

Standal, Ø. F. (2011).

Re-embodiment: incorporation through embodied learning of wheelchair skills. *Medicine, Health care and Philosophy*, 14(2), 177-184

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1 Running head: Re-embodiment and incorporation

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3 Article type: Scientific contribution

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6 Re-embodiment: Incorporation through embodied learning of wheelchair skills

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1 **Abstract**

2 In this article, the notion of re-embodiment is developed to include the ways that
3 rearrangement and renewals of body schema take place in rehabilitation. More
4 specifically, the embodied learning process of acquiring wheelchair skills serves as an
5 off-set for fleshing out a phenomenological understanding of incorporation of assistive
6 devices. By drawing on the work of Merleau-Ponty, the reciprocal relation between
7 acquisition of habits and incorporation of instruments is explored in relation to the
8 learning of wheelchair skills. On the basis of this, it is argued that through learning to
9 manoeuvre the wheelchair, a reversible relation between established between the moving
10 body subject and the wheelchair. In this sense, re-embodiment involves a gestalt switch
11 from body image to body schema.

12

13 Key words: Rehabilitation, wheelchair skill learning, incorporation, body schema,
14 phenomenology, Merleau-Ponty

1 **Re-embodiment: Incorporation through embodied learning of wheelchair skills**

2 Rehabilitation is a multidisciplinary endeavour with a strong medical history. Its
3 historical origin lies in efforts of returning injured or ill persons back to a so-called
4 normal state as productive workers (Grue & Heiberg, 2006). As such, rehabilitation is
5 often criticized for being a way of colonizing individuals according to normalizing
6 criteria (Connolly & Craig, 2002) and for being a part of disablist society's strategy to
7 oppress people with disabilities (Paterson & Hughes, 1999). It is therefore pertinent to re-
8 think rehabilitation, so that it can become "a credible place from which to devise
9 strategies for actual bodies to dwell in the world in honorable ways" (Connolly & Craig,
10 2002: 455).

11 In *Remaking the body*, Wendy Seymour (1998) proposes a wider view of the
12 rehabilitation process that follows the acquisition of disability. Seymour refers to this as
13 re-embodiment, that is, "the reconstitution of self-identity in relation to the person's new
14 bodily state" (p. 107). Seymour is mostly concerned with identity and body image, for
15 instance how the participants in her study use clothing as a means of redressing their
16 embodied selves after injuries that forced them to use wheelchairs.

17 In the works of for instance Maurice Merleau-Ponty (2002), Kay Toombs (1992) and
18 Fredrik Svenaeus (2000), an integral aspect of acquiring a disability is the loss or
19 disruption of bodily habits. By drawing on the distinction between body image and body
20 schema (Gallagher, 2005; Merleau-Ponty, 2002), it can be argued that re-embodiment is
21 not only a matter of reconstituting body images, but also "rearrangements and renewals
22 of body schema" (Merleau-Ponty, 2002: 164).

1 Merleau-Ponty addresses the body schema in his investigation of the spatiality of the
2 body (Merleau-Ponty, 2002: 112-170). He describes it initially as a
3 compendium of our bodily experience... supposed to register for me the positional
4 changes of parts of my body for each movement of them... a total awareness of my
5 posture in the intersensory world, a 'form' in the sense used by Gestalt psychology
6 (Merleau-Ponty, 2002: 113-114).

7 The body schema, in this interpretation registers body movements and body postures as
8 gestalts, that is, as figures standing out on an undifferentiated background. However,
9 Merleau-Ponty also criticized the Gestalt psychologists for remaining entrenched in
10 physiology and the scientific attitude therein, thus failing to pay attention to being-in-
11 the-world¹.

12 Being-in-the-world is a term coined by Martin Heidegger, and is a key concept in
13 phenomenology. The hyphenated expression is meant to capture the essential and
14 intertwined relation between human beings and the world. The starting point of
15 Heidegger's analysis of being-in-the-world is that human beings are self-interpreting, that
16 is, we take a stand on our own existence (Dreyfus, 1991).

