

Shogo Tanaka<sup>1,2</sup>

# *What is it Like to Be Disconnected from the Body?*

## *A Phenomenological Account of Disembodiment in Depersonalization/ Derealization Disorder*

**Abstract:** *So long as I maintain the ordinary modes of experience such as walking or eating, the body appears to me as something inseparable from myself. Through and with the body I act in the world, and through and from the body I perceive the world. However, this is not the case in the pathological condition known as depersonalization/derealization disorder (DD). People with DD frequently claim that their self is disconnected from the body and their bodily actions feel like those of a robot. This symptom raises an important question about the paradigm of the embodied self, which is whether the union of body and self is contingent or not. In this paper, I describe the split between the self and body experienced in DD, then compare it with experiences of the full-body illusion, in which the self is perceived to be located*

Correspondence:

Shogo Tanaka, Center for Liberal Arts, Tokai University, 4-1-1 Kitakaname, Hiratsuka, Kanagawa 259-1292, Japan. Tel: +81-463-58-1211; Fax: +81-463-58-1812. Email: [shg.tanaka@gmail.com](mailto:shg.tanaka@gmail.com)

<sup>1</sup> Center for Liberal Arts, Tokai University, 4-1-1 Kitakaname, Hiratsuka, Kanagawa 259-1292, Japan.

<sup>2</sup> Centre for Psychosocial Medicine, Heidelberg University Hospital, Voßstraße 4, 69115 Heidelberg, Germany.

*out of the physical body. Through this comparison, it is made clear that the self in DD is not totally disembodied even though the basic sense of self has gone through a qualitative change.*

## 1. Introduction

The opening question for this paper is whether the union of body and self is contingent. So long as I maintain the ordinary modes of experience, such as perception and action, the body appears to me as something inseparable from myself. When I perceive the surrounding world, *through* and *from* the body I do so. When I act in the world, *through* and *with* the body I do so. Before I start to reflect and objectify myself, the pre-reflective sense of self is pervasively ongoing with the presence of this body. For example, while walking toward the bus station, I am acting through and with the body and I am also aware of it in the background. A sense of agency, that is, ‘the pre-reflective experience that I am the one who is causing or generating a movement’ (Gallagher, 2012, p. 132), is deeply embedded in the body. And the whole experience of walking is occurring as *my* experience. In other words, bodily action is accompanied by a sense of ownership in which the very sense of self is intermingled with the presence of the body. The union of body and self does not seem contingent, but essential.

However, in the pathological condition known as depersonalization/derealization disorder (hereinafter, DD), this union seems to break down. Let me quote the following passages describing the symptoms. This is recounted by an individual (Malia Bradshaw) who experienced DD and recovered from it:

My body didn’t feel like my own. I just felt like a floating mind in space with blunted, blurry thoughts. I found it crazy sometimes that I even had my own body, because I didn’t feel connected to it. I’d look down at my hands and they didn’t feel real. I felt as if I were moving through the motions of life robotically, never quite fully connected like I used to be. Sometimes I’d wake up and forget what gender I was. I felt *that* separate from my body that even looking in the mirror caused me to panic. I didn’t recognize that person. (Bradshaw, 2016, chapter 1, emphasis in original)

In this case, the self is experienced as ‘a floating mind in space’ and ‘separate from my body’. Indeed, this split between the self and body is one of the symptoms most frequently claimed by people with DD. How is it possible for us to properly understand this symptom? Does it

really mean that the union of body and self has broken down? Is the union that we experience in the ordinary mode not inherently essential and is it possible to disrupt it at any moment? Or does this happen only in pathological cases, such as DD, and is it discontinuous to the healthy state? Does the split occur only as a subjective experience or does it have objective evidence such as neurological correlates?

Whatever the answers may be, it is clear that the split between self and body that happens as a symptom of DD raises an important question in the concept of the *embodied self*. In the context of the phenomenology of embodiment, the self has been conceptualized as being in union with the body. Both Husserl (1952/1989) and Merleau-Ponty (1945/2012) have used the term *I can* to represent the embodied self. The self is realized through the body, which consists of acquired skills through past experiences, and it is therefore always already engaged with the surrounding environment through concrete actions. The starting point to discuss the self is not reflection, but action. Needless to say, the concept of the embodied self contrasts sharply with that of Descartes, who considered the self essentially distinct from the body. Let me quote his famous statements that represent his dualistic view of the self: 'From that I knew that I was a substance the whole essence or nature of which is to think and that for its existence there is no need of any place, nor does it depend on any material thing; so that this "me," that is to say, the soul by which I am what I am, is entirely distinct from body, and is even more easy to know than is the latter; and even if body were not, the soul would not cease to be what it is' (Descartes 1637/1996, pp. 21–2). According to Descartes, the self is not a physical being but a soul, the essence of which is thinking (*res cogitans*). At a glance, the symptom of self–body split in DD seems to partially support the claim by Descartes. In the case quoted above, the self in DD is disconnected from the body but is experienced as a thinking subject ('blunted, blurry thoughts') and is even easier to know than the body ('forgot what gender I was... my body... in the mirror... I didn't recognize that person').

