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Expert tool use: a phenomenological analysis of processes of incorporation in the case of elite rope skipping

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ABSTRACT

According to some phenomenologists, a tool can be experienced as incorporated when, as a result of habitual use or deliberate practice, someone is able to manipulate it without conscious effort. In this article, we specifically focus on the experience of expertise tool use in elite sport. Based on a case study of elite rope skipping, we argue that the phenomenological concept of incorporation does not suffice to adequately describe how expert tool users feel when interacting with their tools. By analysing a combination of insights gained from participant observation of 11 elite rope skippers and autoethnographic material from one former elite skipper, we take some initial steps toward the development of a more nuanced understanding of the concept of incorporation; one that is able to accommodate the experiences of expert tool users. In sum, our analyses indicate that the possibility for experiencing a tool as incorporated depends on the existence of an extraordinary kind of relationship between the tool and the expert tool user. This relation, that can persist even when successful manipulation of the tool fails, is not only cultivated through deliberate practice of physical skills, but also through the collective sense-making process going on within a particular community of practice. Therefore, expert tool users may experience a more profound kind of incorporation that can persist even when normal motor incorporation fails.

To state that we live in a world of tools is obviously superfluous and there can be no doubt that we are all tool users. So accustomed are we to using a variety of tools that we only rarely have to think about them (Hodder 2012; Hogeveen 2011, Rietveld 2008). Thus, when focused on the everyday project of getting ready for school, for example, the tools such as the spoon I use to eat my breakfast, the brush with which I quickly fix my hair, and the bike I employ for transportation normally go completely unnoticed by me.

In the phenomenological literature, such experiences of tool use are categorized as instances of motor incorporation. Motor incorporation may be defined as an experience that '[…] occurs when something is integrated into the motor system, i.e. when practice enables one to animate an object as directly, effortlessly and fluently as one is able to animate one's own body'(Carijó, de Almeida and Kastrup 2013, 687). Thus, from a phenomenological point of view, because of the way in which we are destined (for the

most part) to engage with the world on a pre-reflective level, through our bodies' operative intentionality, the tools we use are rendered inconspicuous to us to the extent that we can come to experience them as incorporated parts of ourselves (Merleau-Ponty 2002, 165). Accordingly, tool incorporation, is an experience that can occur when a tool comes to *feel* as though it were part of the user's body. I experience it when riding my bike, e.g. Since I do not have to consciously think about how to peddle when I want to go forward, the bike can be said to be incorporated. I want to go forward, and I just do while the bike seems to effectively obey my intentions as seamlessly as do my other limbs when going about my everyday business.

When turning our focus toward expert[1] tool users, such as elite athletes, circus artists, and musicians, a similar notion seems prevalent. Indeed, when manipulating the ribbon or the rope, the rhythmic sports gymnast and the skipper do not have to consciously think about mastering these tools either (Hogeveen 2011). However, in phenomenological explorations of tool use, no distinction has been drawn between the experience of incorporation that expert tool users have when performing their highly specialized skills, and the corresponding feeling all of us can experience when riding our bikes, handling cutlery, employing computer keyboards, etc.

Expert tool use differs from ordinary tool use in a number of ways. Unlike the rest of us, expert tool users constantly challenge their abilities to handle their tools (Annas 2011; Montero 2010). Always striving to improve, they push themselves to the limit of their capacities on a regular basis. This propensity in turn significantly increases the risk of losing control of the tool which is why expert tool users will often be confronted with their tools as anything but incorporated in the sense alluded to by Carijó et al. (2013). What is more, for some expert tool users, such as rope skippers and rhythmic sports gymnasts, the creative ability to invent and execute entirely novel tricks constitutes an important element of what it means to be an expert in these sports. Indeed, in competition, judges are likely to

be impressed by highly original moves that have never been seen or performed before and award extra points for such elements. As a result, rope skippers, and rhythmic sports gymnasts often engage in many experiments with their tools some of which lead to the development of new tricks. Both authors of this article have a background in elite sport and have competed in rope skipping and rhythmic sports gymnastics internationally. In many ways, the practice-based experiences of experimenting with specific tools as well as the experience of the extensive amounts of deliberate practice involved in learning how to successfully manipulate a tool have informed our critical reading of the phenomenological understanding of tool use and processes of incorporation.

The aim of this article was to explore expert tool use in order to challenge and develop phenomenological descriptions of expert *tool use* and *processes of incorporation*. For this exploration, we will turn to the case of expert rope skippers and scrutinize the skippers' relation to and experience of their skipping ropes during training. We want to emphasize that this exploration is focused on how tools can be incorporated and come to feel as though they are part of the practitioner's body. Therefore, questions concerning intentionality, consciousness, and knowledge are not specifically touched upon in this article. In other words, our primary concern is with the relation between the rope skippers and their skipping ropes that form the basis for their skilled performance.

Competitive rope skipping is a small and relatively new sport. Teams and individuals compete in a number of different disciplines. While individuals compete in single rope, that is one person with one rope, teams may also compete in double Dutch, that is two persons turning two long ropes while one or more persons jump. Within these two types of rope skipping, there are two subcategories of disciplines: speed and freestyle.[2] In speed, the goal is simply to complete as many jumps as possible as quickly as possible. The current world record (2016) stands at 222 jumps in 30 s. In freestyle, the goal is to perform a routine comprising as many different tricks as possible within an

allocated timeframe. Routines are judged for difficulty, creativity, and execution. Points are deducted for mistakes that cause the rope(s) to stop turning. As a case of expert tool use, rope skipping requires practitioners not only to engage in creative experiments in order to learn and develop new tricks and combinations of tricks but also to push themselves to the limit of their physical and technical abilities.