17 Thus, the *being* in being-in-the-world is a self-interpreting being thrown into the
18 world. We are already in the world, and we have already a relation to our existence. The
19 preposition *in* of being-in-the-world is therefore crucial. The basic sense of in, according
20 to Dreyfus (1991), is not that of a physical inclusion, as when we refer to objects in a box.
21 The more primordial meaning is to dwell. The crucial distinction between inclusion and

¹ E.g.: "'figure and ground' has a meaning only in the perceived world: it is there that we learn what it is to be a figure and what it is to be a ground. The perceived would be explicable only by the perceived itself, and not by physiological processes" (Merleau-Ponty, 1963: 92).

1 dwelling is that of involvement: Inclusion does not imply involvement, but dwelling does
2 (ibid.). In the phenomenological perspective, then, the world cannot be understood in
3 abstraction from a subject who experiences this world. Neither can the subject be
4 abstracted from the world.

5 Merleau-Ponty appropriated the insights of Heidegger in that his existential
6 phenomenology underscores the intertwined relation between subject and world. In the
7 preface to *Phenomenology of perception*, Merleau-Ponty states that “we are through and
8 through compounded of relationships with the world” (Merleau-Ponty, 2002: xiv), and he
9 ends the book by quoting Saint-Exupèry in saying that man (in the sense of human being)
10 is but a network of relations. In this sense, being-in-the-world is a primordial relation
11 between self-others-world.

12 With the notion of being-in-the-world as a critical corrective to what Merleau-Ponty
13 saw as the Gestalt psychologists’ scientism, he noted that if the body schema is to be
14 understood as a gestalt “this occurs in virtue of [the body] being polarized by its tasks, of
15 its *existence towards* them... the body [schema] is finally a way of stating that my body
16 is in the world” (Merleau-Ponty, 2002: 115. Italics in original).

17 In his clarification of the body schema / image distinction, Gallagher (2005) sees the
18 body schema as a system that deals “with its environment without the requirement of a
19 reflexive conscious monitoring directed at the body. It is a dynamic, operative
20 performance of the body” (p. 32). In grammatical terms the body schema should not be
21 thought of as a noun, but rather as an adverb; as a manner or style of being-in-the-world
22 (Dillon, 1997). Thus, the body schema is not an entity residing within the body, but

1 extends into to the world and plays an integral part in the projects that the body-subject is
2 involved in.

3 The body image on the other hand, “consists of a complex set of intentional states and
4 dispositions – perceptions, beliefs, and attitudes – in which the intentional object is one’s
5 own body” (Gallagher, 2005: 25). That is, the body, or parts of the body, is consciously
6 attended to as an object for perception. So, the difference between body schema and
7 image is that with the body image “one is consciously *attending* to body”, whereas with
8 the body schema one is “marginally *aware* of the body” (ibid: 27. Italics in original). The
9 body schema does its work “before we know it” (ibid: 5), and so structures our
10 experiences of the body-in-action. It takes account of the environment in a pragmatic
11 fashion, and can incorporate into its structure objects in the environment, so that the
12 limits between the body and environment become blurred.

13 Drawing on the notion of body schema, the aim of this article is to flesh out an
14 understanding of a typical rehabilitation practice: The effort of learning how to control
15 and manoeuvre a wheelchair after sudden injury or illness. This will be done from the
16 perspective of Merleau-Ponty’s phenomenology. Therefore, I will in the following
17 elucidate how Merleau-Ponty conceives of the process of incorporation as an embodied
18 learning process that establishes a reversible relation between the wheelchair user and the
19 wheelchair.

20 **En-wheeled and incorporated**

21 Learning to use a wheelchair is an integral part of rehabilitation for people who, due to
22 illness or sudden accident, no longer is able to walk. Indeed, the loss of loco-motor

1 capacities profoundly affects the person's embodied relation to the surrounding world, as
2 for instance expressed by Kay Toombs:

3 Locomotion opens up space, allowing one freely to change position and move
4 towards objects in the world. Loss of mobility anchors one in the Here, engendering a
5 heightened sense of distance between oneself and surrounding things.... Loss of
6 mobility illustrates in a concrete way that the subjective experience of space is
7 intimately related both to one's bodily capacities and to the design of the surrounding
8 world (Toombs, 2001: 249)

9 Learning to use a wheelchair is therefore not a matter of mere technicalities, where one
10 simply learns to manipulate an object. Rather, it is a process that affects the wheelchair
11 user's being-in-the-world.

