CMS are at most self-related, i.e. related to the self only to some extent, but not *self-specific*, i.e., not specific

enough to capture the sense of self-as-subject.<sup>36</sup> Partly because of this criticism, but more because of new findings by his own group, Northhoff's view has changed significantly in recent times. First, Qin et al. (2010) recently studied the CMS in patients who are in a vegetative state. Surprisingly, by showing the patients their own names, various regions in their CMS were activated. Assuming that vegetative patients have lost the capacity to experience themselves as subjects, this finding undermines Northhoff's previous claim that the CMS constitutes an “experiential self that mediates ownership of experience.” In fact, Northhoff now agrees that the neural processing in the CMS is at most a necessary condition for the experiential self.<sup>37</sup>

Second, after conducting a meta-analysis on eighty-seven imaging studies covering 1433 participants, Qin & Northhoff (2011) suggest that self-related processing involves far fewer areas in the CMS. It is the perigenual anterior cingulate cortex (PACC), rather than the medial prefrontal cortex (MPFC) or posterior cingulate cortex (PCC), that is specifically involved in self-processing. This indicates that they have become more cautious about interpreting data. However, they still maintain that there exists a strong connection between the PACC and the sense of self. They argue that “our sense of self may result from a specific kind of interaction between resting state activity and stimulus-induced activity, i.e., rest–stimulus interaction, within the midline regions” (2011, p. 1221). That is, a narrower network *within* the CMS is not just necessary but indeed sufficient for “generating our sense of the self” (2011, p. 1222). I will comment on this last claim below.

Whether or not Qin and Northhoff take their notion of “sense of self” to include the sense of

<sup>33</sup> Another criticism is that, when the subject is interacting with the world, the neural activity in the default mode network is not totally extinguished. Some studies show that it is “reorganized in response to the working memory task” (Fransson 2006). Others have suggested that it could “function to support exploratory monitoring of the external environment when focused attention is relaxed” (Buckner et al. 2008).

<sup>34</sup> Many of these studies used a “judgment paradigm”. Subjects made explicit evaluative judgments about first- vs. third-person perspectives, own vs. others' judgments, self vs. others' decisions, own vs. others' personality traits, etc. The domains that Northhoff et al. (2006) reviewed include verbal, spatial, memory, emotional, facial, agency, ownership of movements, and social tasks.

<sup>35</sup> CMS show a high level of neural activity during the resting state. Non-self-referential tasks elicit large signal decreases in the CMS (Northhoff et al. 2006, p. 450).

<sup>36</sup> Legrand and Ruby indicated that the CMS are involved not only in self-related tasks, but also in several cognitive tasks that are not related to self-consciousness at all. For example, their review showed that some areas in the CMS are activated in others' mind reading, inductive and deductive reasoning, resting state, and memory recall. Moreover, these areas are “sometimes more activated for the self than for others and sometimes more activated for others than for self” (Legrand & Ruby 2009, p. 258).

<sup>37</sup> Northhoff et al. tell us that “the neural mechanisms underlying SRP [self-related processing] may only be considered a necessary condition which is not sufficient by itself to constitute a self with its self-specific contents” (2011, p. 55).

self-as-subject, I argue that their meta-analysis does not capture the sense of self-as-subject. They describe the operational criteria as follows: “the specificity of the self (e.g. hearing one’s own name, seeing one’s own face) was tested and compared across familiar (using stimuli from personally known people) and other (non-self–non-familiar, i.e. strangers and widely-known figures) conditions” (2011, p. 1211). The tasks in the “self condition” include “trait adjective judgment, retrieval of personality traits, face recognition, body recognition, personal thinking, name perception, autobiographical memory, own feeling, self-administered pain, person perspective tasks and agency tasks” (2011, p. 1224). All these tasks are about participants making judgments about whether a certain property may be suitably attributed to themselves. From the first-person point of view, the participants are judging whether the contents of the stimuli accurately characterize themselves. But again, whether “I” am the one who is experiencing the stimuli and making the judgments is really not in question, and hence not reflected in the data. Once again, the sense of self-as-subject is not measured by Qin and Northoff’s most recent study.

I conclude that Damasio, Panksepp, and Northoff have all failed to explain the mechanisms of the sense of self-as-subject. A theoretical gap exists between neural synchrony and the SCMS, on the one hand, and the sense of self-as-subject, on the other. But it is important to see exactly where the shortcoming is. It is not that neural synchrony and the SCMS are completely irrelevant to the sense of self-as-subject. Rather, the failure is that why and how they are relevant have not really been explained. This is because the neuroscientists have not clarified and captured the sense of self-as-subject well enough, such that they over-interpret data and make unjustified claims about this target phenomenon. In this regard, my proposals in sections 2 and 3 have provided the required clarification.

## 6 Conclusion

I have suggested that the sense of self-as-subject can be explicated by examining the sense of experiential ownership, which is distinct from the

sense of body ownership. Having a conscious experience secures only the fact of experiential ownership, not the sense of experiential ownership. This provides a reinterpretation of the distinction between the sense of self-as-object and the sense of self-as-subject. I elucidated the sense of self-as-object by looking at the sense of body ownership, and the sense of self-as-subject by examining the sense of experiential ownership. It became clear that both can misrepresent. The possibility of misrepresentation makes the sense of self-as-subject open to empirical as well as philosophical investigations. It is important to investigate how misrepresentation of the sense of experiential ownership is generated. This requires us to identify the right research question—which, I suggest, is precisely the Wittgenstein Question. When examining pathological cases or conducting experiments, researchers should ask their subjects questions like: “Are you sure it is you who is feeling your niece’s sensations?” or “Are you sure it is you who is shaking your own hand?” Then psychophysical and fMRI experiments can be developed to study the subjects’ responses. As such, to move forward, the first step is to look for and then to study the various conditions about which one can pursue the Wittgenstein Question.

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# Are there Counterexamples to the Immunity Principle? Some Restrictions and Clarifications

A Commentary on Caleb Liang

Oliver Haug & Marius F. Jung

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Our commentary focuses on the sense of experiential ownership and its implications for the Immunity Principle. In general we think that Liang elaborates the self-as-object and the self-as-subject in an interesting and refreshing way. Nevertheless, there are some problems that we want to address. (1) First, we argue that the sense of experiential ownership cannot misrepresent the fact of experiential ownership. (2) Second, we argue that neither the sense of experiential ownership in particular nor phenomenal states in general are eligible for identity judgments. (3) Then we claim that the two alleged counterexamples actually do not provide any valid argument against IEM. (4) We close by evaluating whether it makes sense to talk about the Immunity Principle as a non-trivial property, or whether the relevant properties are just mispredication or misguided reference.

## Keywords

Body-ownership | Body-swap illusion | *De re* misidentification | Fact of experiential ownership | Identification-freedom | Immunity to error through misidentification | Immunity to misguided reference | Judgments | Mispredication | Self-as-object | Self-as-subject | Sense of experiential ownership | Somatoparaphrenia | Which-object misidentification

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## 1 Introduction: Preliminaries and conceptual clarification

Liang investigates some interesting issues concerning self-consciousness and its relation to conscious phenomenology and bodily self-con-

sciousness. His argumentation, which has the aim of being interdisciplinary fruitful, is closely tied to some conceptual distinctions that are



also very important for our commentary. First, he refines the initial point of the Wittgensteinian distinction between self-as-object and self-as-subject (Wittgenstein 1958). An important distinction concerning the former is the sense of body ownership and the sense of self as physical body, which describes the self-as-object in a more fine-grained manner. The self as subject is also sub-classified in terms of the fact of experiential ownership and the sense of experiential ownership. The sense of experiential ownership describes mental states that refine proprietarily aspects of *who* is having the experience in question. Liang claims that the sense of experiential ownership is not privileged in the sense that it gives rise to the well-known property *immunity to error through misidentification* (IEM). In the second part of his investigation he is concerned with theoretical and empirical investigations made by Damasio, Panksepp and Northoff, which do not provide substantial evidence in their measurements for the sense of self as experiential subject. They rather concern the self-as-object and therefore disregard substantial aspects of self-consciousness. Our commentary will focus on the sense of experiential ownership with regard to IEM. According to Liang, there are several counterexamples to IEM, mainly to be found in misrepresentations (like in the body-swap illusion) due to a sense of experiential ownership. In this commentary, we ask ourselves the following questions: is the sense of experiential ownership a plausible candidate for exemplifying the property of IEM, and could there be serious counterexamples to that principle? We defend the following four theses:

- (1) The sense of experiential ownership cannot misrepresent the fact of experiential ownership (cf. section 3).
- (2) Phenomenal states like the sense of self as experiential subject are ineligible to serve as *bearers* of IEM as a property (cf. section 3).
- (3) Liang's counterexamples do not provide real counterexamples to IEM, be-

cause they do not aim at the target phenomenon (cf. section 4).