Before continuing with the analysis of the rope skippers' practices, we present a brief overview of current phenomenological discussions concerning tool use and sketch out the methodological considerations of how the case of rope skipping can be used for our phenomenological analysis.

Current phenomenological understandings of tool use and processes of incorporation

> The blind man's stick has ceased to be an object for him, and is no longer perceived for itself; its point has become an area of sensitivity, extending the scope and active radius of touch, and providing a parallel to sight. (Merleau-Ponty 2002, 165)

Merleau-Ponty's famous description of how a blind man may come to experience his stick as an integrated part of himself is probably the most widely used example employed to illustrate what the phenomenological concept of incorporation entails. To briefly restate the matter, Merleau-Ponty contends that we exist not as pure subjects nor as pure objects but rather as being-in-the-world, that is, as always already intimately connected to our surrounding environment via the moving body. Importantly, the body that we move is not our objective body rather it is our phenomenal body, which is capable of extending beyond the boundary of the skin to include within its phenomenal field the objects with which we habitually interact.

Other phenomenologists such as Leder (1990), Black (2014), Fuchs and De Jaegher

(2009), and Carijó et al. (2013) have proposed definitions of incorporation along the same lines, concurring on the central point that tools may be incorporated within the phenomenological framework of the body. Thus, incorporation of tools, they contend, can occur when '[…] something is integrated into the motor system, i.e. when practice enables one to animate an object as directly, effortlessly and fluently as one is able to animate one's own body' (Carijó et al. 2013, 687). According to Leder (1990), this is also what Heidegger is essentially getting at with the term *ready-to-hand*:

> The body is capable of incorporating within its phenomenological domain objects that remain spatially discrete. This is evidenced by the example of the tool, whose existential significance was emphasized by Heidegger. The tool, he writes, is something 'ready-to-hand' (*zuhanden*), part of an equipmental structure that tends to withdraw from our explicit attention. (Leder 1990, 33)

In this view, any tool; a fork, a prosthetic hand, a violin, or a skipping rope, may be experienced as an incorporated part of a user's body provided that the user has made an effort and succeeded in becoming proficient at using that particular tool, De Preester and Tsakiris (2009), however, disagree. In their opinion, the concept of incorporation should be reserved for describing a more profound relation. They argue that under normal circumstances, tools may function as extensions of the body but they should not be understood as incorporated. In their view, and based on the results of experimental investigations, real incorporation only takes place when the body model is reorganized, i.e. when changes occur in the sense of body ownership. According to De Preester and Tsakiris (2009), this is only possible when the tool in question fits into the user's pre-existing body model, i.e. when it resembles some- thing belonging to the user's anatomy both in terms of its appearance and in terms of its postural properties. It follows that whereas a prosthesis that looks similar to an actual body part may be incorporated in a profound way, other tools such as forks and skipping ropes may not.

While providing a different and more nuanced perspective on what it takes for tools to become incorporated, De Preester and Tsakiris' account still seems wanting because it does not allow for a distinction to be made between ordinary tool use and expert tool use. However, the fact that they have been able to show that the experience of using, e.g. a prosthetic hand differs significantly from the use of other kinds of regular tools such as forks, sticks, and computer keyboards begs the question of how we are to adequately describe the experience of expert tool users such as elite athletes, circus artists, and musicians who sometimes describe the relation between themselves and their tools as completely seamless. In fact, some of them sometimes even claim that they feel so intimately connected with their tools that they seem to complete them (De Preester 2012).

Even though they have not investigated this difference in their study, De Preester and Tsakiris implicitly recognize that it probably does make sense to distinguish between regular tool use and expert ditto when at the end of their article they state that

> […] some very specialized tool-users, such as musicians, report about the relation between them- selves and their instrument as an experience of completion or wholeness. one of the reasons may be an aspect of tool-use not touched upon in this article, namely the fact that some tools, such as music instruments, allow (and are designed for) expression. The experience of wholeness with a music instrument might partly be due to this possibility of highly extending the expressive body (and not just the body as a sensorimotor body). (De Preester and Tsakiris 2009, 318)

Tools in sports like rope skipping and rhythmic sports gymnastics are not 'designed for expression.' However, the tools are fundamental to the athlete's performance and in that sense central to the elite athlete's sense of her moving body. So, can these tools function as profound incorporations and the relation that exists between these expert tool users and their tools be likened to the one existing between a musician and her instrument? In another article, De Preester modifies the argument by explicitly claiming that tool use is not always experienced as a matter of extension and never one of

incorporation. Once again, however, she uses the example of musical instruments to support the idea that it is the possibility for extending the expressive body that constitutes the crux of the matter (De Preester, 2012).

Although the tools of other expert tool users might not serve as a means for expression on a par with musical instruments, it does not seem far-fetched to take this observation about the experiences of very specialized musicians as an indication of how other expert tool users such as elite athletes and circus artists may experience their tools. However, the reason why the tools of elite athletes and circus artists may be experienced as incorporations and not just extensions might be different from the reason advocated by De Preester and Tsakiris for why musical instruments may be incorporated. Since several studies (Brewer, Van Raalte and Linder 1993; Lavallee and Robinson 2007; Sparkes 1998) have shown that athletes and other experts often rely heavily on the relation between themselves and their skills and by implication their tools for identity formation, it seems reasonable to argue that this kind of tool use may provide possibilities for highly extending not just the sensorimotor body in and by itself but also the meaning attributed to the tool-dependent motor capacities these individuals possess.