12 In a phenomenologically informed study investigating the rehabilitation process for
13 adults with spinal cord injury, Papadimitriou uses the notion *becoming en-wheeled* about
14 the process of "learning to use a wheelchair and making it part of one's way of living"
15 (Papadimitriou, 2008: 691). Papadimitriou focuses on how wheelchair users acquire the
16 ability to use the wheelchair so that their bodily awareness extends to include the frame
17 of the chair. In this way, the wheelchair becomes an integral part of the persons' habitual
18 actions. According to Papadimitriou this means that

19 a new ontological style is created, a comfortable style in and through which the chair
20 is experienced as an extension and integral part of the lived body.... Becoming en-
21 wheeled means becoming newly abled, and this is constituted through actual
22 practices, through 'doing' (p. 699).

1 In a similar vein, I (Standal, 2009) have described and discussed how incorporation of
2 wheelchairs takes place through learning skills in a rehabilitation setting. Through close
3 observations and semi-structured interviews, the participants expressed how the
4 wheelchair is transformed from being experienced as a foreign body that they resisted, to
5 becoming – at least for some of the participants – experienced as an integral part of their
6 bodies. That is, through learning skills, the wheelchair changes its experiential qualities
7 for the person using it.

8 These two studies highlight the dual process of incorporation / becoming en-wheeled.
9 On the face of it, it may look as if there are two different movements taking place: on the
10 one hand, the wheelchair becoming a part of the user’s body (*incorporation*, apparently an
11 inward movement), and on the other hand, the wheelchair user becoming a part of an
12 external object (*en-wheeled*, a movement outward towards the external world).

13 Yet, taking these as either inward or outward directed processes is misleading,
14 because it can convey the problematic idea that inside and outside are two strictly
15 separated spheres of reality. From a phenomenological perspective this should be
16 avoided, because, as Merleau-Ponty puts it: “Inside and outside are inseparable. The
17 world is wholly inside and I am wholly outside myself” (Merleau-Ponty, 2002: 474).
18 Furthermore, the idea that becoming en-wheeled / incorporated are two sides of the same
19 coin is pin-pointed at another place in the *Phenomenology of perception*, where Merleau-
20 Ponty writes that “to get used to a hat, a car or a stick is to be transplanted into them, or
21 conversely, to incorporate them into the bulk of our own” (Merleau-Ponty, 2002: 166).
22 There is a reciprocal relation between being ‘transplanted’ into assistive devices (i.e.
23 becoming en-wheeled) and to incorporate these instruments into one’s own body.

1 Both Papadimitriou (2008) and Standal (2009) point out the reciprocal relation
2 formed between body and world in the processes of becoming en-wheeled and
3 incorporated. However, the specific nature of this relation can be further substantiated.

4 *Acquisition of habits as incorporation*

5 This reciprocal relation between becoming en-wheeled and becoming incorporated can be
6 further developed by studying how movements, which have habitual qualities, are
7 considered by Merleau-Ponty. The process of incorporating a wheelchair into a person's
8 body is seen in close conjunction with how movements are learned: "those actions in
9 which I habitually engage incorporate their instruments into themselves and make them
10 play a part in the original structure of my own body" (Merleau-Ponty, 2002: 104). There
11 is thus an intimate relation between acquiring habits and incorporating instruments like a
12 wheelchair, and it is this relation I will work out here.

13 *Habits in Merleau-Ponty*

14 Merleau-Ponty was interested in habits for the same reasons that he was interested in
15 behaviour and movement: They are phenomena that can be properly understood neither
16 by intellectualism nor empiricism (Smith, 2007). The intellectualist account of habit is
17 the automatism of mental representations. On that account, the proper mental
18 representation is called up and the movement executed without explicit monitoring by the
19 acting subject (for a critique, see Moe, 2005). This is the outcome of a learning process
20 where the learner consciously and explicitly monitors movements before they – after long
21 time of practise – become automatic.