- (4) IEM is either a very trivial property of judgments or beliefs or could be explained in terms of immunity to misguided reference (cf. section 5).

In order to defend these four theses we introduce two conceptual distinctions by which we hope to describe the target phenomenon in greater detail. Some philosophers, such as Evans (1982) and Shoemaker (1968) consider IEM to be a property of *judgments*, whereas others, such as Coliva (2002) and Bermúdez (1998), talk about some phenomenal aspects. Let us summarise these two accounts of IEM as follows:

First-person pronoun immunity (IEM-FP): A speaker who uses the singular indexical expression “I” knows a thing to be  $\varphi$  and conducts a predication “a is  $\varphi$ ”. This judgment is based on the rule of *identification-freedom*, so that it is clear that “I am  $\varphi$ ” is a judgment that does not depend on any further identification component.<sup>1</sup>

Phenomenological immunity (IEM-P): Immunity to error through misidentification is a property of phenomenal states that characterises the constituents of first-person judgments. These identification-free constituents manifest themselves in phenomenological experiences about oneself.<sup>2</sup>

1 In other words, a judgment is identification-free if to judge that “a is  $\varphi$ ” *eo ipso* is to judge that “I am  $\varphi$ ”. Shoemaker's argument for identification-freedom (subject-use) can be summarized as follows. (1) The utterance “a is  $\varphi$ ” gives rise to an error through misidentification, if a speaker knows a thing to be  $\varphi$  and mistakenly thinks that ‘a’ refers to  $\varphi$  (cf. Shoemaker 1968). (2) Not every subject-use, which can give rise to knowledge about oneself, depends on identification, because this would lead to an infinite regress (cf. *ibid.*). (3) Since there is no identification of an object with a thinker in subjective first-person judgments, they are clearly incorrigible (relative to the first-person pronoun (e.g., some proprioceptive judgments or “I feel pain”); Shoemaker 1968). (4) Since the use-as-subject does not depend on identification, an error through misidentification is impossible.

2 This is a highly controversial metaphysical generalization of IEM, because it assumes that *there are* phenomenal constituents of IEM that serve for IEM as a property of judgments. Lane (2012), for instance, denies that there are any unique constituents that could explain *mineness* or mental ownership. Nonetheless, we suspect that the authors who defend theories of phenomenological immunity, like Liang, have to accept this generalization in one or another way. François Recanati (2012) seems to defend a similar position. A sub-

There is a strong inclination that the above philosophers who describe IEM as a property of judgments claim IEM to be something like a conceptual truth. But this would be overhasty, because of the fact that it is not yet clearly elaborated what a judgment with regard to the property in question actually is. We turn to this problem later. Liang seems to be a proponent of IEM-P, which holds that IEM is a property of phenomenal states:

My target is a form of mental immunity that I call experiential immunity. Experiential immunity concerns phenomenal experiences. It is a form of relative immunity—that is, it is relative to first-personal access to phenomenal states, such as introspection, somatosensation, proprioception, etc. (Liang [this collection](#), p. 8)

What distinguishes Liang’s account from others is that he emphasises that IEM does not hold necessarily. In an older paper he and Lane state that the philosophical orthodoxy of IEM has never been empirically challenged. That is because the majority of philosophers hold IEM as a conceptual truth, which has nothing to do with the empirically-tractable structure of reality (cf. Lane & Liang 2011). Our commentary is structured as follows. First, we summarize Liang’s most interesting claims and distinctions (cf. section 2). In section 3 we claim that it is impossible that the sense of experiential ownership can misrepresent the fact of experiential ownership, and that phenomenal states are not eligible bearers of IEM as a property. In section 4 our main claim is that Liang’s interpretation

subject experiences a state, for instance, through a proprioceptive mode, whereas the subject is not explicitly represented. He calls this *implicit de se* immunity to error through misidentification (IEM). This mode of experience is immune to error through misidentification because it is identification-free. Then the subject reflects upon this mode of experience, which means that she represents explicitly *who* the subject is. This is the *explicit de se*. The explicit involvement of a subject is constituted by the implicit involvement of the subject, which is identification-free. Since the former, the constituent, is IEM, it is also the latter. Recanati’s argumentation was the inspiration for summarizing proponents of phenomenal (or perceptual) immunity, as we did with IEM-P. The question arises whether some systems without any instantiated phenomenal properties could have beliefs that have the property of IEM. Since we are skeptical about IEM-P as a constituent of IEM-FP, as will be argued, nothing excludes this possibility according to our account.

of some empirical studies does not provide counterexamples to IEM. Section 5 develops the consequences of this claim and concludes with some aspects concerning the way in which we could talk about IEM in a more deflationary and less mysterious manner, such as in terms of immunity to misguided reference (IMR) or mispredication. In section 6 we conclude with some proposals for future research.

## 2 The sense of body ownership vs. the sense of experiential ownership

Before we discuss the self-as-subject in a more detailed manner, we focus on Liang’s conceptual refinements of the self-as-object. Liang proposes three important distinctions that are very helpful for the debate on bodily self-consciousness. The first marks out the fact of body ownership and the sense of body ownership. The fact of body ownership has nothing to do with phenomenal experiences of one’s own body. It just describes “[...] a biological fact about the anatomical structures of one’s body” (Liang [this collection](#), p. 2). In contrast, the sense of body ownership describes the experiences of the factual aspect of body ownership. Hence, to experience something as belonging to one’s own body is to experience a biological fact. Then Liang distinguishes between *the first-personal sense* and *the third-personal sense of body ownership*. We think that this is a very explanatorily fruitful distinction. The first-personal sense of body ownership describes some pre-reflective states such as walking or proprioceptive states. But these states could be third-personal or reflective as well if there are experienced from the outside, for instance through mirror recognition of one’s own body parts.

The last distinction concerning the self-as-object is between *the sense of body ownership* and *the sense of self as physical body*. The sense of body ownership is the experience of various body parts belonging to one’s own body, while the sense of self as a physical body concerns more ontological questions of the self. Here Liang introduces the sense of self as physical body as the sense of being a person of flesh and blood.

Let us concentrate on the distinction between *the first-personal sense* and the *third-personal sense of body ownership*. For us it is a rich conceptual tool that can help us refine the classic Wittgensteinian distinction between self-as-object and self-as-subject. We suggest that the notions of the first-personal sense of body ownership and the sense of experiential ownership are often used interchangeably. There are closely related but of course distinct from each other. Imagine a person who recognises that her legs are crossed through the first-personal sense of body ownership. She experiences her legs to be her own crossed legs. But here the Wittgenstein question makes perfect sense. Is it really she who is experiencing that very state? This open question marks out the sense of experiential ownership. We share Liang’s criticism that the lack of a distinction between a sense of bodily ownership and a sense of experiential ownership could result in overinterpretation of some empirical data. If this distinction makes sense—as we think it does—then Liang’s claim that Damasio, Panksepp, and Northoff’s conceptions of the core self do not target the sense of self as experiential ownership sufficiently is plausible. The claims fit rather with *the first-personal sense of body ownership*.

In order to target the sense of experiential ownership, the Wittgenstein question could be asked to the participants of some experiments. Then we could, according to Liang, measure and elaborate on not only *what* is experienced but also on *who* is experiencing. Liang convinces us that there is more to explain than just senses of body ownership. If the sense of experiential ownership marks out a specific phenomenal target property, then much has to be done in philosophical and interdisciplinary empirical research. If Liang is right—which we think he is—and the target phenomenon of the sense of experiential ownership is empirically tractable, some further research would be very interesting and illuminating.