In support of this argument, based on an investigation of the experience of being in a wheelchair, Svenaeus (2000) contends that while there are different categories of tools, the categorization of them does not depend on whether or not a tool actually belongs to the biological body or rather looks as though it could. on the contrary, it is '[…] determined through an appeal to the importance the tool plays in the totality of relevance for the human being in question' (Svenaeus 2000, 130). Thus, the tools of expert tool users hold the potential for being experienced as profoundly incorporated because these tools are extremely important to the expert users. The relationship they have with their tools may come to define them and there is no mystery in that. In fact, it only seems a natural consequence of having dedicated vast amounts of time to practicing with their tools. Although his idea has been criticized for being too simplistic, there is still an important

lesson to be learned from Ericsson's (in)famous contention that it takes on average 10,000 h of practice to attain expert status (Ericsson et al., 1993). Indeed, spending 10,000 h practicing a particular skill is no laughing matter. It testifies to an extraordinary commitment that is bound to have an impact on one's self-understanding.

Using rope skipping as factual variation for a phenomenological analysis

In accordance with Martínková and parry (2011), we want to emphasize that phenomenology is a philosophical enterprise that seeks to account for the structure of consciousness. It is not an empirical discipline. However, this does not rule out that phenomenological analysis should benefit from empirical studies. on the contrary, for decades, empirical data have been used to strengthen and further develop phenomenological concepts and descriptions. For this purpose, phenomenological thinkers have employed data from pathological cases to put normal experience into perspective in their phenomenological analyses. Merleau-Ponty's (2002) use of the Schneider case and Gallagher's (2005) use of the Ian Waterman case are well-known examples of how such 'real life deviations' can be used to better describe the structures underlying our mental and embodied life (Zahavi 2005, 141, 142). Drawing on Gallagher's argumentation, we will refer to this way of employing exceptional cases constructively in the phenomenological analysis as a way of performing 'a factual variation' (Froese and Gallagher 2010, 86). With reference to Husserl's description of the philosophical practice of phenomenology, the factual variation derives from the eidetic or imaginative variation which 'keys in on the essential or invariant structures' of consciousness (Gallagher and Zahavi 2008, 28).[3] It thereby refers to the analytical move through which the phenomenologist imagines the phenomenon under enquiry in its potential variations. Thus, while the eidetic variation is based on free imaginative variations carried out by the thinker, the factual variation informs this process of the

analysis by actively using empirical data.

Traditionally, phenomenologists have not paid much attention to qualitative research. When performing the factual variation, they have turned to exceptional pathological cases as these cases have been described in the science-based fields of psychiatry and the cognitive sciences, e.g. (Ravn and Høffding 2016). In accordance with recent methodological discussions (Høffding and Martiny 2015; Ravn 2016; Ravn and Høffding 2016), we argue that bodily expertise, as this expertise can be studied within the field of qualitative research, can constitute as good a basis for factual variation as pathology can within, e.g. the domain of psychiatry. Thus, in this article, we aim at *employing qualitative data to enhance a phenomenological analysis* of tool use.

To clarify our methodological point, let us emphasize that we recognize that qualitative researchers have turned to phenomenology to advance our knowledge of experience as embodied for decades. In other words, qualitative researchers have described and explored particular worlds of sensations and meanings and thereby in many ways succeeded in 'bringing the body back in' to theories on, e.g. sport and physical activity (Allen-Collinson 2009). Methodologically, qualitative researchers thereby *employ phenomenology* to empirically investigate a certain domain of lived experience. Quite often they present an applied version of the phenomenological method, suited to generate as well as analyse descriptions of different kinds of lived experience (e.g. Allen-Collinson 2011; Finlay 2012; Giorgi 1975, 2008). In comparison, when we turn to exceptional cases to use these as factual variations in the phenomenological analysis, as described above, we aim at employing the empirical data to modify and challenge fundamental phenomenological concepts and descriptions.

Method

The part of our study in which we use qualitative research methods to generate

descriptions of the practice in focus can be characterized as a single case study (yin 2014) in which we engaged in a collaborative autoethnographic[4] fieldwork (Chang, Ngunjiri and Hernandez 2013). The observations were made by the first author, Thorndahl, while the subsequent analyses resulted from the collective efforts of both authors.

Until 2011, Thorndahl was herself an elite skipper. She competed and coached at the highest international level and taught a variety of rope skipping courses under the auspices of the DGF, The Danish Gymnastics Federation, and the DGI, Danish Gymnastics and Sports Associations.[5] Being a former elite rope skipper herself facilitated Thorndahl's ability to see something that would otherwise have remained unnoticed (Ravn and Hansen 2013). That is, because the first author is thoroughly versed in the sport of rope skipping herself, two distinctly different approaches that were intimately intertwined in this particular case, informed the interpretation of the observations even as the observations were made. Thus, while actually occupying an outside position from which only a third person perspective is usually available, because of the unique characteristics of the first author's relation to the field of interest, a first person perspective also contributed to our understanding of the skippers' experiences. In other words, the third person perspective was complemented by autoethnographic elements inspired by the embodied resonance of Thorndahl's own prior embodied experiences.