22 Empiricism, on the other hand, would equate habit with the conditioned reflexes i.e.
23 the behaviourist program of establishing causal links between stimuli and responses

1 (Merleau-Ponty, 1963). In this learning process, a regime of reinforcement – provided
2 either by a trainer or occurring naturally in the environment – establishes a stimulus that
3 will elicit a desired response. The body, on this account, is an object, fully under the sway
4 of external forces².

5 Merleau-Ponty rejects both these explanations: “Habit has its abode neither in thought
6 nor in the objective body, but in the body as mediator of the world” (PhP: 167). Habits
7 dwell in the body-subject’s sensitive relation to the world (Ostrow, 1990). As an
8 example, Merleau-Ponty argues that people who are skilful at typewriting are not in
9 possession of decontextualized knowledge of the place that each letter has on the
10 keyboard³. Neither have they acquired a conditioned reflex for each one. To the contrary,
11 habits is

12 *knowledge in the hands*, which is forthcoming only when bodily effort is made, and
13 cannot be formulated in detachment from that effort. The subject knows where the
14 letters are on the typewriter as we know where one of our limbs is, through a
15 *knowledge bred of familiarity* which does not give us a position in objective space
16 (Merleau-Ponty, 2002: 166. Italics added).

17 For Merleau-Ponty habit is a form of ‘knowing how’ rather than ‘knowing that’. It is
18 embodied knowledge. The body involved in these habits is to Merleau-Ponty, “the third

² This is a topic Merleau-Ponty treated at length in *The structure of behavior* (Merleau-Ponty, 1963), where he argued, contra behaviorism, that the body does not wait for external forces to set itself in motion, because – as he would put it later – the body displays “a sort of prospective activity” (Merleau-Ponty, 1964). Thus, the body is not an object solely governed by external forces.

³ Here is an experiment that illustrates this: Can you tell which finger you use to press the letter F on the key board of your computer? Most people who are somewhat proficient at typing wouldn’t. But if they sit down by their keyboard in order to write, the finger will find the letter immediately without the intervention of thought.

1 term” (Merleau-Ponty, 2002: 115), the alternative to the intellectualists’ and empiricists’
2 account of the body in action.

3 *The acquisition of habits*

4 As should be clear from the above, movement is a matter of I can, not of I think.

5 Throughout his work Merleau-Ponty underscores the intertwining of body-subject and
6 world. In *Structure of behaviour*, he exemplifies this with the football player’s relation to
7 the field (Merleau-Ponty, 1963: 168-169). The phenomenal field, with its demarcations
8 and other players, calls for certain modes of action, and disallows others. The player is
9 one with the field, yet each move made by the player, his team mates, and opponents
10 modifies and alters the phenomenal football field. Hence, the football field, or more
11 generally the world is imbued with meaning. But this meaning is not a pre-given, a source
12 that we can tap (Adams, 2001), but arises in an interplay between body-subject, world,
13 and other body subjects. It is also a meaning which is tied to a specific on-going
14 (movement) project.

15 To be able to move is to display a form of practical understanding, i.e. to grasp a
16 motor meaning. This motor meaning is an experience of “the harmony between what we
17 aim at and what is given, between the intention and the performance” (Merleau-Ponty,
18 2002: 167). In terms of acquiring (motor) habits, a movement is

19 learned when the body has understood it, that is, when it has incorporated it into its
20 ‘world’, and to move one’s body is to aim at things through it; it is to allow oneself to
21 respond to their call, which is made upon it independently of any representation.

22 (Merleau-Ponty, 2002: 160-161).

1 One does not have to apply representations of movement patterns formed and stored in
2 the mind. Rather, opportunities for movement is presented directly to the learner
3 (Dreyfus, 2002). This presentation takes place through *the intentional arc*, a feedback
4 loop between body-subject and world:

5 the life of consciousness – cognitive life, the life of desire or perceptual life – is
6 subtended by ‘an intentional arc’ which projects round about us our past, future, our
7 human setting, our physical, ideological and moral situation, or rather which results in
8 our being situated in all these respects (Merleau-Ponty, 2002: 157).