### 3 IEM-P—A conceptual matter?

In order to discuss this appropriately we first have to recall some of Liang’s conceptual refine-

ments. One important distinction we want to discuss is the distinction between the fact of experiential ownership and the sense of experiential ownership, which mark out the factual and the subjective aspect of experiential ownership. The third-personal sense of experiential ownership describes the factual aspect, which can be observed from the outside via fMRI. Liang calls it a biological fact that, when a subject undergoes an experience, there is an objective fact of experiential ownership that is constitutive of the sense of experiential ownership. The first-personal sense is a phenomenal property of mental states, which means that it does not require further informational states to ensure that the one *who* is experiencing it *from the inside* sense herself experiencing it, which would be the “for-me” aspect. This is the property which concerns the aspect in which we and Liang are interested in: the self-as-subject. In order to evaluate the arguments of IEM, Liang uses the conceptual refinement offered by Pryor (1999), namely the *de re* and *which-object misidentification*. The former has been challenged through cases of somatoparaphrenia, the latter by the so-called body-swap illusion, both of which provide cases of misrepresentation. What happens in cases of misrepresentation? For Liang the sense of experiential ownership misrepresents the fact of experiential ownership. We argue that there are some aspects of the fact of experiential ownership and the sense of experiential ownership that are not that clear. Our thesis is that the fact of experiential ownership has nothing to do with IEM-P in the first place, but is rather what some philosophers describe as the conceptual truth of a subject having an experience. If you are describing the specific phenomenological richness of an instantiated experience, it is obviously true that it is an experience of a subject.<sup>3</sup> Since subjects are the bearers of experiences (as opposed to objects) it is quite obvious that there is a *fact* that somebody

<sup>3</sup> It is important to mention that a subject can experience a state “from the inside”, which she does not experience as her own. Experienced “from the inside”, it could belong to someone else or to nobody (Lane 2012). But this fact, which we take to be an analytic truth, is something ascribed “from the outside”. To say that somebody has an experience, is just to say that the experience is instantiated in a subject, regardless of which experience the subject undergoes exactly.

has this experience. This can be illustrated in Liang’s own words: “[w]hen a subject experiences a phenomenal state, there exists a fact that he is the subject of that state” (Liang [this collection](#), p. 6). But this is just analytically true, since experiences are not free-floating occurrences—because they, as a matter of principle, have a subject of experience. This is about using the words “somebody’s experience” correctly and is rather a description from the outside. It tells us nothing substantial about IEM-P. Perry (1998, pp. 96–97) talks about a similar phenomenon while recapitulating Locke’s idea of personal identity. He claims that “[a]n instance of being aware of an experience, and the experience of which one is aware is known, necessarily belong to the same person [...]”. To say something substantial it would be important for the content of the phenomenal experience of a specific state to *concern* the subject itself. But the content, experienced “from the inside”, is of course different from an analytical truth, because phenomenal states have nothing to do with the right usage of words. The content of the phenomenal experience is what Liang calls the sense of experiential ownership, experienced *from the inside*. Granted that these two conceptualizations are correct, it is impossible that a phenomenal state like the experiential ownership represented from the inside can misrepresent something that is rather a conceptual ascription or description from the outside. They are completely different categories. To understand this we can think of a patient suffering from dissociative identity disorder (DID), who has many different personalities. What would be the fact of experiential ownership here? To answer this question a very specific and rigorous conception of personal identity is needed, which cannot be discussed here.

Let us summarise the argument:

*Sense of experiential ownership cannot misrepresent fact of experiential ownership*

(1) The fact of experiential ownership is to describe (as we see it), as a matter of logical necessity, that an experience is instantiated in a subject, that is (according to Liang), if a sub-

ject undergoes an experience in the actual world, a matter of fact.

(2) The sense of experiential ownership concerns the content of a phenomenal experience, which can either be experienced as owned by a subject or by nobody.

(3) Phenomenal experiences do not represent facts or states of affairs and even less analytic truths.

(4) The sense of experiential ownership cannot represent the fact of experiential ownership.

(5) A representation necessarily goes together with the possibility of a misrepresentation.

(C) The sense of experiential ownership cannot *misrepresent* the fact of experiential ownership.

Does it generally make sense to talk about IEM-P as a property of phenomenal states? The remaining story about IEM-P could be that it serves as the basis for judgments that usher in beliefs (see section 4). The immunity would then hold just through the structure of experience itself. But does it?

We claim that there no error through misidentification is possible, because of the lack of judgments and cognitive elaboration at the phenomenal level. An identity judgment requires identifying two conceptually-represented ingredients. Phenomenal states can be accompanied by conceptual ingredients, but they are not basic properties of phenomenal states themselves.<sup>4</sup> Thus, they are distinct from one another. Hence we could say that phenomenal states are neither *eligible* for such a kind of error in general nor for a *de re* or which-object misidentification in particular. The intelligibility of IEM-P is very doubtful. Let us again summarise the argument:

*Ineligibility of IEM-P*

(1) To talk about identification is to talk about judgments and inferences that can be identified with one another, which means that they are *judged* to be identical.

<sup>4</sup> Proponents of *Cognitive Phenomenology* would probably deny this claim. We stick with Carruthers & Veillet (2011), who says that cognitive thoughts could causally initiate some phenomenal experiences. The stronger claim, that thoughts constitute phenomenal experiences, lacks substantial argument. Hence we stick to the position that phenomenal states and thought contents could occur in isolation from each other.



(2) To talk about misidentification is to talk about some defective judgments.

(3) Phenomenal states have nothing to do with judgments and inferences in the first place.

(C) Phenomenal states lack the basic properties to be defective.

The ineligibility of phenomenal states of course satisfies the rule of identification-freedom. But since phenomenal states are always identification-free, the claim that they are immune to error through misidentification is misleading. Why is that? Remember that the content of phenomenal experience could occur without being owned by somebody (Lane 2012). Nevertheless, an experience is instantiated in a subject, which is just a matter of principle or the factual aspect. If the content of a phenomenal experience just occurs, without an experience of *mineness*, then the rule of identification-freedom tells us nothing substantial, because of the lack of any committed judgment. An interesting question, of course, is whether there are any judgments that are identification-free.

We would recommend talking about IEM as a property of judgments or beliefs (IEM-FP) instead of talking about phenomenal states. Nevertheless, there are also some problems with IEM-FP that we will present and discuss in section 4. Let us now have a closer look at the two alleged counterexamples that Liang proposes.

## 4 Two counterexamples to IEM-FP?

IEM is generally considered to be a property of judgments concerning the first-person perspective and respectively involving the first-person pronoun. A major problem in the current discussion about IEM is that no solid account of what judgments are is given. In contrast to philosophers that are concerned with beliefs, who usually give a brief declaration of what they take beliefs to be (e.g., relations, sentence operations etc.), philosophers involved in the IEM discussion seem to take judgments to be already widely understood. Since the initial paper written by Shoemaker (1968) focuses on the identification-freedom of judgments, we think that what philosophers

usually talk about using the term “judgment” is inference or reasoning.<sup>5</sup>

So we take judgments to consist of propositional reasoning. Let us have a look at some examples:

Judgment A:

(1) John is a fish. (Fa)

(2) Fish can swim.  $(\forall x)(Fx \rightarrow Gx)$

(C) John can swim. (Ga)

Judgment B:

(1) John is a fish. (Fa)

(2) John is Jim’s best friend. (a=b)

(C) Jim’s best friend is a fish. (Fb)

Though usually the conclusion of these inferences is what is referred to using the term “judgment”, we do not think that philosophers generally tend to take judgments as being adequately analysed as propositional attitudes (as relations between persons and propositions like