Data were generated on three different occasions in connection with three subsequent practice sessions in November and December of 2012.[6] Each session lasted 2.5 h. The process of generating data began as an open exploration of the skippers' practice. In the following session, the skippers' use of their tools was specifically in focus for the observations and informal conversations. Following each session, the field notes were 'worked up, expanded on and developed' (Hammersley and Atkinson 2007, 143). After

the last session, and based on another close reading of the notes, three different situations, each in their own way indicating different aspects of the skippers' experience of and relationship with their tools, were identified as relevant to the phenomenological analysis of this particular instance of expert tool use.

In order to retain as far as possible the spontaneity and straightforwardness of the observations we subject to analysis, we have stayed true to the original wording of the original observations carried out by Thorndahl which explains the use of the singular first-person pronoun in the following presentations of the situations.

Directly, effortlessly, and fluently

The observation presented below represents an example of a situation in which several telling signs could be taken to imply that the skipper is experiencing her skipping rope as incorporated in the sense alluded to by Carijó et al. (2013). However, as our analysis makes clear, things turn out to be more complicated than that.

> One of the first things I notice during my first visit to the club is that the skippers hardly ever seem to keep their ropes still. Even during the breaks they have between the drills and exercises dictated by their coach, they are constantly moving their ropes performing a wide variety of different wraps and releases while at the same time continuously chatting with each other. Even though they do not seem to pay any conscious attention to what they are doing with their skip- ping ropes during the breaks, they often succeed in performing a number of rather advanced skills. At the end of the first practice, I confront Signe with my observation. She looks at me with surprise and asks, 'We really do that? I never noticed!' I proceed to ask her how she thinks it is possible for her to release one of the handles of her skipping rope, let the skipping rope rotate three times in the air above her head and then catch the moving handle again without even looking in the direction of said handle. Her spontaneous reply is prompt. She simply answers: 'I have absolutely no idea!' We both laugh before she hesitatingly adds, 'I used to have to follow the handle with my eyes … I had to do that a lot… In the beginning, I mean… That is when I first tried to learn how to do it.' She makes a pause and looks down at the

handle in her right hand. She looks puzzled as if seeing it for the very first time. Finally, she concludes with more conviction in her voice, 'Now I don't need to watch the handle anymore. I just do it. I can feel it!'

Before we proceed with the analysis of this situation, it is worth noting that these events transpired during a break in the relatively relaxed atmosphere of a practice session and so it cannot be likened to the stressful situations encountered during competitions. It is quite obvious in this situation that Signe has not deliberately planned to perform this release in advance, neither is she deliberately trying to optimize her performance. She is merely playing with her skipping rope, letting her body perform a rather easy skill while focused on talking to her teammates. Thus, this training situation is very different from situations referred to by Breivik (2007, 2013) and Hopsicker (2009), e.g. in order to illustrate how elite athletes experience themselves and their movements during competitive performances. While we do not want to suggest that Signe acts like a zombie[7] in this situation—she is clearly conscious of what she is doing—playing with the rope—she certainly does not seem to be super-conscious of the details of her playful performance of the tricks either in the sense described by Breivik (2013).

It is not difficult to realize, based on this description, how the concept of motor incorporation might be relevant to a discussion of Signe's relationship with her skipping rope. It seems to follow directly from the way she can be seen to handle her skipping rope that the interaction proceeds directly, effortlessly, and fluently to use the words of Carijó et al. (2013). Furthermore, the fact that, in this situation, Signe cannot verbalize how she is able to perform the skill can also be interpreted as an indication of the same thing. due to several hours of intense, deliberate practice she is now able to perform the skill effortlessly which in turn allows her to focus her attention on other things besides the handle of the skipping rope. To her, this release has become as mundane a skill as riding a bike is to the rest of us. Paraphrasing Kiverstein and Rietveld (2015), we

might say that as a result of repeated practice, Signe has become sensitive to the specific demands of this particular type of situation to the extent that the environment literally draws her bodily movements from her (Kiverstein and Rietveld 2015). Because of the way in which we experience our bodies when skilfully involved with the environment around us, the task of describing these bodily skills, however, is no easy matter. In fact, according to Schön (1983).

> Often we cannot describe what it is that we know. When we try to describe it we find ourselves at a loss, or we produce descriptions that are obviously inappropriate. our knowing is ordinarily tacit, implicit in our patterns of action and in our feel for the stuff with which we are dealing. It seems right to say that our knowing is *in* our action. (Schön 1983, 49, emphasis in original)

When taking the level of expertise evident in Signe's effortless handling of her skipping rope into account, it seems unlikely that she would have been able to reply to Thorndahl's question in a meaningful manner. Precisely because she is an expert, her knowledge of how to handle her skipping rope is embodied and tacit. Following Kiverstein and Rietveld (2015), Signe's expert handling of her skipping rope may be characterized as an instance of skilled unreflective action that results from her body's skilled intentionality. Since Thorndahl did not specifically ask Signe to describe how she felt about her skipping rope in this particular situation, however, we cannot know for sure whether the experience Signe has of her skipping rope can be said to constitute an example of motor incorporation based on the observations and informal interview related here. Granted, the way she handles her skipping rope and her answers seem to point in that direction. Nevertheless, we cannot be certain not least for the simple reason that the phenomenological concept of motor incorporation specifically applies to something that goes on at an experiential level cf., e.g. Merleau-Ponty (2002) when he states that 'The blind man's stick has ceased to be an object *for him*, it is no longer *perceived* for itself […]' (165, emphasis added). It follows that it does not matter

whether or not a tool user actually has complete control over her tool as long as she *feels* as if she does. This feeling is what constitutes incorporation, and thus from a third-person perspective it is impossible to determine if the interaction between a tool user and her tool is experienced in a way that might allow us to conclude that the tool has truly been incorporated.[8] However, we remind of Thorndahl's autoethnographic perspective, which means that the second- and the third-person perspective also involved an embodied resonance of the practice observed. We therefore contend that this first situation constitutes an example of motor incorporation as described by Carijó et al. (2013).