9 The projection of the present situation – facilitated by the intentional arc – is given to
10 the body-subject as a gestalt, where certain aspects and features of the situation stand out
11 and call for actions (e.g. bowing the head so as to not break the feather). This gestalt
12 figure is harmonious insofar as it solicits a performance that matches the intention of the
13 body-subject. To learn movements is to continually enrich the intentional arc, which
14 takes up past experiences and future expectations in the projection of the present situation
15 (Dreyfus, 2002).

16 *Incorporation of instruments*

17 In the process of acquiring motor habits, Merleau-Ponty shows how objects that are
18 incorporated into habitual actions change their qualities; they are no longer objects with
19 size and volume in geometrical terms. Rather, they become potentialities of volume and
20 size.

21 One of the examples he uses is the blind person’s stick, which provides a parallel to
22 the wheelchair. As a blind person learns to use the stick, she no longer uses it to identify
23 points in space as geometrical positions relative to the objective position of the body.

1 When it becomes incorporated into the body schema, it takes on a new significance: it
2 ceases to be an object for her, but is perceived “as an area of sensitivity” (Merleau-Ponty,
3 2002: 165).

4 More generally, the habitual use of assistive devices carries with it a forgetfulness
5 that allows users of such instruments to carry out projects in the world:

6 Once the stick has become a familiar instrument, the world of feelable things recedes
7 and now begins, not at the outer skin of the hand, but at the end of the stick... habit
8 does not *consist* in interpreting the pressures of the stick on the hand as indications of
9 certain positions of the stick, and the signs of an external object, since it *relieves us of*
10 *the necessity* of doing so” (Merleau-Ponty, 2002: 176. Italics in original).

11 The stick or the wheelchair becomes an extension (see also Papadimitriou, 2008), a
12 prolongation of the user’s intentions into the world. Incorporation of the wheelchair
13 relieve the wheelchair user of the necessity to pay attention to the wheelchair itself,
14 because it is no longer simply an external object appended to the body, but has attained a
15 certain familiarity, so that the instrument need not be attended to in the same way as prior
16 to the learning process.

17 *Gestalt switches and incorporation.*

18 These considerations needs be put into the context of disability and rehabilitation, and
19 more specifically, the rehabilitation practice of learning to use a wheelchair. Merleau-
20 Ponty discusses several cases of illness and disability, for instance phantom limbs and the
21 case of Schneider, the war veteran who had suffered brain damages. These two cases of
22 disability are connected to how the world pre-reflectively shows up for the patients and
23 calls for certain actions that the body-subject cannot perform.

1 The phantom limb shows how a world – a practical field – is pre-reflectively
2 projected around the patient. It is reported that sometimes a person with an amputated
3 foot stumbles because he tries to walk with the leg he has lost (see Merleau-Ponty, 2002:
4 87ff). Merleau-Ponty explains this by saying that the practical field calls for actions that
5 the ‘body of the present moment’ is unable to answer. On the other hand Schneider is
6 able to perform habitual actions, like carrying out his job of making wallets, given that he
7 is in situations where these habitual tasks usually are performed. But when he is asked to
8 perform actions on command, he must, through an act of reflection, project a practical
9 field around him that allows him to carry out the task. The case of Schneider highlights
10 that in those situations where his habitual body can respond to the tasks required of the
11 motor project, there are no troubles for Schneider, but in other situations, where he cannot
12 rely on his habits, he must concentrate all his efforts on simple movements

13 Thus, disability can be located neither in the environing world nor in the body.
14 Disability is connected to the operations of the intentional arc, that is, the intertwined
15 relation between the body-subject, its habits, and the world as a practical setting: “it is
16 this intentional arc which brings about the unity of the senses, of intelligence, of
17 sensibility and motility. And it is this which goes limp in illness” (Merleau-Ponty, 2002:
18 157).

19 As we have seen above, Toombs (2001) argues that loss of locomotor abilities
20 involves a breakdown in the relation between self and the surrounding world. Toombs
21 (1992) has also pointed out how the body in illness and disability is experienced as an
22 object. Whereas in the ordinary course of events the body goes unnoticed, in illness and
23 disability it becomes thematized as an object: “objectification of body is an integral

1 element in illness” (Toombs, 1992: 70). In other words: illness and disability causes a
2 gestalt switch. Normally, the body recedes into the background of our awareness, thus
3 allowing us to carry out projects in the world. After the gestalt switch, the body becomes
4 the figure that attention is directed at, and the possible projects in the world are forced
5 into the background.