<sup>5</sup> The reason for this is the following: if you talk about “identification-components”, there must be something that is composed of at least one identification-component, and probably of something else as well. The identification component (as described by current philosophers— $a=b$ ) is either a sentence or a proposition, either expressing an identification or representing it. (This distinction is just made to satisfy Platonists and nominalists.) What is it that is composed of identification- and other components? We think, according to the usual use of language of philosophers debating IEM (She sees a bleeding hand in the mirror and thus judges “I am bleeding”), that the most probable answer is that they are part of an inference. Whenever you say that one “judges”  $p$ , you want to express not only that she believes  $p$ , but also that she has come to this belief through inference. We take this to be an adequate interpretation of the term “judgment” as used in Shoemaker, Pryor, Barz, and probably Liang as well. It is probably inadequate for every instance of “judgment” in philosophy, because our interpretation suggests that there are (hidden or opaque) processes that are important for calling something a judgment. Even though proponents of accounts that are Rylean (Ryle 2009), for example, would strongly disagree (because they wouldn’t accept that there are hidden processes that we want to talk about using the term “judgment”), we think that there is in fact an ontological or categorical difference between judgment and beliefs: either judgments *are* processes and beliefs *are* states, or judgments are a subclass of beliefs, but a subclass of beliefs that one has come to through a process of inference (which is not necessarily the case with beliefs—just imagine someone manipulating your brain such that you gain new beliefs). So, unlike Ryle, we would say that as long as we are talking about human beings, judgments are certainly something that happen in the hidden depths of the human brain. And we can represent them—for our purposes—as structured like logical inferences. Please note that this is just an additional remark concerning our positive account of judgments that a lot of papers seem to lack. Our central argumentation does not rely on this specific ontological reading of “judgment” and “belief”.

“Jim believes that it is raining”). We take the whole inference to be what is referred to with the term “judgment”, and the conclusion to be what is referred to using the term “belief”.<sup>6</sup> Judgments A and B are analogous in the following sense: they are both judgments involving two premises and their logically necessary conclusions. But they differ in a particular aspect that is of the highest importance concerning IEM: only judgment B involves an identification, whereas judgment A is identification-free. So the first thing we can say is that IEM following from identification-freedom is not an exclusive property of judgments involving the first-person pronoun—there are numerous judgments that do not contain any identification-components. This is our first reason for thinking that IEM may hold, but is not a remarkable or significant property exclusively reserved for judgments involving the first-person pronoun.

What Shoemaker wants to make clear is that there are certain judgments that cannot take the logical form of judgment B and that these judgments involve the first-person pronoun, in the sense of Wittgenstein’s “subject-use”. Let us take a look at what Shoemaker means by giving examples for the object-use and the subject-use:

Object-use:

- (1) The person in the mirror is looking tired. (Fa)  
 (2) I am the person in the mirror. (a=b)  
 \_\_\_\_\_  
 (C) I am looking tired. (Fb)

As you can see, there are judgments involving the first-person pronoun that also involve an identification-component—at least that is what Shoemaker (1968) thinks. But when he claims that there are judgments that are immune to error through misidentification, he does not claim that they are immune to *any* error, and nor does he claim that the identity relation holds with metaphysical necessity—he just

claims that whenever one judges and this judgment involves certain kind of predicates (or properties) it is automatically identification-free. One of those predicates (or properties) is being in pain. Let’s have a look at how the judgment would work with this special predicate that we may call P\*.

Subject-use:

- (1) There is something that is in pain. ( $\exists x$ ) (P\*x)  
 (2) P\* is always a property of the person recognizing it. (P\*gen)  
 \_\_\_\_\_  
 (C) I am in pain (P\*a)

In fact this formal representation of such a judgment is even weaker than what Shoemaker may have had in mind, thus the strong reading of his idea of judgments that are IEM because of their identification freedom would be:

- (1) There is something that is in pain. ( $\exists x$ ) (P\*x)  
 \_\_\_\_\_  
 (C) I am in pain. (P\*a)

This reading gets closer to Shoemaker’s idea, because he would not agree that judgments explicitly involve a generalization such as (2). We undertook this brief exercise first of all to put pressure on the following point: although philosophers of different generations have been talking about IEM for decades, they usually fail to give an *explicit account* of what judgments are and how they work.<sup>7</sup> This exercise was meant to fill this theoretical gap for the purpose of the current discussion. So whenever someone utters “John is a fisherman”, we take this sentence to express a propositional attitude—a belief. But when we believe that he *judges* “John is a fisherman”, we also take that person to have made an inference, simply because that is what we want to say when we ascribe a judgment to him. Shoemaker’s claim that judgments like “I am in pain” are immune to error through misidentification does not mean that there are hidden structures, neither of the sentence ex-

<sup>6</sup> Note that we in fact think that beliefs are brain states and judgments (if they are inferences) are cognitive processes—but they do not need to be brain states and cognitive processes. Depending on which understanding of propositions you prefer (e.g., the meaning of sentences or informational packs), any machine that is capable of some kind of reasoning can judge and have beliefs.

<sup>7</sup> This means that there are no papers about IEM that give a positive account of judgments, e.g., Shoemaker (1968), Evans (1982), Barz (2010).

pressing the judgment nor of the propositional attitude expressed by the sentence “I am in pain”; it means that no identification-component was involved in the inference that has been made.

The second reason for undertaking this exercise is that we want to have a look at whether Liang’s counterexamples (especially the somatoparaphrenia example) are real counterexamples. We do not think that the two examples Liang gives are in any way counterexamples to IEM—though they are philosophically very interesting, especially concerning theories of self-consciousness. Liang claims that the two counterexamples falsify the Immunity Principle, but we claim that they do not meet the conditions that have to be met to falsify this theory. So we must first see what Liang takes to falsify the IEM theory and then settle on a criterion for how the IEM theory could be falsified.

Liang thinks that the following would suffice for IEM to hold:

- (1) for every phenomenal state there must be a subject who experiences it; (2) every phenomenal state is in principle available to first-personal access (Shoemaker 1996); (3) every phenomenal state is experienced by the one who has first-personal access to that state. The crucial point is that (1)–(3) do not imply that (4) every phenomenal state is, from the first-person point of view, represented as experienced by the one who has first-personal access to that state. (Liang this collection, p. 8)

Liang also considers his two counterexamples (the somatoparaphrenia patient and the body-swap illusion) to be counterexamples to (4), so the IEM-principle does not hold. In fact we agree with Liang that at least one of these examples is a counterexample to (4) but we do not agree that (4) is necessary for IEM to hold. So let us first have a look at how a falsification of the IEM-theory would have to look. The IEM-theory comes in the form of a material conditional: *if* a person judges “I am  $\varphi$ ”, *then* she cannot be wrong because of a misidentification. The truth conditions for a material condi-

tional are clear: the conditional is wrong if and only if the antecedent is true and the consequent is wrong. This brings us to the definition of a theoretical falsification of IEM:

Falsification of IEM =<sub>Df</sub> : **1.** The IEM-theory would be falsified if and only if a person judges “I am  $\varphi$ ” and is wrong in her judgment because of a misidentification. Or, more precisely: **2.** The IEM-theory would be falsified if and only if there is an example of a person that believes “I am  $\varphi$ ” and comes to this belief through inference (the judgment) that involves an identification component and this identification is wrong.

Thus, speaking more formally, a judgment of the following two forms must be present (cf. Pryor 1999):

wh-judgment<sup>8</sup>

- (1)  $(\exists x)(Fx)$  (predication to a variable)
  - (2) I am  $x$  (identification,  $x=a$ )
- 
- (C) I am  $F$  (predication to a constant, depending on the identification),  $(Fa)$

or

*de re* judgment<sup>9</sup>

- (1) A particular thing (*de re*) is  $F$  ( $Fa$ )
  - (2) I am that particular thing ( $a=b$ )
- 
- (C) I am  $F$  ( $Fb$ )

We pick these two different structures to emphasise that Shoemaker did not exclusively talk about *de re* “attitudes” but also about “existential quantification”, though he did not do so explicitly. Note that besides the presence of belief states such as (c) it is necessary for the falsification of IEM-theory that this conclusion is only wrong because (2) is wrong.

<sup>8</sup> A *wh*-judgment involving an identification starts with existential quantification over a variable. You know that there is *something* that has a particular property and then you identify that something with, e.g., yourself.

<sup>9</sup> A *de re* judgment involving an identification starts with a predication to a particular thing—a constant. So you know a *particular* thing to have a particular property and then you find that thing to be identical with, e.g., yourself.