Beyond motor incorporation

Although, the tools employed by expert tool users may sometimes be experienced as incorporated, rendering them practically invisible in the sense alluded to in the previous section, at other times, typically when something goes wrong, the existence of the tools as objects will become abundantly clear even to expert tool users. If we accept the simple definition of motor incorporation put forth by Carijó et al. (2013), we should expect the experience of incorporation to evaporate once the tool no longer moves in accordance with the tool user's intention. However, as we will now go on to demonstrate, there may be more to experts' experience of incorporation than the description offered by Carijó et al. (2013) suggests.

> Following a brief warm up, practice begins with a number of single rope drills. About halfway into the second round of drills, one of the older girls, standing in the middle of the gym, lets out a loud scream. She has been hit by the skipping rope and there is no way to mistake the look on her face: eyes shut tight, teeth clenched – it spells out pain. She presses her left hand against the back of her leg just below her buttocks and bounces up and down a few times before she resumes skipping. Mette makes a half-hearted attempt at concealing a knowing smile but other than that, none of the skippers reacts to the incident until after they have completed the drill. 'You hurt

> yourself, Maya darling?' one of the other skippers asks in a friendly yet slightly mocking tone of voice. She laughs aloud and Maya laughs back at her, 'Heck yeah! Look at this!' Still laughing, she pulls up her shorts to reveal a thick red line stretching across the backside of her leg.

For the same reason we could not discern whether Signe experienced her skipping rope as incorporated, we cannot know if the skippers described above feel as if their skipping ropes are incorporated when performing at near-maximum speeds. Indeed, from an observational perspective, it is impossible to tell whether the skippers experience their skipping ropes as transparent, i.e. as something ready-to-hand.

To the outside observer, the skipping ropes literally do dis-appear when the skippers perform these fast-paced drills! So fast do the skippers turn their skipping ropes that they actually become invisible. When something goes wrong, though, as it frequently does when one tries to push the limits of one's technical and physical abilities, the skipping rope immediately comes back into view. It dys-appears, to use Leder's term (Leder 1990, 84). What is more, even though the skipper immediately resumes skipping, thereby once again rendering her skipping rope invisible, the experience of dys-appearance may persist over time since, more often than not, an incident of this kind will leave a trace that is plain to see in the shape of a thick red mark on the skipper's body. This mark serves as a visible reminder to the skipper of the fact that the experience of the skipping rope as a fully incorporated part of her body is fleeting. Meanwhile, if we employ Heidegger's terminology, we would expect the skipping rope to become present-at-hand that is to manifest its existence as an entity in its own right, once it no longer adheres to the intentions of the user. While this might at first seem to constitute a reasonably adequate analysis of the matter, if we look closer, however, another possible perspective comes to view. Indeed, what is also evident from the incident just described is that even the mistakes the skippers make as well as the marks they leave are eventually incorporated.

Maya's reaction as well as the response she receives from her coach and teammates, testifies to the fact that this situation is far from unique. As Thorndahl recognizes from her own experiences, it happens to all of them on a regular basis. Thus, rather than considering the impression that is left by the rope on the body a cosmetic nuisance, it seems plausible that such marks may even be said to serve as a kind of proof of bravery for all to see, cf. the fact that Maya (proudly) shows off her newly acquired 'war wound' to her team mates. The marks mean something to the skippers.

From our analysis of the second situation, it is evident that even when something goes wrong in the interaction between an expert tool user and her tool, the tool may still be experienced as incorporated although in a sense different from the one suggested by Carijó et al. (2013) and other phenomenologists. In this situation, the tool does not lose its meaning as tool just because it fails to adhere to the intention of the tool user. According to Heidegger, this may be because tools are always part of a larger equipmental structure and as a result they do not lose their meaning as tools and become things the moment they malfunction. In other words, because of their equipmentality, tools can remain ready-to-hand even when not functioning perfectly (Breivik 2007).

But there is more to the situation described above. When taking Maya's reaction to her mistake into consideration, we can see that to Maya the skipping rope is still a skipping rope. This may be established on the grounds, firstly, that she does not stop to check if the skipping rope is broken; she knows it is not, and so, in spite of the mistake, she has no reason to think that the relation between her and her tool has changed significantly. Secondly, the fact that she immediately resumes skipping confirms that she still believes in her ability to control the skipping rope and thus she still experiences the skipping rope as incorporated although in a way somewhat different from the way she experiences motor incorporation when actually performing the skill.

The difference between motor incorporation and this other type of incorporation pertains to the way in which the sense-making takes place. Motor incorporation

requires the sense-making to go on a bodily level while the other type of incorporation depends on the tool user's ability to decode specific signs (including artefacts such as tools) in accordance with the shared ideas of a particular cultural context.

Incorporation revisited

> Mette, the head coach of the club's best rope skippers, and I enter the large gym through a heavy door. A motley crew of approximately 25 little girls who still have a couple of minutes left of their practice session are seated on the floor in a circle around their coach. The coach is demonstrating a rope skill she wants the girls to try. Mette and I move quietly along the wall toward the wall lined with wall bars. As we approach the back wall of the gym we are confronted with a curious installation: At a telling distance from the floor, clearly revealing that the mastermind behind this concoction could have been no taller than the average seven-year-old, a hot pink drinking bottle is secured to a bar with, imagine that – of all things – A SKIPPING ROPE! I look at Mette. Our eyes meet. She sees it too. As she walks on, she jokingly pretends to be outraged by this highly unorthodox use of a skipping rope. Unable to suppress a laugh, she shakes her head violently as if in disbelief and sighs dramatically to herself, 'Despicable!'