6 In relation to wheelchair users, one could say that the illness or injury, which disables
7 the person, brings forth a gestalt switch. There is a breakdown in the habits of the body,
8 which causes the reorganization of the figure-background structure, where the body
9 becomes the figure that one is occupied with, and worldly engagement recedes into the
10 background of awareness.

11 The gestalt switch Toombs refers to, can also be understood with distinction between
12 body image / schema. As habitual engagement with the world breaks down, the body is
13 experienced as (painfully) present. This means that one attends to the body image. Also,
14 Toombs point out that worldly engagement is halted, troubled or stopped. This worldly
15 engagement is in the usual turn of events facilitated by body schema operations (e.g. we
16 don’t have to think about every step we take to get around). Thus, I suggest that the
17 gestalt switch introduced by Toombs is also a gestalt switch from body schema to body
18 image. As I will return to shortly, this gestalt switch is not to be thought of as a complete
19 shift from one way of being-in-the-world to another, completely different. Behaviourally,
20 the body schema and image interact and inform each other, but conceptually, the
21 distinction is useful to make sense of the embodied learning under consideration here
22 (Gallagher, 2005).

1 In a rehabilitation setting, learning to use a wheelchair clearly aims at rebuilding the
2 disruption between the body and the world, as pointed out by Toombs. If loss of loco-
3 motor capacities “anchors one in the Here”, as Toombs (2001: 249) says, then one could
4 think of the wheelchair as an assistive device aiming at facilitating the movement from
5 *here to there*. But the process of learning the skills necessary to control the wheelchair is
6 not merely a matter of object manipulation, because in the process of learning these
7 skills, the wheelchair as an experiential object is transformed⁴. In the beginning of the
8 learning process, the learners must attend to their wheelchairs and the movements of their
9 bodies, for instance by controlling the position of the arms on the wheels or the posture of
10 their upper bodies. Thus makes their efforts somewhat clumsy. But, through sustained
11 practise they are gradually able to attend less and less to the details of the skill, so that the
12 wheelchair becomes a familiar instrument (see Standal, 2009: 158-172). The wheelchair
13 “has ceased to be an object for [the wheelchair user], and is no longer perceived for
14 itself” (Merleau-Ponty, 2002: 165).

15 Just as Toombs describe acquired illnesses and disabilities as a gestalt switch,
16 successful rehabilitation entails a reverse gestalt switch, where the body-as-object recedes
17 into the background of awareness, albeit with the difference that the body-subject now is
18 extended to include the wheelchair.

19 Two qualifications are in order here: 1) When I say ‘successful rehabilitation’ this is
20 not to imply that all there is to rehabilitation is the learning of skills. Rehabilitation is a
21 much wider process than what I describe here, so successful must be understood in

⁴ On a different level, experienced users also transform their wheelchairs by for instance peeling off manufacturers’ labels, taking off breaks and handles, and putting on stickers. In this sense the wheelchair is transformed into personalized object invested with meaning (Standal & Jespersen, 2008).

1 relation to this specific part of the entire process of rehabilitation. 2) The gestalt switches
2 I make reference to here do not involve stable gestalts, so that one is either in a state
3 where the body is an object or a subject. In addition, gestalts are often thought of as the
4 visual gestalts like Rubin's vase or the duck/rabbit figure, which are clearly outlined
5 against a background. However, as Dillon (1997) has argued, in the lived world of
6 synesthesia, these gestalts are more blurred and volatile. Thus, the objective and
7 subjective aspects of our embodiment mutually condition each other (Matthews, 2006).

8 In summary, we have seen that the body-subject is intertwined with the world, so that
9 the world is partly co-configured by the body-subject's practical intentions. Therefore, as
10 we learn new habits or refine old ones, we come to see the world differently. Our habits
11 make the world meaningful for us (Crossley, 2001), and, by extension, to acquire and
12 refine habits is to open up the world: "Habit expresses our power of dilating our being-in-
13 the-world" (Merleau-Ponty, 2002: 166). In this process of extending being-in-the-world,
14 the body is able to incorporate instruments like wheelchairs into the body schema,
15 making "them play a part in the original structure of my own body" (Merleau-Ponty,
16 2002: 104).