The crucial question concerning Liang's counterexamples is: do they meet this condition? Consider the first example. It is—as Liang sees it according to Pryor—an example of a *de re* misidentification. *De re* misidentifications occur, for example, when there are two objects equally eligible for exemplifying the property in question. To show that Liang's first example is a counterexample to IEM one would have to prove, first, that the structure of a *de re* judgment as stated above holds, and second that the judgment is only wrong because the second premise is not true. Recall the first experiment: a patient suffering from somatoparaphrenia, FB, is touched on her hand and asked whether she feels her hand being touched. She answers “No”. When she is asked whether she feels her niece's hand being touched, she gives a positive answer (FB believes that her hand is in fact her niece's hand, and has been placed on her body). But since she does not judge “I am being touched on my hand”, the necessary conditions for falsifying the IEM-theory are not met. The material conditional could only be proved wrong if the antecedent (a person judging that she has a certain property) is true, but in this case it is not true. The conditions would have been met if she had answered “I feel being touched on my hand”, even though she was not, and even though the only reason why she was wrong was because she misidentified her own sensations with someone else's. But she does not commit the error of judging “I am being touched” in the first place, so the IEM-theory is not falsified. It is crucial here to understand that falsification of IEM does not depend on what exactly she said, but whether she judged that she had a certain property. Unfortunately wrongly judging that one is not touched, though one is touched, does not get close to a falsification of IEM, by definition of the truth conditions of material conditionals.

Now let us have a look at Liang's second counterexample: the body-swap illusion. This, according to Liang and Pryor, is an example of a *wh*-misidentification that happens when someone simply knows a property to be there (e.g., a smell) and falsely ascribes this property to a particular object. In this setup, the parti-

cipants judge that they are shaking hands with themselves. This example gets much closer to the claim of IEM, because they in fact judge, and judge falsely, that they experience something, and there *is* another person who really seems to have that experience. So it seems that one of the following inferences is made:

- (1) A particular person is shaking hands with myself. (Fa)  
 (2) I am that person. (a=b)  
 (C) I am shaking hands with myself. (Fb)

or

- (1) There is something that is shaking hands with myself. ( $\exists x$ )(Fx)  
 (2) I am that something. (x=a)  
 (C) I am shaking hands with myself. (Fa)

If these judgments occurred it is obvious that they are false because the second premise is false—thus an error through misidentification was made. But did the participants really commit such an error? Recall that the IEM thesis would be falsified if a person believed a certain proposition but was mistaken because and only because she misidentified herself with someone else. Did the participants really believe that they were shaking hands with themselves? We assume that they most certainly did not. Of course they remarked that they were shaking hands with themselves, but we take them to speak merely metaphorically and not literally. If one wanted to be sure, the same experiment would have to be made, asking the participants whether they believed that they were shaking hand with themselves (not if it felt as if they were). Even if they believed that they were shaking hands with themselves, the judgment would probably not have the form stated above, because they did not have the experience of the other participant—only if they had an experience that that very (exactly the same) experience depended upon another person, and only if they accidentally identified themselves with that person—only in that case would the IEM-theory be falsified. But the participants did not have the experience of the other person wearing the



camera. They were having their very own experience—caused by the informational flow starting with the display (monitoring not the perspective of the person wearing the camera, but the camera’s perspective) and their own lenses, their own retina, and so on. The experience they ascribed to themselves was not the experience of another person or agent, it was their own experience. They were only wrong in judging that they were shaking hands with themselves because they in fact did not shake hands with themselves. This is not a misidentification but simply a mispredication. This problem will be elaborated in section 5.

So why does Liang think that these examples are counterexamples to IEM? Because he takes (4) to be crucial for IEM to hold. The differences between what Shoemaker and Evans take to be the theory of IEM and what Liang takes it to be are the following:

Shoemaker/Evans: If a person believes that she has certain properties, she cannot be mistaken in having them by misidentifying herself (or her phenomenal states) with someone else or someone else’s states. In this conditional, the antecedent implies a person to believe something about herself or, speaking in Liang’s terms, a person to represent herself as having a so-and-so experience. But Liang’s conditional looks quite different:

Liang: “(4) every phenomenal state is, from the first-person point of view, *represented as* experienced by the one who has first-personal access to that state.” (Liang [this collection](#), p. 8)

So what used to be the antecedent in the original theory becomes the consequent in Liang’s theory—thus Liang is right that (4) does not hold and that the somatoparaphrenia patient and her reports are counterexamples to (4), but he is not right in taking this fact to falsify the IEM-theory.

## 5 Why does IEM-FP hold?

There seems to be an immunity relative to the first-person pronoun, which at least guarantees that you cannot have a belief like “I believe that I am in pain” and accidentally take

someone else to have that belief. It probably also guarantees that in this case you cannot be wrong about who is in pain. We think that there are a few good theoretical candidates for explaining this kind of immunity. These candidates are:

1. Irrelevance of misidentification
2. Immunity to misguided reference
3. Reference magnetism

Since reference magnetism<sup>10</sup> is a highly controversial, metaphysical notion and it would take too much time to elaborate this view correctly (which would certainly include a refreshment of Lewis’ philosophy of reference), we will focus on the first two for the sake of this commentary.

1. Irrelevance of misidentification:

If you take judgments about yourself to be a) always starting with *de re* beliefs and b) single-predicative in form, it seems impossible to construe misidentification as being relevant to the truth-value of a sentence or proposition. This point has been made by Barz (2010). Barz takes the current discussion to assume that there are two fundamentally different kinds of errors that can occur: an error through misidentification and an error through mispredication. It should be clear what an error through mispredication is supposed to be: an error through mispredication occurs when a person’s judgment is wrong and is only wrong because the predicate she thinks applies to a particular object in fact does not apply to that object. Barz’ definition of an error through misidentification (in general) is the following:

General error through misidentification (EM-G): A person S (i) believes (*de re*) of a certain thing that it is *F*, (ii) believes that

<sup>10</sup> A short explanation: reference magnetism is a theory that claims that there are metaphysically distinguished objects of reference in the world (no matter whether they are abstract or concrete) that function as magnets for certain expressions. This could, for example, hold for natural kinds and existential quantification. In the case of existential quantification, some philosophers, like Theodore Sider (2009), claim that there is no possibility of talking about *existence* without talking about the very same thing that everybody talks about—as long as there is no explicit or implicit quantifier restriction. Reference Magnetism plays an important role in the debate about quantifier variance and verbal debates.

thing to be identical with  $a$ , and (iii) thus judges that  $a$  is  $F$ . But (iv)  $a$  is not identical with the thing  $S$  believes to be  $F$ .

According to Barz this kind of error cannot happen at all, so the proponents of the IEM-theory are right—but in fact IEM is not an exclusive property of judgments concerning the first-person or involving the first-person pronoun, and is instead a property of any judgment. His argumentation can be summarised in one sentence: since there are examples of judgments involving misidentification that are nevertheless true, and since there cannot be judgments involving mispredication that are true, there are no errors through misidentification. A judgment is right or wrong solely depending on whether the predicate applies to the object.

Imagine the following situation that is usually used to distinguish between notional and referential use of singular terms: Peter is a detective, investigating the case of Smith's murder. Participating in the judicial proceedings, a man, accused of having murdered Smith, behaves so strangely that Peter, the detective, judges: Smith's murderer is a maniac. He is using the term "Smith's murderer" to refer to the person that is accused of having murdered Smith, and according to most theories of reference he does in fact refer to that person with that term. But what if that person is not the one who murdered Smith, but is nevertheless still a maniac? Thus a misidentification has occurred, but no error. On the other hand, if the person were Smith's murderer but not a maniac (maybe his weird behaviour was the result of pharmaceutical treatment)—Peter's judgment would be wrong.

The same goes for the traditional wrestler example. Imagine that wrestler A and wrestler B are in a close wrestling fight and wrestler A does not misidentify her arm with the arm of wrestler B but still, for some strange reason—maybe there are blood smears caused by a bleeding bird that flew over the two wrestlers—comes to judge "My arm is bleeding" (although wrestler B's arm is actually bleeding). She would be wrong, but her error would not be one of misidentification but of mispredication. Thus, as Barz believes, there are no errors through misidentification, because the

only thing that necessarily suffices for the falsity of a judgment is mispredication.