Once again, the main question in this paper is whether the union of body and self is contingent. In the following argument, I will consider this question by examining the pathology of DD. In particular, I would like to focus on what it is like to be disconnected from the body during an episode of DD. I hope that the detailed phenomenological description of pathological experiences alone will answer the question. In the process of description, I will compare the symptom of disembodiment with other experiences, especially that of full-body

illusions that are induced in experimental settings. The entire examination will lead us to reconsider the self and whether it can be totally disembodied.

## 2. General Descriptions of Depersonalization/ Derealization Disorder

Although both depersonalization and derealization are sorted into the same category under the current diagnostic system (DSM-5) and classification system (ICD-10), the symptoms manifest differently. Depersonalization is described as feeling disconnected or alienated from one's own body, emotions, and thoughts, whereas derealization is described as feeling that the outside world is unreal and lacking in perceptual or emotional vividness. In the former, the detached feeling derives from self-related experiences. In the latter, detached feeling derives from the external world. However, as they often co-occur within the same individual, clinical cases are defined as depersonalization and/or derealization (Spiegel and Simeon, 2015).

Sierra and David (2011) point out four main experiential components of the disorder. (1) Anomalous body experience: the person feels detached or disconnected from the body and also has other related anomalous bodily experiences, which will be discussed later. (2) Emotional numbing: it is difficult for the person to experience emotions, not only negative ones such as disgust or fear but also positive ones such as joy or affection. This numbing may make it difficult for the person to experience affective empathy toward others. (3) Anomalous subjective recall: when the person recalls past personal events, the memories seem to lack personal meaning or a sense of ownership. They feel as if those events did not really happen, although they can retrieve factual information. (4) Derealization: the person feels cut off from the world, and things around them seem unreal. People express this feeling of unreality in many forms, such as 'being in a bubble', 'separated from the world by an invisible barrier', 'foggy and veiled', and 'dream-like'.

It is important to note that the symptoms mainly involve an alteration in perceptual and emotional processes, but the reality-testing function remains intact. People with DD are able to distinguish outer reality from their subjective processes, and thus they are not delusional. As was seen in the quoted case, they often describe their experiences using 'as if' and 'like', such as 'I feel as if I have become a robot' or 'the world looks like a dream'. These expressions indicate

that they are not confusing their own feelings with the given reality (Simeon and Abugel, 2006). The alteration of experiences seems to occur not in secondary cognitive processes, but in primary perceptual-emotional processes. Reality testing is taken into consideration in the diagnostic process as well (Spiegel and Simeon, 2015).

Symptoms of DD may appear temporarily as a result of physiological effects of medications or drugs, such as cocaine (Wel *et al.*, 2015). There are also cases where depersonalization symptoms are better explained by and attributed to other mental disorders. (1) Schizophrenia: there are similarities between disturbance of selfhood in depersonalization and schizophrenia. However, the fundamental confusion in the self–other distinction plays an important role in schizophrenia (Sass *et al.*, 2013). (2) Panic disorder: it is known that panic attacks often involve depersonalization symptoms such as feeling disembodied. In one study, 48% of the sample ( $n = 104$ ) had this symptom (Mendoza *et al.*, 2011). The main difference lies in interoceptive sensitivity, which is relatively increased in panic disorder in contrast to DD (Domschkea *et al.*, 2010). (3) Major depressive disorder: depression is often characterized by affective depersonalization and/or derealization because affective contact with the environment through the body is lost in both cases (Fuchs, 2013). (4) Post-traumatic stress disorder (PTSD): it is said that PTSD has a subtype that involves chronic dissociation, which might also include depersonalization and/or derealization symptoms (Lanius *et al.*, 2010).

The overlap with other mental disorders complicates the diagnosis of DD in the clinical setting. According to Simeon (2014), DD is commonly misdiagnosed and underdiagnosed. As many clinicians are not very familiar with the clinical picture or diagnostic criteria of the disorder, they tend to consider symptoms of DD as secondary to other disorders. In addition, most people with DD have difficulty putting their impalpable experiences into words. As we have difficulty explaining the feelings and touch of dreams, people also seem to have difficulty explaining feelings of ‘unreality’ of the symptoms. Although the prevalence of DD is estimated to be 1–2% of the population in an epidemiological survey (Hunter, Sierra and David, 2004), it appears much lower than expected in statistical data on diagnoses (Michal, Beutel and Grobe, 2010).

One of the reasons for this under-diagnosis seems to derive from the fact that major symptoms of DD are not accompanied with clearly observable behavioural changes. Turning our eyes to neurobiological studies, several facts have been observed that correlate with symptoms

of DD. For example, the subjective intensity of depersonalization and degree of increased activation in the parietal cortex (Brodmann area 7B) were found to be correlated in a positron emission tomography study (Simeon *et al.*, 2000). Sierra (2009) suggests that the symptom of disembodiment and other anomalous body experiences might be related to abnormal activation of the parietal cortex, an area that corresponds with somatosensation. Concerning bodily experiences, it is also suggested that one's sense of body ownership is functionally related to activities in the premotor cortex and right temporoparietal junction (rTPJ), based on studies of the rubber-hand illusion (Botvinick, 2004; Ehrsson, Holmes and Passingham, 2005; Tsakiris, Constantini and Haggard, 2008). This knowledge is also applied to treatment of DD using transcranial magnetic stimulation (TMS) focused on rTPJ. A study reports that five among 12 patients showed improvement in their symptoms after TMS (Mantovani *et al.*, 2011).