17 **A reversible relation**

18 So far, a few conceptual pairs have been presented: The body as object / subject; body
19 schema / image; incorporation / en-wheeled. One could ask if one of the entities in these
20 pairs is more primordial than the other. However, as I have hinted at in different places
21 through-out, such a question is misguided, because for Merleau-Ponty "the most basic
22 unity of experience is that of a figure-on-a-background and if analysis seek to reduce this
23 fundamental complex into something simpler, it can arrive only at constructs" (Dillon,

1 1997: 60). Thus, thinking in terms of gestalts enables us to go beyond a dualistic
2 ontology, where body and world are separated (ibid.). The intertwinement of body-
3 subject and world; and between habits and assistive devices, could be further investigated
4 with the aid of the ontological terms Merleau-Ponty developed towards the end of his life.

5 Both MC Dillon (1997) and Lawrence Hass (2008) hold that in Merleau-Ponty's later
6 writings, the term gestalt is replaced by his new concept of flesh, that is, flesh occupies
7 the same conceptual terrain as gestalt. Flesh is a carnal concept, and can be seen as a
8 continuation of Merleau-Ponty's emphasis on embodiment in his earlier writings. But,
9 since he also says that the world too is flesh, it would be a mistake to understand flesh in
10 the most literal sense, as in 'flesh and blood'. Flesh is precisely an expression of how the
11 body is more than its flesh and blood, because it extends into the world. Thus, Merleau-
12 Ponty speaks about a carnal space which is an orientation of the body-world matrix in
13 relation to a presently, ongoing behavioural project.

14 But, if both body and world are flesh, then where should we draw the line between
15 body and world? This was an important question for Merleau-Ponty, because just as
16 much as he wanted to avoid dualism, he also wanted to avoid the other extreme, namely
17 to collapse body and world into one category. It is also important in the present context,
18 because it addresses the question of identity and/or difference between the body and the
19 wheelchair as a worldly object. For Merleau-Ponty,

20 the world seen is not 'in' my body, and my body is not 'in' the visible world
21 ultimately: as flesh applied to a flesh, the world neither surrounds it nor is surrounded
22 by it... There is reciprocal insertion and intertwining of one in the other (Merleau-
23 Ponty, 1968: 138).

1 Flesh thus shows the reversibility between the body-subject and the world.

2 Learning wheelchair skills in rehabilitation is an embodied learning process, which, if
3 successful, establishes a reversible relation between the wheelchair user and the
4 wheelchair. Through re-embodiment one acquires habitual movements, and in this
5 process external instruments like assistive devices are taken up into bodily space.
6 Through re-embodiment, a reversible relation between the body-subject and the
7 wheelchair is established. Clearly, there is a difference between the body and the
8 wheelchair, but there is also an identity, so that the two are not completely separated.
9 Thus, we can say with Merleau-Ponty that “things pass into us as well as we into the
10 things” (Merleau-Ponty, 1968: 123).

11 **Closing**

12 I want to close with a couple of reservations and clarifications. First, the body schema /
13 image distinction must, as I have already mentioned, be seen as a conceptual clarification
14 of two systems that interact. This is especially important in the case considered here: In
15 the context of intentional action, the body schema and image are highly coordinated
16 (Gallagher, 2005). As wheelchair skills are practised, learners pay attention to for
17 instance the positions of their arms and their posture. This attention helps form the
18 perceptual aspects of the body image. But this attention to body image interacts with the
19 body schema in complex ways:

20 even in such cases [i.e. learning movements] the contribution made to the control of
21 movement by my perceptual awareness of my body will always find its complement
22 in capacities that are defined by the operations of a body schema that continues to
23 function to maintain balance and enable movements (p. 27).

1 This is why the notion of gestalt is so helpful: It shows clearly that one attends to a figure
2 of some sort whether that is the position of the arms as one tries to enter a curb with the
3 wheelchair, or the person standing on the pavement that I greet as I enter the curb. The
4 central point is that this figure can only appear to us on a necessary background without
5 which there would be no figure.