As one can guess, Barz' theory does not completely fit with our theory of judgments. While we take judgments to be processes of inference, thus involving several propositions, Barz seems to take judgments to be relations to single, structured propositions. We can agree with Barz if he can explain how the identification component in the judgment—which would, in our terms, be one of the premises used during the inference—is in fact a kind of predication.

## 2. Immunity to misguided reference:

Howell (2007) wants to distinguish between two kinds of immunity: immunity to error through misidentification and immunity to misguided reference:

IEM is often confused with what I call Immunity to Misguided Reference (IMR). A judgment that  $x$  is  $F$  has IMR if it is impossible for someone to make that judgment while being mistaken about the reference of  $x$ . All I-judgments have IMR, while not all I-judgments are IEM. (Howell 2007, p. 584)

To say that there is something like immunity to misguided reference (IMR) does not mean that one can never be wrong about the reference of any term one uses. It just means that whenever you want to refer to yourself using the term "I" you cannot fail to do so.

We think that a majority of the proponents of IEM are in fact proponents of IMR. And because IEM is thought to be an immunity relative to the first-person pronoun (what we have termed IEM-FP), it makes sense to say that this immunity is in fact an immunity of referring acts in general and not of judgments exclusively. Talking about IMR can be helpful in two ways: first, it can be helpful in stressing the fact that IEM is not a theory about the self or about subjectivity but simply a theory about linguistic rules and reference. Thus IEM-FP is a trivial property that can be explained by the semantic rules of usage of the word "I".

Second, it can be helpful for explaining our intuitions in complicated cases of self-refer-

ence and by determining the objects of beliefs. Think of the two wrestlers again. When one of the wrestlers states “I am bleeding” or “My arm is bleeding”, she is wrong, but it seems as if she is not necessarily wrong because of a misidentification. Let’s have a look:

(1) Wrestler A correctly describes her belief, intending to refer to herself using the first-person pronoun.

(2) One cannot fail to refer to oneself when using the first-person pronoun. (IMR-rule)

(3) Wrestler A has a belief about herself (granted by accepting 1 and 2).

So far the argument is trivial—stating that Wrestler A has a belief about herself just means that she has *any* kind of belief. It does not show that Wrestler A has a *de re* belief about herself. This comes from the second part of the argument:

(4) A *de re* belief is a belief that holds if the believer is in a non-conceptual, contextual relation to the object the belief is about.<sup>11</sup>

(5) One is always in a non-conceptual, contextual relation to oneself.<sup>12</sup>

(C) Wrestler A has a *de re* belief about herself (granted by accepting 3, 4 and 5).

Opponents of the IEM-theory would have to state that wrestler A has no *de re* belief about herself, because the object her belief is really about is not herself, but wrestler B, misidentified with herself (thus creating a *de dicto* belief about herself and a *de re* belief about wrestler B). But by accepting IMR and certain accounts of *de re* attitudes we can see that wrestler A’s attitude is a possible candidate for a *de re* belief about herself. Thus the only reason why she would be wrong is—as we have seen above—mispredication.

## 6 Concluding remarks

The question with which we began was how the sense of experiential ownership is related to the well-known property of IEM, and whether, if it

<sup>11</sup> This is to accept a *de re/de dicto* distinction that is compatible with non-propositional attitudes.

<sup>12</sup> This does not mean that one is always only and exclusively in a non-conceptual relation to oneself. Of course one can have *de dicto* beliefs about oneself.

is, the proposed counterexamples are cogent. First of all we argued that it is impossible to talk about the sense of experiential ownership misrepresenting the fact of experiential ownership, since the latter is a conceptual ascription from the outside that has nothing to do with phenomenal states that are experienced from the inside (cf. thesis 1). Second, IEM-P is an incoherent notion, because phenomenal states lack the basic properties that are possessed by judgments and inferences, namely to be defective—which suffices for a misidentification. Since they lack these properties, the claim that phenomenal states are immune to error through misidentification is misleading (cf. thesis 2). Third, we argued that the alleged counterexamples to IEM are just counterexamples of Liang’s fourth premise. But premise four is not necessary for IEM to hold. In any case, the counterexamples do not seriously challenge IEM, because the necessary conditions for a falsification are not met (cf. thesis 3). The last section addressed some aspects concerning how to talk about IEM convincingly in future philosophical research. Our suggestion is somehow deflationary, since it is not necessary, but very likely that the more interesting properties for talking about are mispredication and IMR (cf. thesis 4).

We are looking forward to the time when philosophical as well as empirical interdisciplinary research concerning the mind focuses on Liang’s commitments on self-consciousness, most interestingly the sense of experiential ownership. We think that this *explanandum* has not yet been enriched with empirical data. Here Liang perhaps provides a good starting point for future research. In order to provide fruitful data, we think that to ask the Wittgenstein question, as Liang proposes, is a promising idea. But nonetheless the question has to be subdivided in order to provide a fruitful questionnaire. Here are some proposals that are, of course, provisory, which could be more fine-grained, depending on the experiment:

On a scale from 1 to 10, how much do you feel the experience as being owned by you? Have you felt parts of your body as detached from yourself? If yes, how much were you able to control the belongingness of this body-experi-

ence? Have you felt some experiences belonging to another subject, not being owned by yourself?

Here are some further theoretical questions: How is the sense of experiential ownership connected to beliefs? Could it serve to justify some beliefs? How is the sense of experiential ownership generally related to self-knowledge? We are looking forward to a fruitful discussion in philosophy of mind and in cognitive sciences with regard to the elaborated topics.

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# Can Experiential Ownership Violate the Immunity Principle?

A Reply to Oliver Haug & Marius F. Jung

Caleb Liang

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In what follows, I respond to Haug and Jung’s criticisms of my target paper and defend the following claims: (1) the sense of experiential ownership can misrepresent the fact of experiential ownership; (2) the sense of experiential ownership is eligible to serve as a bearer of IEM; (3) at least some versions of IEM face genuine counterexamples; and (4) as far as the sense of self-as-subject is concerned, IEM is not a trivial property. Finally, I describe a new set of experiments that induced what I call “the self-touching illusion.” The data, I suggest, strengthen the view that both the sense of self-as-subject and IEM are open to empirical as well as philosophical investigation.

## Keywords

Experiential ownership | Immunity principle | Self-as-subject | Self-touching illusion

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## 1 Introduction

Does the sense of self-as-subject conform to the immunity principle (IEM)? When I experience a phenomenal state, does it guarantee that based on first-personal access I cannot be wrong about whether it is me who experiences it? In “Self-as-Subject and Experiential Ownership”, I elucidated the sense of self-as-subject in terms of the sense of experiential ownership, and argued that the sense of experiential ownership does not enjoy IEM. Haug and Jung raise very

substantial issues against my overall position.<sup>1</sup> Here, I respond to Haug and Jung’s criticisms and intend to show how an interdisciplinary approach may enhance our understanding of the sense of self-as-subject.

Let me begin by suggesting that the following two issues regarding IEM are different:

<sup>1</sup> I am very thankful for Haug and Jung’s criticisms, from which I have learnt a great deal. Below I will use “the sense of self-as-subject” and “the sense of experiential ownership” interchangeably.

(1) Does IEM correctly specify how we use the first-person pronoun “I”? (2) Does IEM really mark the line between the sense of self-as-object and the sense of self-as-subject? While (1) concerns a linguistic rule, (2) is about the nature of self-consciousness. The issue addressed in my paper was (2). I investigated the best way to understand the distinction between the sense of self-as-object and the sense of self-as-subject. I argued that IEM, or at least some versions of it, fails to draw the distinction between the two types of self-consciousness. I proposed an alternative account, according to which the distinction can be better articulated in terms of the sense of body ownership and the sense of experiential ownership.