Sedeño *et al.* (2014) report that patients with DD show impaired performance in accessing interoception (through a heartbeat detection task) compared with normal controls. This might suggest connecting the symptom of disembodiment with that of emotional numbing because interoception primarily refers to one's perception of internal bodily states, but it is also experienced in relation to emotional experiences (e.g. feeling palpitations with fear). Neuroimaging studies support the view that interoception and emotions are commonly related to the function of the anterior insula and anterior cingulate (Critchley *et al.*, 2004; Wiens, 2005). In relation to this point, it has been suggested that depersonalization is caused by a fronto-limbic (particularly in the anterior insula) suppressive mechanism (Sierra and David, 2011). In any case, we can confirm again that people with DD are alienated from the primary perceptual-emotional processes of experiences.

Based on these general descriptions of DD, let us describe the main symptom of DD for our discussion; that is, anomalous bodily experiences, including disembodiment.

### 3. Anomalous Body Experiences

Let me cite bodily experiences that are described from a first-person perspective. Below are the words of another individual (Joseph Shay) who recovered from DD after being affected for six years. In his case, the DD was mostly triggered by what he calls an 'attack', that is, a sort of panic attack. He writes as follows:

When I had my ‘attacks’, I felt like I was losing my soul and was afraid I would become so detached from myself that I wouldn’t be able to come back to my body. (Shay, 2016, chapter 3)

None of this is real! I’m dreaming... I’m not really driving! I’m not in control of anything! I’m an automaton! (*ibid.*)

I believed that I had no free will and that nothing was real. I was just a puppet predestined to go through the motions. I thought I had no control over my thought nor any of my actions. (*ibid.*)

Although his case might be diagnosed as panic disorder according to current criteria, Shay describes well the experience of how disembodiment outbreaks feel. He does not feel that he is actually disconnected from his body, but he is afraid that such a disconnection might happen and that he would not be able to come back. Curiously, disconnection of the self from the body also includes detachment from ‘myself’, who is in control of mind and body in the ordinary state. Once he is attacked by this feeling of disconnection, he loses a sense of control over his thoughts as well as actions. According to his own words, he feels like an ‘automaton’ or ‘puppet’ that moves out of his control.

Below, another individual (Keigo Kaku) reports his own distressing symptoms of DD in detail. He originally developed severe depression, after which the main symptom switched over to chronic depersonalization. He writes as follows (author’s translation of text):

My actions are not accompanied by subjectivity, in which I feel that I am the one who is certainly doing those actions. (Kaku, 2007, p. 146)

The sensations (five senses) are not mine. The needs and emotions are just the same. Now, all animated and living senses, perceptions, and emotions are gone. I wonder if they will come back. (*ibid.*, p. 147)

An ‘empty shell’ is what I am now because I feel as if my soul has slipped out of my body... I have no real feeling that I am alive. (*ibid.*, p. 149)

In this case, the body does not seem to function as *my* body anymore. Kaku claims that he is very uncertain about the sense of agency during his actions, and moreover that he does not have a sense of ownership of perception or emotions. As a result of these losses, he claims that he has no feeling that he is alive. In another part of the book, he refers to this feeling as being ‘the living dead’ (*ibid.*, p. 129).

Sierra (2009) points out that a large proportion of people diagnosed with DD complain about abnormalities in the way that they experience their own bodies. He lists four different but related facets to describe them: (1) lack of body ownership feelings, (2) feelings of ‘loss of

agency', (3) disembodiment feelings, and (4) somatosensory distortions. Let us confirm each of these points for further understanding.

(1) Lack of body ownership feelings: people with this symptom experience parts of their body or the whole of it as alien. If the lack of ownership covers the whole body, the person feels as if he/she has no body. This point corresponds well with the above-quoted description by Bradshaw, in which she stated, 'my body didn't feel like my own... I'd look down at my hands and they didn't feel real'. Sierra (2009) explains this feeling in contrast to the illusory sense of ownership induced in rubber-hand illusion experiments and its extended versions. We will take up these experiments and examine their significance in the section below.

(2) Feelings of 'loss of agency': people with this symptom complain about the absence of the sense of agency, so that their behaviour feels automatic and robotic. We have seen that all three individuals referred to this point in their own way. It is difficult for those experiencing this to feel that their actions are their own, and thus it is also difficult for them to feel that they are doing their actions themselves. Sierra explains this feeling of loss of agency by distinguishing the subjective sense of agency into two components, that is, the experiential component and the cognitive attributional component. In the case of DD, the experiential component of agency is lacking, whereas the cognitive ability to attribute those acts to the self is intact. We will point out the theoretical problem included in this point in the next section. It is important to note that Sierra, by explaining it this way, supports a post hoc view of the sense of agency in that it derives not from direct experience but is a reflection of it.