What the observation presented above makes evident is that things, and thereby tools, mean different things to different people. Thus, while the seven-year-old novice rope skipper sees the (skipping) rope as something suitable for skipping *as well as* a practical device that may be used to tie her bottle to the wall, Mette and I, the experts, see the skipping rope as a tool designed and meant exclusively for skipping.

It follows that various tools may be used for purposes for which they were not *originally* intended (a rope may be jumped; hammers may be juggled; skipping ropes may be used to tie things up) which goes to further support our claim that tools do not in and by themselves intend a certain use—tools do not have intentions—only people have intentions. In that sense, tools may very well have been designed for particular purposes

but it is the way in which they are interpreted by different users that imbue them with meaning (Houkes and Vermaas 2004). Thus, a skipping rope is a skipping rope because someone understands it as a device for skipping. This understanding can take different forms: It can be bodily in the sense referred to by Merleau-Ponty when he states that '[…] it is the body, which 'catches' (*kapiert*) and 'comprehends' movement. The acquisition of a habit is indeed the grasping of a significance, but it is the motor grasping of a motor significance' (Merleau-Ponty 2002, 165). This grasping is equivalent to what Carijó et al. (2013) call motor incorporation. As our observations demonstrate, however, the grasping of a motor significance may also take another form once a particular habit of tool use has sedimented.

While prima facie it might seem that way, the claim put forward above should not be mistaken for an argument in favour of a position holding that the meaning a tool attains is completely arbitrary. In fact, upon further inspection, the observation seems to attest to quite the opposite, in that it shows that the way we use tools and thereby attribute meaning to them depends on the embodied norms and conventions we have (or have not yet) acquired in the course of actively participating in a particular community of practice. If we accept the latter claim at face value, we may arrive at the conclusion that we are condemned, predestined, to always act in accordance with the limited possibilities that a particular (sub) cultural context affords us. once again, however, this would be to overstate the matter since, as we will now go on to show, unconventional behaviour, in this case the creative, innovative use of the skipping rope, is not only possible, indeed, it is vital to the development of sports such as rope skipping.

It follows in continuation of this point that as she becomes increasingly involved in the practice community of rope skipping and accepts this particular community's meaning- making practice; the skipper begins to attribute a certain meaning to the (skipping) rope while simultaneously eliminating others. In accordance with this

finding, we suggest that Leder's argument about how the incorporation of a specific skill is a prerequisite for the incorporation of the tool used to perform that skill should be extended to include yet another level of incorporation that is even more elementary for the possibility of incorporating tools than the incorporation of skills. In order to facilitate the incorporation of skills, tool users must also incorporate the meanings attributed to the skills and the tools by the practice community in which they have come to be involved.

In fact, one of the aspects that makes the observation presented above particularly interesting is *when* it was made. The situation described took place just before the last session Thorndahl was going to observe. At that time Thorndahl had already been observing the skippers for five hours. not to mention all the years she spent skipping herself. And yet, it was not until Thorndahl saw the little girl's installation that she realized what seems unbelievably trivial, even banal—that a skipping rope is also a rope! The skipping rope's existence as an object that may be utilized in a number of different ways suddenly became evident to Thorndahl when confronted with how it might be used in a way that struck her as strange. Nevertheless, the skipping rope's newly discovered additional mode of being as rope can be said to have existed alongside or even prior to the skipping rope's existence as skipping rope as an untapped potential for action previously hidden from view by the routine use of the skipping rope for skipping.

In continuation of this point, we contend that the ability to develop new skills is actually based on a capacity to avoid fully incorporating the rope as skipping rope, to not always strive for the experience of motor incorporation, because new skills may be born when a skipper with a highly evolved bodily understanding of the skipping rope is able to consciously ignore this knowledge for a while. In other words, seeing the skipping rope as a rope will allow her to disregard her habitual movement patterns and exploit the rope's full potential for movement.

In Leder's terms, the relation between a user and an incorporated tool is not '[…]

severed when I abandon an instrument [...] That is, while momentarily put out of play, instrumental capabilities, no less than the skills indigenous to my body, remain a part of my corporeal "I can"'(Leder 1990, 33). While essentially agreeing with Leder on this point, we advocate that, based on our observations, a rather more radical conclusion may be drawn. Once the meaning of the skipping rope as skipping rope has been incorporated, the relation between the skipper and the skipping rope does not merely persist when 'momentarily put out of play.' Rather, the (imagined) relation may in fact endure for extended periods of time and survive periods of total relinquishment. It is immediately obvious that the experience of the skipping rope still exists as an incorporated part of Thorndahl's former expert's body is but an illusion that can only be sustained for as long as the former expert does not actually pick up a skipping rope and has a stab at some of the advanced skills she used to be able to perform. Then it will immediately become evident that while the incorporation of the *meaning* of a tool may persevere, motor incorporation, that is the experience of the tool as an integrated part of one's physical body needs to be nourished through continuous practice.