6 In the process of incorporating the wheelchair into the body schema, the wheelchair
7 changes its experiential qualities. The wheelchair changes from an object consciously
8 attended to, into a prolongation of the user's intentions in an on-going project. However,
9 this should not be taken as a linear learning process where the end point is incorporation.
10 Studies of incorporation indicate that there are two broad forms of experience: one where
11 the assistive device is incorporated into the body of the user, and one where it is
12 experienced more like a tool, a useful aid to get from A to B (Standal, 2009; Murray,
13 2004). There are two points to be made from this. For one thing, becoming en-
14 wheeled/incorporated is not the necessary outcome of learning to use an assistive device.
15 It seems that for some people the wheelchair is never incorporated in the sense discussed
16 above Secondly, one might ask how one can determine the degree to which the assistive
17 device is a tool or a part of one's experiential body. Drawing on Svenaeus' (2000)
18 Heidegger inspired analyses of health and illness, one can suggest that this must be
19 "determined through an appeal to the importance the tool plays in the totality of relevance
20 for the human being in question" (p. 130). If the tool belongs to what we would identify
21 as the embodied self, we can consider that incorporation has taken place.

1 I have made use of the notion reversibility. Merleau-Ponty's paradigm example of
2 reversibility is that of one hand touching the other, so that the two hands can reverse roles
3 as touching / being touched:

4 When I touch my right hand with my left, my right hand, as an object, has the strange
5 property of being able to feel too... [This is] an ambiguous set-up in which both
6 hands can alternate the rôles of 'touching' and being 'touched'. What was meant by
7 talking about 'double sensations' is that, in passing from one rôle to the other, I can
8 identify the hand touched as the same one which will in a moment be touching
9 (Merleau-Ponty, 2002: 106)

10 Clearly, this kind of reversibility is not possible when it comes to learning to use a
11 wheelchair. The reversible relation in these cases is, as Dillon points out, asymmetrical,
12 since I cannot touch the chair in the same way that the chair touches me.

13 In a more pragmatic fashion, one might also ask whether there are differences
14 between incorporation of different kinds of assistive devices. Here, I have primarily
15 referred to wheelchairs and the white canes used by blind people. The use of a cane is
16 clearly different from the use of a wheelchair, for instance since the former is used
17 primarily for sensory purposes, whereas the latter is used for loco-motor purposes. The
18 use of a cane, therefore, has other experiential qualities than the use of a wheelchair.

19 Another relevant case in point is prosthesis. In terms of practical use, these are more
20 similar to wheelchairs than to canes, since their purpose is loco-motion. In a study of the
21 embodiment of artificial limbs, Murray (2004) reported similar findings to those of
22 Papadimitriou (2008) and Standal (2009): With experience, some of the participants in
23 that study were able to "lose focal awareness of their prosthesis" (p. 971). However,

1 prostheses are also different from wheelchairs in the sense that they are not only
2 replacing a lost body part, in a way that a wheelchair does not, but they are also used to
3 regain a lost function, which is not an opportunity with wheelchairs. That is, whereas
4 prostheses are assisting in regaining the habit of walking, wheelchairs cannot do so,
5 because they fundamentally change the loco-motor possibilities and so necessitates the
6 development of new habits. Therefore, it is fair to suggest that walking and wheeling
7 have different experiential qualities for instance in terms of lived space and lived time.
8 Thus, though there are similarities in the process of incorporation across different
9 assistive devices, one might also expect differences. Further (empirical) research might
10 shed light on these differences.

11 What I have tried to show in this article is the way that an analysis inspired by
12 Merleau-Ponty can shed light on the embodied learning processes that take place in
13 rehabilitation when people learn to use a wheelchair. In this sense, one can think of the
14 gestalt switch from body image to body schema as a process of re-embodiment, whereby
15 the wheelchair no longer is experienced as a thing, an otherness, but rather has become a
16 part of the wheelchair user's habitual being-in-the-world.

17 **Acknowledgement**

18 The author would like to thank participants and organizers of the workshop on *Body*
19 *(im)materialities* at Uppsala Universitet, Sweden, for helpful comments on an earlier
20 version of this article.

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