(3) Disembodiment feelings: disembodiment is the experience of the self as localized outside one's physical body. In a survey using the Cambridge Depersonalization Scale, 48% of 407 patients diagnosed with DD endorsed an item describing disembodiment: 'I have the feeling of being outside my body' (Sierra and Berrios, 2000). However, different from so-called out-of-body experiences (OBE), disembodiment in DD is not '...accompanied by a feeling of occupying a distinct location in extrapersonal space' (Sierra, 2009, p. 30). In contrast, according to Blanke and Arzy (2005), in a typical experience of OBE the subject experiences the self as located in a certain extracorporeal space.

(4) Somatosensory distortions: people with this symptom experience perceptual distortion of the body in diverse ways. For example, the body feels lighter, as if floating, or the hands feel as if they have



grown larger or smaller. Sierra (2009) provides a description by a patient who stated, 'As I walked, I had the distinct feeling of being floating or bouncing up and down on a rubber floor, I wanted to avoid a group of people as I realized they might make fun of my walking' (p. 31). However, others do not notice these subjective changes, even though perceptual distortions are serious to the affected people themselves. Different from cases of schizophrenia, behaviours of people with DD do not arouse specific impressions such as 'praecox feeling', through which others can notice a lack of affective attunement with the environment (Grube, 2006).

From these analyses, we can see that there is a lack of ownership of one's own body that spreads out over one's actions, which is at the core of anomalous body experiences in DD. The body appears as something alien to the self, losing the meaning of 'my' body. The actions also appear as if they are not 'my' actions. Instead, people with DD feel as if their actions are automated like those of a robot. In accordance with this qualitative change, they feel disembodied such that 'this is not my body and I am not located within this body'. If these disembodied feelings increased, they would actually feel that they were located outside their own bodies. As Kaku (2007) describes, they feel as if the self 'has slipped out of my body'.

It is the symptom of detached observation that represents this state. As Sierra (2009) adds to the points listed above, the feeling of heightened self-observation is experienced as being closely related to anomalous body experiences. This is also known as the split between the observing self and the experiencing self (Simeon and Abugiel, 2006). The symptom of depersonalization is often described in a manner such as 'feeling detached from the self', as was the case for Shay (2016). However, this is actually a split of the *selves*, between one that is acting within the body and one that observes the acting self outside the body. This split of selves is what characterizes the symptom of depersonalization (Simeon, 2014).

#### 4. Phenomenological Clarification

In order to further describe and clarify bodily experiences in DD from a phenomenological perspective, let us introduce the concept of the *minimal self*. The minimal self is a mode of self that still maintains a sense of 'self' even if all unnecessary features are stripped away. Gallagher (2000; 2012) argues that the minimal sense of self is based on direct experience of the present moment and that it is composed of

two distinguishable senses: sense of ownership and sense of agency. Whenever 'I' have an experience of any kind, such as perceiving something, acting on something, or thinking about something, that experience has a tacit quality of 'my' experience. In other words, all experiences involve a pre-reflective sense of 'mineness' for a subject who experiences them (Gallagher, 2012). This sense of mineness is the source of a sense of ownership, which is defined as 'the sense that I am the one who is undergoing an experience' (Gallagher, 2000, p. 15). The most profound sense of self derives from a sense of ownership, which is involved in a direct experience of here and now.

Gallagher continues that it is possible to further distinguish the sense of ownership by considering a case of involuntary action in which one's body is passively moved by others. In a case such as being pushed hard by someone, 'I' may fall down. The experience of falling down would still be accompanied by a sense of ownership, but 'I' would not feel that I am the one who generated that movement. In other words, 'I' would have no sense of agency for the movement. Sense of agency is defined as 'the sense that I am the one who is causing or generating an action' (*ibid.*). Therefore, if a direct experience occurs as a voluntary action, normally it involves both senses of ownership and agency, which constitute the minimal sense of self. If it is an involuntary action involving a reflex act, the minimal self is composed mainly of the sense of ownership.

As we have seen already, what happens in anomalous body experiences in DD is primarily a qualitative change in the sense of ownership. It is difficult for people with DD to feel natural ownership of their bodies or actions. Although the degree of loss of ownership can vary depending on the person, loss of ownership can pervade memories and interoception as well. If the recall process lacks a sense of ownership, memories would seem to lack personal meaning. They would be recalled as if they were not 'my' memories or as if they did not really happen to 'me'. This is what occurs as anomalous subjective recall, which we saw as one of four experiential components of DD (Sierra and David, 2011). Similarly, we find that the same loss pervades interoception. The case of Kaku informed us that sensations and needs can also lack the ownership of being 'mine' (Kaku, 2007). In severe cases of DD, the sense of ownership toward the whole body, including interoception, seems to be reduced to almost zero, as is seen in a case of severe PTSD (Ataria, 2016).

However, a sense of ownership derives from direct experience. Wherever there is an experience of any kind, that experience is

accompanied by a tacit sense of mineness, that is, the primary sense of ownership given in a pre-reflective manner. Fuchs (2010) also states that ‘the minimal self is characterized by an implicit, prereflective self-awareness that is present in *every experience* without requiring introspection’, and thus it is ‘preserved even when autobiographical memory is lost, as in amnesia or dementia, or when a long-term sense for the future is missing, as in certain frontal brain damages’ (*ibid.*, pp. 549–50, emphasis added). Therefore, we should ask how a sense of ownership or the minimal self is preserved in the case of DD.