## 2 Experiential ownership and the immunity principle

The first issue raised by Haug and Jung concerns whether the sense of experiential ownership could misrepresent the fact of experiential ownership at all. For ease of discussion, I will present my argument against IEM again, and then reply to Haug and Jung’s objection. Here is the argument:

- (1) For every phenomenal state there must be a subject who experiences it.
- (2) Every phenomenal state is in principle available to first-personal access.
- (3) Every phenomenal state is experienced by the one who has first-personal access to that state.

However, (1)~(3) do not imply:

- (4) Every phenomenal state is, from the first-person point of view, *represented as* experienced by the one who has first-personal access to that state (Liang [this collection](#), p. 8).

Three remarks are in order: first, when Haug and Jung characterize the fact of experiential ownership as a conceptual truth or a matter of logical necessity, what they say can be accommodated by (1) above. I agree with (1), but that is not my notion of the fact of experiential ownership. For me, the fact of experiential ownership is an *empirical* fact: it is not just that every phenomenal state has a subject; rather, it concerns exactly who is the subject of a specific

experience in a given situation. For example, right now, it is me, not you, who is experiencing back pains. So, the fact of experiential ownership is captured and fixed not by (1) but by (3) in my argument above; i.e., the question “who is the subject of that particular phenomenal state?” can be answered by ascertaining which particular subject has first-personal access to that state. Second, I would not characterize the sense of experiential ownership as concerning “the content of a phenomenal state” (Haug & Jung [this collection](#), p. 5). As I stated in the target paper (Liang [this collection](#), pp. 6–7), the representational content and the phenomenal character of a phenomenal state belong to the *what*-component of that state. The sense of experiential ownership is exclusively about the *who*-component, which is captured by (4) in my argument. Third, central to my argument is that (3) and (4) are not equivalent: as in FB’s case of somatoparaphrenia, feeling sensations is one thing, but whether she experiences herself *as* the subject of those sensations could be another. Misrepresentation may occur in one’s sense of self-as-subject when there is a mismatch between (3) and (4), i.e., when the sense of experiential ownership fails to pick out the same subject as the one settled by (3). As I suggested, the best way to describe FB’s case is that, while the fact of her experiential ownership is intact, her sense of experiential ownership fails to represent that fact. Given these remarks, the first four premises of Haug & Jung’s argument (on p. 5 of their commentary) seem to be problematic.

The second issue is about whether the sense of experiential ownership, as a phenomenal state, is eligible to serve as a bearer of IEM.<sup>2</sup> Haug and Jung insist that self-ascriptions relevant to IEM must be an explicit judgment (or belief) in an inference. However, it is not obvious that this restriction is mandatory. Given that my focus is on how to understand the sense of self-as-subject, I think that what is crucial for IEM is that the self-

<sup>2</sup> Note that, as I suggested in the target paper (Liang [this collection](#), p. 6), the fact of experiential ownership and the sense of experiential ownership are not numerically different states or events that can be detached from a phenomenal state. Rather, they are two ways of characterizing the *who*-component of that state.

ascriptions are justified on first-personal grounds, e.g., introspection, somatosensation, proprioception, etc. (cf. footnote 19 of the target paper). As the examiners of FB said: “The patient was blindfolded and instructed to say ‘yes’ when she felt a touch and ‘no’ when she did not feel any touch” (Bottini et al. 2002, p. 251). When FB said “yes” based on her sense of experiential ownership, there is no reason why this response shouldn’t count as a self-ascription. If we wish, we can reconstruct FB’s response in propositional form: I am mistaken in reporting “yes” during the test (ii) because, although I do know of someone that feels the sensations (via first-personal access), I am mistaken in thinking about who that person is. This seems to be a clear threat to IEM.

Also, it is worth pointing out that not all defenders of IEM think that self-ascriptions must explicitly be in propositional form. According to what may be called the Pre-reflective Account (Legrand 2006, 2007, 2010; Gallagher 2012; Zahavi 2005), at the pre-reflective level, the sense of self-as-subject is a constitutive component of the conscious state rather than an intentional object of consciousness. This phenomenological structure makes the sense of self-as-subject identification-free and hence enjoys IEM: when I am pre-reflectively conscious of myself-as-subject, I *cannot* be wrong about whether I am the subject of experiences. For the proponent of this account, making judgments about one’s sense of self-as-subject would count as *reflective* rather than pre-reflective self-consciousness, and hence ceases to be identification-free (Gallagher 2012, pp. 207–209). Given these considerations, I believe that the premises of Haug and Jung’s argument for the ineligibility of IEM-P are not as firm as they might think.<sup>3</sup>

The third issue is whether the specific case of somatoparaphrenia and the body swap illusion that I discussed are genuine counterexamples to IEM. The way that Haug and Jung oppose my counterexamples is related to our dispute above concerning whether IEM

has to be in the form of judgment. Haug and Jung define “judgment” as referring to a whole inference and “belief” as the conclusion of an inference. They then use their definitions to articulate a version of IEM and the necessary conditions for falsifying it. I concede that I don’t see why their account is obligatory for investigating the connection between IEM and the sense of self-as-subject. IEM has many varieties (cf. Liang this collection, pp. 7–8 and footnote 17). In my paper (Liang this collection, pp. 2 and 6), I did not claim that the two counterexamples would undermine all versions of IEM. It was “experiential immunity” in its *de re* and *which-object* forms that came under my attack. According to experiential immunity, when I am aware of a phenomenal state through first-personal access, I cannot be wrong about whether it is me who feels it. This variety of IEM focuses on phenomenal states rather than judgments, and a key feature is that it is *relative to first-personal access*, such as introspection, somatosensation, and proprioception. This feature accommodates a widely accepted view that whether a self-ascription enjoys IEM *depends on its grounds* (Pryor 1999; Coliva 2006). The feature, however, is omitted from Haug and Jung’s account, which indicates that their version of IEM is different from my target.

Haug and Jung argue that FB’s case is not a genuine counterexample because she did not judge “I am being touched on my hand”, and hence the necessary conditions for falsifying their version of IEM are not met. However, the perplexity of this case is not why FB felt nothing when she expected that she would be touched, but why she felt the sensations when she expected that her niece would be touched. So, when FB reported feeling the sensation in test (ii), a more appropriate reconstruction of FB’s self-ascription would be: “I am being touched on my niece’s hand.” She was wrong because in fact it was her own hand being touched by the researcher, not her niece’s hand. Then, my interpretation in the paper suggested that, using Haug & Jung’s formulation, “the only reason why she was wrong was because she misidentified her own

<sup>3</sup> I discuss the Pre-reflective Account in “Body ownership and experiential ownership in the self-touching illusion” (Liang et al. 2015).

sensations with someone else's" ([this collection](#), p. 9). This provides a falsification of experiential immunity.

Regarding the case of the body swap illusion, Haug and Jung argue that this is simply a case of mispredication. Instead of adding in more conceptual analyses to compete for the best interpretation of the study by [Petkova & Ehrsson \(2008\)](#), I will briefly describe a set of new experiments that combine the RHI and the body swap illusion. They explicitly address the Wittgenstein Question and measure the sense of experiential ownership. Before doing so, let me reply to the last issue raised by Haug and Jung.

The last issue concerns whether IEM is merely a trivial property. Here, I will limit myself to one remark. Haug and Jung consider IEM as purely a linguistic rule regarding how to use the first-person pronoun. Although many philosophers share this view, the goal of my paper was not to attack a linguistic rule. The opponents that I have in mind are those who try to use IEM to distinguish between the sense of self-as-object and the sense of self-as-subject. For these philosophers, IEM is not trivial at all. It matters to them and it matters to me if it turns out that the sense of self-as-subject really is fundamentally different from the sense of self-as-object. Because if the answer is yes, it would be very significant to consider whether the necessary and sufficient conditions for these two types of self-consciousness are distinct, and whether they are generated by different (though partially overlapping) neural mechanisms.