Conclusion

What our study has demonstrated is that expert tool use cannot adequately be described by using the phenomenological concept of motor incorporation as it is commonly understood.[9] In other words, the expert tool use in rope skipping challenges the phenomenological concept of motor incorporation. What phenomenologists describe when employing the term incorporation is a *motor* experience. Expert tool use, however, involves something else and more. While expert tool users may sometimes experience motor incorporation, their connection with their tools also runs deeper than that—their tools *also* matter to them on a different level. Due to the countless hours of interacting with their tools, they have come to attach a kind of profound meaning to their tools that

cannot be likened to the way I feel about my bike. The tools have come to mean something for their very identity. This in turn explains why these expert tool users may experience incorporation even when they are not physically in contact with their tools, when tools are broken, missing, or used for unconventional purposes.

Our study opens up a new way of understanding experts' experience of incorporation that is different from the way we understand the experience of *motor* incorporation, which is a very common experience that we all have every day when habitually interacting with all kinds of tools. The experience of incorporation that experts experience is much more profound. Our analysis indicates that while the tools experts use may sometimes be experienced as incorporated, the possibility for such experiences to arise depends on the existence of a particular kind of relationship between the tool and the expert tool user. This relation is not only cultivated through the deliberate practice of physical skills but also through the collective sense-making process going on within a particular community of practice. Therefore, incorporation may persist even when *motor* incorporation fails.

Notes

1. In accordance with the definition proposed by Breivik (2007), expertise may be defined by behavioural criteria. In this understanding, experts are those who perform at the highest level. It follows that expertise is not an absolute but rather a relative term that may be used to describe the highest quality of performance relative to a specific context and time
2. Under FISAC-IRSF rules, teams compete in six disciplines: single rope speed relay, single rope pair freestyle, single rope team freestyle, double Dutch speed relay, double Dutch single freestyle, and double Dutch team freestyle. The individual competition consists of three disciplines: 30 s speed, 3 min speed, and freestyle. To see examples of competitive rope skipping go to https:// www.fisac-irsf.org/media.html.
3. For a more thorough discussion of how the factual variation relates to Husserl's notion of the eidetic variation please see Ravn and Høffding (2016) and Høffding and Martiny (2015).
4. Collaborative autoethnography is a qualitative method that combines autobiography, ethnography, and collaboration between two or more researchers. Thus, when engaging in collaborative autoethnography '[…] researchers work in community to collect their autobiographical materials and to analyze and interpret their data collectively to gain a meaningful understanding of sociocultural phenomena reflected in their autobiographical data' (Chang et al. 2013).
5. In 2008, Thorndahl was part of the team that won the world championships for double Dutch while placing second in

the overall competition. The following year the same team won the European championships for double Dutch and placed second in the overall competition.

6. Upon arriving at the club for the first time, prior to conducting the first observations and informal interviews, 11 elite skippers were informed of the purpose of the study and agreed to participate. At the time when the initial phases of the study were conducted in November and December of 2012, the skippers were between 15 and 20 years of age and preparing for the upcoming European championships.
7. Cf. the on-going discussion about the nature of expertise between different philosophers of sport. Whereas Dreyfus (2014) claims that experts are usually performing their highly specialized skills on automatic pilot, others such as Breivik (2013) maintain that experts are not like zombies while stressing the importance of consciously and deliberately attending to what one is doing even at the highest level of expertise.
8. Thus, in spite of the fact that neuroscientists have been able to demonstrate that the extension of the body caused by tool use results in physical changes that can be detected at the neurological level, from a phenomenological point of view motor incorporation remains a concept reserved for describing a particular kind of subjective experience.
9. In Merleau-Ponty's account for instance, no distinction is made between the abilities of a blind man when using a stick to gain information about the environment and the organ player who is able to play a new instrument after only minutes of getting used to the new instrument. It seems a mistake however to conflate these experiences since one only involves the temporary incorporation of a rather basic motor skill while the other depends on hours and hours of deliberate practice until not only the tool per se but the very meaning of the tool becomes an incorporated part of the expert's understanding of herself, that is of her identity.

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References

ALLEN-COLLINSON, J. 2009. Sporting embodiment: Sports studies and the (continuing)

promise of phenomenology. *Qualitative Research in Sport and Exercise* 1: 279–296.

———. 2011. Intention and Epoché in tension: Autoethnography, bracketing and a novel approach to searching sporting embodiment. *Qualitative Research in Sport, Exercise and Health* 3 (1): 147–168.

ANNAS, J. 2011. practical expertise. In *Knowing how: Essays on knowledge, mind, and action*, edited by J. Bengson and M. Moffett. oxford: oxford University press: 101–112.

BLACK, D. 2014. Where bodies end and artefacts begin: Tools, machines and interfaces. *Body and Society* 20 (1): 31–60.

BREIVIK, G. 2007. Skillful coping in everyday life and in sport: A critical examination of the views of Heidegger and Dreyfus. *Journal of the Philosophy of Sport* 34 (2): 116–134.

———. 2013. Zombie-like or superconscious? A phenomenological and conceptual analysis of consciousness in elite sport. *Journal of the Philosophy of Sport* 40 (1): 85–106.

BREWER, B.W., J.L. VAN RAALTE, and D.E. LINDER. 1993. Athletic identity: Hercules' muscles or Achilles' heel? *International Journal of Sport Psychology* 24 (2): 237–254.

CARIJÓ, F.H., M.C. DE ALMEIDA, and V. KASTRUP. 2013. on haptic and motor incorporation of tools and other objects. *Phenomenology and the Cognitive Sciences* 12 (4): 685–701.

CHANG, H., F.W. NGUNJIRI, and K.A.C. HERNANDEZ. 2013. *Collaborative autoethnography. Developing qualitative inquiry.* Walnut Creek, CA: Left Coast press.