Without doubt, it is the observing experience that is still maintained as a direct experience and as a source of the sense of self. Let us take up once again the following description of her symptoms by Bradshaw: ‘It was strange when I would hear myself talking. Who was this person speaking words out of my mouth? I didn’t feel like it was me. I didn’t feel like I was in the “driver’s seat” of my own body and mind’ (Bradshaw, 2016, chapter 1).

Taking her words literally, we are inclined to think that there is no self who is speaking in the scene described here. There is no sense of ownership at all for the speaking action. Nevertheless, we can still find a sense of self, one who is feeling ‘strange’ during the speaking action, and who is feeling its own absence in the ‘driver’s seat’. It is important to note that she writes in the quoted passages, ‘I didn’t feel like it was me’, still using the first-person subject ‘I.’ This ‘I’ is different from the ordinary ‘I’ who has experiences such as perceptions, actions, and emotions that are grounded in the body. However, this ‘I’ has a direct experience of observing reality in a detached manner. Although the sense of ownership of the body and its actions seems to be almost lost, the observing experience itself is still occurring as ‘my experience’, accompanied by a sense of mineness.

Here, it is possible to find a self that is able to experience both symptoms of depersonalization and derealization. As we saw already, these two symptoms have different sources from which the detached feeling derives: the self-related experiences or the external world. However, they are compatible if the ‘self’ is reduced to a mere first-person perspective, through which ‘I’ observe the whole reality. Unexpectedly, Freud (Freud and Freud, 1936/2001) knew this compatibility of depersonalization and derealization. In his letter to Romain Rolland, he noted as follows: ‘These phenomena are to be observed in two forms: the subject feels either that a piece of reality or that a piece of his own self is strange to him. In the latter case, we speak of “depersonalization”; derealizations and depersonalizations

are intimately connected' (*ibid.*, p. 245). The difference seems to be the context in which the heightened observation is experienced. If the observation occurs with its focus on external reality, it would be experienced as derealization. In contrast, if it occurs with its focus on self-related experiences such as actions, emotions, or recalling, it would be experienced as depersonalization. Derealization and depersonalization are 'intimately connected' through the experience of heightened observation. For the observing self, whatever appears in its experience, it is nothing more than *unreality* that lacks a sense of ownership.

Let us clarify how loss of agency is experienced in DD. Now it is clear that in both depersonalization and derealization 'my' experience is narrowly focused on observing experience in which the very meaning of 'my experience' seems to be almost lost. Thus, it is difficult for those with DD to have not only a sense of ownership for actions but also a sense of agency for them: 'I' am a detached observer of actions that occur through the body, which I know, but do not feel, is mine. However, we should carefully take into consideration the fact that people with DD are able to move their bodies in response to their intentions. They are also able to carry out necessary actions for everyday life, and it is difficult for others around them to detect that their actions are different from those of ordinary people.

On the one hand, this is different from paralysis, where the body does not move in accordance with one's intention due to a neurological impairment, as is generally seen in cases of paralysis after stroke (e.g. Dobkin, 2005). On the other hand, this is also different from passivity experiences of the kind that can occur in schizophrenia. There are individuals with schizophrenia who complain that they are passively moved by an 'other' or an external force. In these cases, the intention itself is experienced as other or 'external' from the very beginning. In passivity experiences, the actions themselves are captured or owned by the other (Kimura, 2006).

As subjective experiences, bodily actions experienced in DD differ in quality from both paralysis and passivity experiences. As an objectively observable fact, bodily actions in DD do not differ greatly from those of a non-pathological state. From this point, one can claim that people with DD themselves experience their bodily actions as *intentional movements*. Thus, one can also claim that these people have a sense of agency, at least at the initiating moment of actions. Otherwise, it would be actually impossible to act according to their intentions. However, neither the body nor its actions are accompanied

by a sense of ownership. There would be only weak sensory feedback through kinaesthetic sensation after initiating the action. Thus, for people with DD, even though 'I' initiate the action, it is difficult to feel the action as mine; instead, it feels like that of a robot.

As we saw in the last section, based on a post hoc view of agency, Sierra (2009) claims that people with DD have no sense of agency at the experiential level. However, if there is no sense of agency at all, it would be impossible for the action to feel 'as if' it were that of a robot. On the contrary, action is accompanied by a slight sense of agency, but is alienated by a lack of ownership. This strange mixture of senses creates the robot-like feeling. This is not a post hoc cognitive attribution but an *ongoing bodily feeling* that accompanies the action. Criticizing Sierra's view, Ataria (forthcoming) also claims 'depersonalized individuals have indeed lost their sense of body ownership — at least to some extent — yet it would be a mistake to argue that they have also completely lost the sense of agency'.

### 5. The Floating First-Person Perspective

If a person's sense of self is mainly preserved in observing experience, then where is the observing self located? Is it located out of the body, as many people with DD vaguely feel? And does it imply that the totally disembodied self can possibly be experienced? Let us consider this point in comparison with experiences of the 'full-body illusion' that are induced in experimental settings.