### 3 The self-touching illusion

At the end of my target paper I suggested that the next step for the investigation of the sense of self-as-subject would be to study the various conditions where one can pursue the Wittgenstein Question. I recently designed a set of experiments that allow us make exactly this step. The subject wore a head-mounted display (HMD) connected to a stereo camera positioned on the experimenter's head. Sitting face to face, they used their right hand to

hold a paintbrush, and brushed each other's left hand (figure 1).<sup>4</sup> Through the HMD, the subject adopted the experimenter's 1PP as if it was his/her own 1PP. In Experiment 1, the participant watched from the adopted 3PP (180°) the front side of his/her own virtual body, including not only the torso, legs, and face, but also his/her own right hand holding a paintbrush (figure 2). In Experiment 2, the participant watched from the adopted 3PP (180°) the front side of his/her own virtual body, including the torso and legs, but not the face. The participant also saw his/her own left hand being touched by a paintbrush held by the experimenter's hand (figure 3). Compared with the asynchronous condition, the synchronous full-body condition generated a "self-touching illusion": the subject felt "I was brushing my own hand!"<sup>5</sup>

Two "Wittgenstein Questions" in the questionnaires were designed specifically to measure the participants' sense of experiential ownership: "It was me who felt being brushed, not someone else" (WQ1), and "The one who felt being brushed was not me" (WQ2). Notice that these two statements are directly opposed to each other. In addition, they are not about the sense of body ownership, but about *who* felt the tactile sensations caused by brushing. In Experiments 1 and 2, the participants were touched by a paintbrush, so they were indeed the subjects of those tactile sensations. This fixed the *fact* of their experiential ownership. The task was to examine whether this fact was correctly represented by their *sense* of experiential ownership. Focusing on the syn-

<sup>4</sup> The experiments and data presented here are part of a bigger project; cf. "Body ownership and experiential ownership in the self-touching illusion" ([Liang et al. 2015](#)). Four students conducted the experiments under my supervision: Si-Yan Chang, Wen-Yeo Chen, Hsu-Chia Huang, Yen-Tung Lee.

<sup>5</sup> The self-touching illusion was measured by two questionnaire statements: "It felt as if I was brushing my own hand" (S1), and "The one whom I brushed was me, not someone else" (S2). A Likert scale from "strongly disagree" (-3) to "strongly agree" (+3) was used for the questionnaires. In both Experiment 1 (sync. n=38, async. n=35) and Experiment 2 (sync. n=28, async. n=14), the statistics showed significant differences between the synchronous and asynchronous conditions (Exp. 1, S1:  $p < 0.0010$ , S2:  $p < 0.0010$ ; Exp. 2, S1:  $p < 0.0010$ , S2:  $p = 0.0003$ ; one-tailed t-test). The measurements of skin conductance responses (Exp. 1, sync. n=15, async. n=15; Exp. 2, sync. n=13; async. n=13) showed the same differences (Exp. 1,  $p = 0.0080$ ; Exp. 2,  $p = 0.0473$ ; one-tailed t-test). This provided objective support for the questionnaire data.



chronous conditions, the average scores on WQ1 were 1.58 and 1.04 in Experiments 1 and 2 respectively, and the average scores on WQ2 were -1.03 and -0.50 in Experiments 1 and 2 respectively.



Figure 1: Experimental set-up.

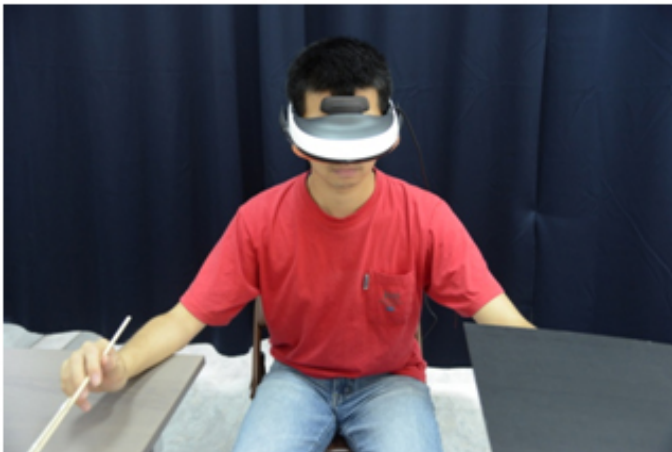


Figure 2: Subjects' view via the HMD in Experiment 1.

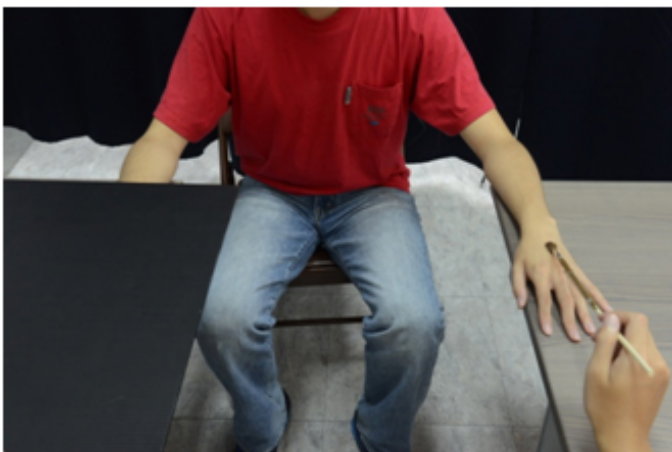


Figure 3: Subjects' view via the HMD in Experiment 2.

Suppose that the participants understood WQ1 as addressing themselves. That is, from their subjective point of view: it was *me* who felt the brushing. Then, according to IEM, no participants would commit mistakes regarding their sense of experiential ownership. One would expect that most participants would answer “strongly agree” (+3) or at least “agree” (+2) on WQ1. But that is not the case. In fact, 13.2% of participants in the synchronous conditions of Experiments 1 and 2 disagreed with WQ1 (i.e., they answered either -1, -2, or -3), and the average scores of WQ1 reported above were much lower than this interpretation requires. I discuss other possible interpretations elsewhere and argue that neither of them can support IEM.<sup>6</sup> Based on the data, it is more plausible that at least some participants in these experiments were uncertain and hence prone to error about whether they were the subjects of the tactile sensations that they actually felt. That is, the fact of having tactile sensations does not guarantee that the participants will necessarily have the *sense* that “I am the one who felt them.”<sup>7</sup> Overall, the data provide empirical evidence for the possibility that one’s sense of experiential ownership can misrepresent the relevant fact of experiential ownership. Hence, IEM could potentially be falsified.

6 Cf. “Body ownership and experiential ownership in the self-touching illusion” (Liang et al. 2015). Briefly, (i) suppose for some reason that the participants understood WQ1 to be addressing someone else. That is, in their subjective experiences, it was *not me* who felt the brushing. Then, according to IEM, one would expect that most participants would answer “strongly disagree” (-3) or at least “disagree” (-2) on WQ1. But this is not the case either. This time, the average scores of WQ1 were too high to fit this interpretation. (ii) Suppose that the participants did not all understand WQ1 in the same way: some took it as addressing themselves, but others as addressing someone else. Then, assuming IEM holds, one would expect the participants to answer either +3 (or at least +2) or -3 (or at least -2). But, again, that is not the case. Many participants answered “slightly disagree” (-1), “not sure” (0), or “slightly agree” (+1). In fact, the standard deviation in each experiment is large (Exp. 1, SD=1.5001; Exp. 2, SD=1.5512), suggesting that the participants’ responses to WQ1 varied widely.

7 In addition to WQ1, we also presented WQ2 (“The one who felt being brushed was not me”) in the questionnaires. The direct contrast between WQ2 and WQ1 was so obvious that, even if the participants felt uncertain about WQ1, the contrast can still be easily recognized. So, if IEM holds, one could reasonably expect that participants’ responses would manifest a *strong* “negative correlation” between WQ1 and WQ2. For example, if a subject answers +3 to WQ1, then he/she would likely answer -3 (or at least -2) to WQ2, etc. However, we only observed a weak negative correlation between these two sets of results (coefficient  $R=-0.3278$ ).

## 4 Conclusion

The defenders of IEM will try to find ways to interpret these data differently. It would not surprise me if what these data mean continues to be controversial. However, I hope that experiments like these and the discussions in the target paper will at least convince many researchers that sometimes it does make sense to ask Wittgenstein Questions (like WQ1 and WQ2 above). Both the sense of self-as-subject and IEM are open to empirical as well as philosophical investigation.

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