DREYFUS, H. 2014. *Skillful coping: Essays on the phenomenology of everday perception and action*. Oxford: Oxford University press.

ERICSSON, K.A., R.T. KRAMPE, C. TESCH-ROMER, C. ASHWORTH, G. CAREY, J. GRASSIA, and V. SCHNEIDER. 1993. The role of deliberate practice in the acquisition of expert performance. *Psychological Review* 100 (3): 363–406.

FINLAY, L. 2012. Unfolding the phenomenological research process: Iterative stages of "Seeing Afresh". *Journal of Humanistic Psychology* 53 (2): 172–201.

FUCHS, T., and H. DE JAEGHER. 2009. Enactive intersubjectivity: participatory sense-making

and mutual incorporation. *Phenomenology and the Cognitive Sciences* 8 (4): 465–486.

FROESE, T., and S. GALLAGHER. 2010. Phenomenology and artificial life: toward atechnological supplementation of phenomenological methodology. *Husserl Studies* 26 (2): 83–106.

GALLAGHER, S. 2005. *How the body shapes the mind*. New York, NY: Clarendon Press.

GALLAGHER, S., and d. ZAHAVI. 2008. *The phenomenological mind*. London: Routledge.

GIORGI, A. 1975. An application of phenomenological method in psychology. In *Duquesne studies in phenomenological psychology*, vol. 2. edited by A.Giorgi, C.Fischer and E.Murray. Pittsburgh, PA: Duquesne University press: 82–103.

GIORGI, A. 2008. Concerning a serious misunderstanding of the essence of the phenomenological method in psychology. *Journal of Phenomenological Psychology* 39: 33–58.

HAMMERSLEY, M., and p. ATKINSON. 2007. *Ethnography: Principles in practice*. London: Routledge.

HODDER, I. 2012. *Entangled: An archeology of the relationships between humans and things*. Chichester: Wiley.

HØFFdING, S., and K. MARTINY. 2015. Framing a phenomenological interview: What, why and how. *Phenomenology and the Cognitive Sciences.* doi:http://dx.doi.org/10.1007/s1107-015-9433-z.

HOGEVEEN, B. 2011. Skilled coping and sport: promises of phenomenology. *Sport, Ethics and Philosophy* 5 (3): 245–255.

HOPSICKER, p. 2009. Polanyi's "From-To" Knowing and His Contribution to the Phenomenology of Skilled Motor Behavior. *Journal of the Philosophy of Sport* 36 (1): 76–87.

HOUKES, W., and P. VERMAAS. 2004. Actions versus functions: A plea for an alternative metaphysics of artifacts. *The Monist* 87 (1): 52–71.

KIVERSTEIN, J., and E. RIETVELD. 2015. The primacy of skilled intentionality: on Hutto and Satne's the natural origins of content. *Philosophica* 43 (3): 1–29.

LAVALLEE, d., and H.K. ROBINSON. 2007. In pursuit of an identity: A qualitative exploration of retirement from women's artistic gymnastics. *Psychology of Sport and Exercise* 8 (1): 119–141.

LEDER, D. 1990. *The absent body*. Chicago, IL: The University of Chicago Press.

MARTÍNKOVÁ, I., and J. PARRY. 2011. An introduction to the phenomenological study of sport. *Sport, Ethics and Philosophy* 5 (3): 185–201.

MERLEAU-PONTY, M. 2002. *Phenomenology of perception*. London: Routledge.

MONTERO, B. 2010. Does bodily awareness interfere with highly skilled movement? *Inquiry* 53 (2): 105–122.

DE PREESTER, H. 2012. Equipment and existential spatiality: Heidegger, cognitive science and the prosthetic subject. In *Heidegger and Cognitive Science*, edited by J. Kiverstein and M. Wheeler. New York, NY: Palgrave Macmillan: 276–308.

DE PREESTER, H., and M. TSAKIRIS. 2009. Body-extension versus body-incorporation: Is there a need for a body-model? *Phenomenology and the Cognitive Sciences* 8 (3): 307–319.

RAVN, S. 2016. Phenomenological analysis. In *International handbook of qualitative methods in sport and exercise*. edited by B. Smith and A. Sparkes. New York, NY: Routledge.

RAVN, S., and H. HANSEN. 2013. How to explore dancers' sense experiences? A study of how multi-sited fieldwork and phenomenology can be combined. *Qualitative Research in Sport, Exercise and Health* 5: 196–213.

RAVN, S., and S. HØFFDING. 2016. The promise of 'Sporting Bodies' in phenomenological thinking – How exceptional cases of practice can contribute to develop foundational phenomenological concepts. *Qualitative Research in Sport, Exercise and Health*. doi: http://dx.doi.org/10.1080/21596 76X.2016.1187663.

RIETVELD, E. 2008. Special section: The skillful body as a concernful system of possible actions: phenomena and neurodynamics. *Theory and Psychology* 18 (3): 341–363.

SCHÖN, D. 1983. *The reflective practicioner*. London: Temple Smith.

SPARKES, A. 1998. Athletic identity: An Achilles' heel to the survival of self. *Qualitative Health Research* 8 (5): 644–664.

SVENAEUS, F. 2000. The body uncanny – Further steps towards a phenomenology of illness. *Medicine, Health Care and Philosophy* 3: 125–137.

YIN, R. 2014. *Case study research: Design and methods*. Thousand oaks, CA: Sage.

ZAHAVI, D. 2005. *Subjectivity and selfhood: Investigating the first-person perspective*. Cambridge: MIT press.