There are two prototypical experiments of the full-body illusion. One was reported by Ehrsson (2007). As is shown in Figure 1, the participant sits on a chair and wears a head-mounted display that is connected to a video camera placed two metres behind the participant's back. The experimenter stands beside the participant and touches the participant's chest with a rod. Synchronously, with another rod, the experimenter touches the spot that corresponds to the place where the chest of the 'illusory body' is located. Thus, what the participant observes through the display is (a) his/her own back and (b) the rod that approaches his/her chest in the visual field. And, at the same time, he/she feels (c) the actual touch on the chest. According to Ehrsson (2007), under this setting, participants experience a perceptual illusion in which 'individuals experience that their center of awareness, or "self," is located outside their physical bodies and that they look at their bodies from the perspective of another person' (p. 1048).



Figure 1. Ehrsson's full-body illusion (taken from Wolfe *et al.*, 2015: <http://sites.sinauer.com/wolfe4e/essay13.02.html>).

The other prototypical experiment was reported by Lenggenhager *et al.* (2007). As is shown in Figure 2, the participant stands wearing a head-mounted display through which he/she observes his/her body filmed from a distance of two metres. The participant's back is stroked for one minute in the filmed scene and, while watching the scene, he/she is stroked on the back by the experimenter in a synchronous manner. In this experiment, the participant observes (a) his/her body from behind and (b) the rod that strokes his/her back. At the same time, he/she feels (c) the actual touch on the back. The authors report that they also successfully induced a perceptual illusion of the bodily self. They state, 'our results show that humans systematically experience a virtual body as if it were their own when visually presented in their anterior extra-personal space and stroked synchronously' (*ibid.*, p. 1098). This experiment suggests that the participant's bodily self could be experienced at the location of the virtual body shown in the display. As Meyer (2008) appropriately compares, in Ehrsson's experiment, participants feel the self as located at the place of visuospatial perspective, but in that of Lenggenhager's, the self is felt as located at the place of visual representation of the body.

Although both experiments suggest that participants are able to experience the self as located out of the body, we have to consider carefully what is actually experienced as the 'self' in both cases. First, in Ehrsson's experiment (Figure 1), what the participant experiences out of the real body at the location of the video camera would be mainly the visuospatial perspective, through which 'I' observe 'my back'. During an experiment, the participant may experience an

illusion that 'I' am located at the visuospatial perspective through which I observe the world, for receiving virtual tactile stimuli that are spatially congruent with the location of it. However, it should be noted that virtual tactile stimuli do not erase real tactile stimuli that are received at the location of the real chest, which involves the quality of 'here'.

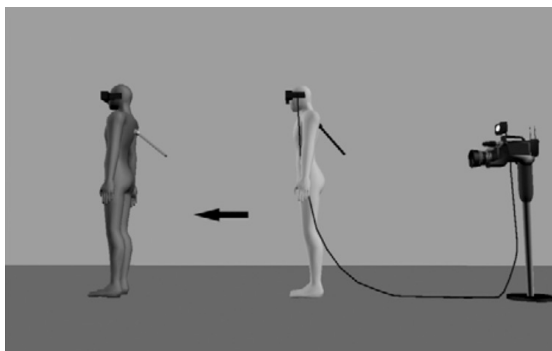


Figure 2. Another version of the full-body illusion (taken from Lenggenhager, Mouthon and Blanke, 2009, p. 111).

The 'here', that is, the spatiality informed by tactile sensation, is not determined by objective coordinates but by the body schema, which represents the whole surface of the body as a somatotopic map (Medina and Coslett, 2010). Therefore, wherever on the body the tactile sensation occurs, the tactile 'here' potentially involves the relation with the whole body, which implies 'my body'. As far as tactile sensation is involved in an experimental setting, it inevitably induces the tacit experience of 'my body' that is accompanied by a pre-reflective sense of ownership. Precisely speaking, what occurs in Ehrsson's experiment is the *split* between the visuospatial perspective, through which 'I' observe, and 'my body', from which the sense of ownership derives. In accordance with this split, the participant would experience the self as located in two places: one out of the body and the other within the body.

Although Lenggenhager's experiment also involves the same theoretical problem of tactile sensation, it has the possibility of transferring the very sense of body ownership toward the virtual body, as this experiment is an extension of the paradigm of the rubber-hand illusion (Botvinick and Cohen, 1998). As is well known, it is possible to induce an illusory sense of ownership for a rubber hand. In the

experiment, the participant receives repeated strokes on the left hand, which is hidden by a screen, while watching a rubber hand that is being stroked in a synchronous manner. Under this condition, the participant feels an illusory ownership of the rubber hand, including the tactile sensation on it. This implies that the spatial information of 'here' is temporarily transferred to the rubber hand and that the body schema is extended to incorporate the rubber hand into it (*cf.* Maravita and Iriki, 2004).

Thus, the most significant experience that is induced by Lenggenhager's experiment is the ownership transferred toward the virtual body that is shown on the display. As is seen in the case of the rubber-hand illusion, the participant would feel that he/she is being touched on the virtual body and that the virtual body is 'my body'. As a result, the participant mislocalizes his/her body to a position outside the physical body, including the drifting sense of proprioception, when the illusion is induced under the experimental condition. This altered sense of self-location would be the significant result in Lenggenhager's experiment, which is not included in Ehrsson's experiment (Blanke and Metzinger, 2010). Based on this fact, the authors claim, 'illusory self-localization to a position outside one's body shows that bodily self-consciousness and selfhood can be dissociated from one's physical body position' (Lenggenhager *et al.*, 2007, p. 1098).

In this experiment, however, it should be noted that illusory mislocalization is induced by the *observing experience*. By watching the virtual tactile sensation occurring 'there' while receiving the real tactile stimuli 'here', the participant starts to feel as if the real tactile sensation is occurring 'there'. Even though a strong sense of ownership of the virtual body is induced during an experiment, it depends entirely on the observing experience that occurs through the visuo-spatial perspective of the real body. Thus, once again, what is experienced is a split between 'my body', from which the sense of ownership derives, and the visuospatial perspective, through which 'I' observe. What is different from Ehrsson's experiment is the location of 'my body', from which the sense of ownership derives. It derives from the real body in Ehrsson's experiment, whereas it derives from the virtual body in Lenggenhager's experiment.

In any case, these two experiments of the full-body illusion show that it is possible to systematically induce a split within the self. Healthy participants are able to experience the purely observing self that is located out of 'my body'. In this regard, we can say that the



observing experience in DD is continuous to the healthy states. However, the most notable difference between the full-body illusion and the observing experience in DD is the sense of ownership of the body. Regardless of the source from which the sense of ownership derives (real body or virtual body), it is still preserved in the full-body illusion. In contrast, with DD, the loss of ownership of the body seems to be the most important factor that reduces the person's direct experience to that of observing.

In addition, we should notice that it is necessary to combine visual stimuli and tactile stimuli to induce a split in a participant's experience of the self (Blanke and Metzinger, 2010; Meyer, 2008). In Ehrsson's experiment, the multisensory integration of these two stimuli is subjectively experienced at the location of the video camera, and this causes the participant's illusory experience that the first-person perspective is separate from the real body. In Lenggenhager's experiment, the same multisensory integration is subjectively experienced at the location of the virtual body presented in the display, and this transferred the participant's sense of ownership from the real body to the virtual body. As a result, the purely observing experience was left at the location of the real body.

People with DD do not seem to have this sort of sensory integration and, as a result, the sense of location is not clearly added to the observing experience. This means that they are observing reality without having a clear sense of location. My view coincides with Sierra's description that disembodiment in DD is not accompanied by a feeling of occupying a distinct location in extrapersonal space (Sierra, 2009). The first-person perspective through which they observe reality would be floating without being anchored at a particular location. It would be difficult for them to locate their own first-person perspective in an extracorporeal space. Precisely speaking, their first-person perspective of detached observation is not confined within the body nor clearly located in an extracorporeal space. It is just floating somewhere around the body.

## 6. Further Clarification

Although it is almost clear for us to see the relationship between the body and self in DD, I would like to further clarify the experience of selfhood in DD. Basically, the self is experienced as the perspective through which the surrounding world appears and one's own actions are observed. For a person with DD, the sense of self has almost

withdrawn from the body and is minimally preserved in observing experiences. Different from full-body illusions, this observing experience is not felt to be located in a particular place, but is just floating around the body. In line with the argument on the minimal self (especially that by Shaun Gallagher), we have clarified that the sense of ownership has withdrawn from bodily actions and is limited to the observing experience, and that the sense of agency is reduced to the initiating moment of bodily actions. However, we have not explained one thing so far. As Kaku articulated in the above-quoted passage that 'I have no real feeling that I am alive', the sense of self seems to lack the ordinary feeling of being alive. It is necessary to further clarify the depersonalized and/or derealized states, not in terms of the relationship between body and self, but in terms of the qualitative change in selfhood.

In the literature, it has been pointed out that people with DD lack the feeling of self in their general experiences (Simeon and Abugiel, 2006). This description is too coarse and leaves room for misunderstanding. As we saw already with Fuchs (2010), if there is any subjective experience, a pre-reflective self-awareness is built into it. Taking into consideration that the minimal sense of self is preserved in observing experiences of DD, it is not 'no-selfhood' but the transformation of selfhood that characterizes the states of DD. A finer-grained explanation of this point is needed. People with DD might claim that they have been disembodied, that they have lost their feeling of being alive, or even that they are dead, but their claims are accompanied by expressions of 'as if', marking a distinction from the so-called Cotard delusion (Billon, 2015). Moreover, phenomenologically speaking, every conscious experience involves an implicit first-person perspective for the world or certain objects. It is impossible to understand the states of DD as no-selfhood in so far as the affected individuals have conscious experiences of observing reality. Consciousness is always accompanied by an implicit 'I' for those who have experiences. So, the qualitative change of selfhood experienced in DD should be understood as an alteration of this implicit 'I'. Zahavi (2005) refers to this implicit dimension of conscious experiences through the notion of 'mineness':

Although the various modes of givenness (perceptual, imaginative, recollective, etc.) differ in their experiential properties, they also share certain features. One common feature is the quality of mineness, that is, the fact that the experiences are characterized by a first-person givenness that immediately reveals them as one's own. (*ibid.*, p. 124)

Whatever ‘I’ experience, that experience is accompanied with a tacit quality of ‘mineness’ because ‘I’ experience it as ‘my’ experience. Let us describe the states of DD, along with the qualitative change of this subjective character of conscious experience.

In her recent paper, Guillot (2017) distinguishes three properties of the subjective character of conscious experiences. The first property is ‘for-me-ness’: an experience has a manner of being given to someone. Be it of outer things or inner states, something is present *for me* in an experience. The second property is ‘me-ness’: someone who is going through an experience is somehow aware of him/herself as ‘me’. Regarding this point, Zahavi (2005) also points out that phenomenal consciousness entails a minimal form of self-awareness, which is based on Husserl’s argument. The third property is ‘mineness’: as part of the experience being given to a subject, the subject is aware of the experience being his/her own. Taking this distinction into consideration, we can say that the property of for-me-ness is much more salient than that of me-ness or mineness in DD. Focusing on depersonalization, Guillot also appropriately states, ‘I thus propose to describe the depersonalisation syndrome as a condition in which experience lacks both mineness and me-ness, but retains for-me-ness’ (2017, p. 42).

In line with this statement, let us describe experiences in DD. For people with DD, it is difficult to feel that it is ‘me’ who is undergoing an experience and it is also difficult to feel that the experience is occurring as ‘mine’, especially when it occurs as a bodily experience. As we saw above, bodily actions feel like those of a robot without a natural sense of agency, and the body itself feels as if it were not mine. Although I do not claim that the body is the source of me-ness and mineness, it is certain that they are deeply interconnected with each other to the extent that consciousness itself is embodied. It should be noted that for-me-ness is relatively easy to be preserved in observing experience as it is possible if only the first-person perspective is maintained. It is through the first-person perspective that something is present *for me* in an experience. On the basis of this analysis, we now need to rephrase: the sense of ownership, which is withdrawn from the body and limited to the observing experience, actually corresponds with the property of for-me-ness and not with mineness.

Let us consider this state in the context of bodily actions. A person with DD can move his/her own body according to certain intentions for action. However, the sense of agency arises only for the moment of initiating the action. It is soon replaced by a highly detached

observation, which is an expression of the property of for-me-ness. There is still 'someone' to whom the bodily action is happening, but it would be difficult to evoke a strong sense of self because of the lack of me-ness and mineness. This sort of detached observation would be experienced as a series of self-reflective moments because the self is not intermingled with the bodily action that happens through continuous temporal flow. In the same context, of referring to the qualitative change of his selfhood, Kaku (2007) claims that he cannot feel the continuous flow of time (p. 77). Detached observation, repeated self-reflection, and lack of temporal flow would result in a lack of the feeling of being alive.

### 7. Conclusion

People with DD experience the almost disembodied self. Here, 'almost disembodied' means that the sense of self is not accompanied by a sense of body ownership. As the subjective character of experiences is reduced to only 'for-me-ness', the primary sense of self derives not from the body but from the direct experience of observing reality. The first-person perspective through which the observing experience occurs is not felt to be located within the body, but seems to be floating without a particular location. Thus, increasing identification with the observing experience would increase the sense of being disembodied. This is the reason why those with DD often claim that they are separated from their own bodies.

However, it is not appropriate to say that their experience of the self is 'totally disembodied' because a certain part of their experiences is still grounded in actions. At least, they are able to move their own bodies in accordance with their own intended actions. Their statements that they feel as if their actions are automated suggest that they are not deliberately controlling their movements, but are acting to some extent in a pre-reflective manner. Considering that their detached observations of their own actions are experienced as a series of self-reflective moments, what they experience is not a smooth action within a temporal flow but is instead an aggregation of fragmented actions. This is probably the subjective experience of moving like a 'robot', which is deeply alienated from animate bodily actions. Nevertheless, I would like to emphasize that a robot still has its *body* even though it is inanimate. In this sense, DD is not a disorder that demonstrates the contingency of the union of body and self.

What we found through our examination, in addition to this point, is that the combination of heightened observation and lack of body ownership would profoundly confuse the sense of self-location in DD. It is even possible for people with DD to feel that they are not really alive, as emotional numbing is also one of the core symptoms. Those with DD do not only feel that their observing perspective (for-me-ness) is floating around, but they also find it in a place of ‘unreality’ as it is difficult for them to feel affectively in touch with the world through the body (Fuchs, 2013). They feel as if they are living in dreams, which feel different from ordinary and familiar reality (Simeon and Abugel, 2006). So, we can conclude as follows. The more disembodied the self becomes in states of DD, the more difficult it is for the self to be located in the world, where the body is located. Such a self lacks the property of mineness as well as me-ness of experiences and is reduced to a mere for-me-ness without being anchored in the body, which has a concrete spatiality within the world. In this regard, if the Cartesian *cogito* is a totally disembodied self, it would be possible to exist only in the form of ‘being-out-of-the-world’. And, there would be no space for such a self in this world.

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