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Dance and Embodied Cognition: Motivations for the Enactivist Program

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Abstract This paper examines dance instruction and choreographic work within Western contemporary dance practice. Its goal is to re-contextualize the later Wittgenstein's ideas regarding the nature of our linguistic competence and cognitive abilities at large in the light of the rise of enactivism.
I discuss examples within dance practice that show that cognition is distributed across brain, body and environment. In the process, this paper supports a good number of sensorimotor enactivism's fundamental claims. However, its main purpose is to bring insight into embodied cognition that is non-representational at root, which could motivate the radical version of enactivism.
In this regard, I provide evidence against the conception of perceptual experience as like snapshots. I also argue that sensorimotor enactivism – due to its focus on *visual* experience – is held captive by such a picture, despite its battle against it. In this regard, I refute sensorimotor enactivism's idea that practical knowledge mediates in perceptual experience by means of examples. I explore instances of non-conceptual, non-mediated perceptual experience that are a product of embodied engagements with the environment. As a result, I propose an enactivist view of embodied cognition that accounts for non-representational processes.

Keywords: Dance, Wittgenstein, Embodied Cognition, Extended Cognition, Enactivism

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0. Introduction

This paper is primarily motivated by the idea that dance practice can bring more insight into the relationship between an agent's cognitive activities, bodily features and interactions with the environment. I examine dance instruction and choreographic work within Western contemporary dance [1]. My goal is to re-contextualize the later Wittgenstein's ideas regarding the nature of our linguistic competence and cognitive abilities at large in the light of the rise of enactivism[2].

[1] For a clarification of what I mean by contemporary dance, cf. Cvejić (2015: 5).

[2] For the affinities between the later Wittgenstein and enactivism, cf. Hutto (2013).

I provide examples that illustrate the idea that perceptual experience includes external processes, in which the body in action plays a central role and there is no fracture between the agent's body, its immediate environment and cognition. In the process, this paper supports a good number of sensorimotor enactivism's fundamental claims. However, the examples discussed also motivate an enactivist view of embodied cognition that accounts for non-representational processes (Gallagher 2017: 40-42). As a result, I subscribe to the radical version of enactivism.

My argument will proceed as follows. I begin by explicating how embodied cognition is understood within dance practice and show that it is not a straightforward issue. Next, I study examples of embodied cognition in the dance context so as to provide arguments for the enactivist view of cognition. In this regard, I start advancing that the construal of meaning in figurative dance instruction is constrained by the agent's body and its immediate environment. I also show that our sensorimotor abilities contribute to understanding (sometimes as a constraint) and to dance vocabulary acquisition. Moreover, I discuss self-awareness and memory as two empirical domains relevant for embodied cognition in dance practice. Furthermore, I explore instances of extended cognition.

Once the groundwork is laid, the fundamental aim of this paper comes to the fore. I argue that sensorimotor enactivism, due to its focus on *visual* experience, is held captive by the conception of perceptual experience as like snapshots. I explore instances of non-conceptual, non-mediated perceptual experience that are a product of embodied engagements with the environment. As a result, I propose an enactivist view of embodied cognition that accounts for non-representational processes.

1. Dance practice, embodiment and embodied cognition

I agree with Graham McFee (2013) that we do not need a specific theory of embodiment for dance practice[3]. Embodiment has become a trendy word in the dance context, in the approaches that draw on the traditions of Western modern dance in particular (Carr 2013). Dance practitioners use the term and incorporate it into their dance practice with the intention of fostering a holistic understanding of the body, in which physicality and mentality are not treated as two clear distinctive entities, and in which the body is not approached instrumentally.

However, already classic scholarship argues that behind such uses there are in disguise deeply rooted dualistic approaches to the mind and the body that can be traced back to the writings of the pioneers in Western modern dance (Best 1974). No wonder that the background to these insights is influenced by Wittgenstein's critique of the picture of the inner and the outer, which unfortunately imbues ordinary people's understanding of themselves and their fellow human beings, let alone philosophers' talk.

By embodied cognition, I mean cognition that is significantly dependent upon features of the agent's physical body. Subject to such tacit dualistic misconceptions, the concept of embodied cognition is a constant in the dance studio. It is usually expressed in other terms, such as 'visceral thinking' or 'the thinking body'. The concept of embodied cognition is also at the core of improvisation, in which the metaphor of the thinking body is often used to explain the generation of dance movement in the very moment of execution. Some of the practices of improvisation are ascribed names that point to the

[3] There are authors that do not share this view. They often try to develop a specific theory of (dance) embodiment by making use of phenomenology, in particular of Merleau Ponty. It is the case of Jane Carr (2013).

cognitive character of embodiment, such as Ivan Hagendoorn's Cognitive Dance Improvisation'. Experienced dancers take for granted this holistic perspective. There is a substantial amount of emerging scholarship that tries to shed light on this insight. In fact, a good number of these efforts aim at the acknowledgment of dance as a form of philosophy.

Many authors working in the interdisciplinary field of 'Performance philosophy' have addressed the question whether dance can be equated to philosophy. It has been argued that certain choreographic practices are 'practical philosophy' (Sabisch 2011). Likewise, dance performances are said to 'rethink philosophically' the relationship between the body, movement, and time by choreographing problems, in the sense that they formulate and pose them (Cvejić 2015). Philosophers from other philosophical backgrounds have also argued that dance is philosophy (Noë 2015). This body of research, pursued by both academics and professional dancers, can be understood as the result of a growing necessity for the recognition of the cognitive aspects of dance, which are intertwined with the concept of embodied cognition. Nevertheless, often they are also held captive by dualistic misconceptions.

This paper provides a substantial number of carefully examined instances of embodied cognition within dance practice that can free us from such delusions. Take the following example. Dancers might require being touched in order to refine a posture. They might not be able to modify the posture when they are told verbally what to do, and it is sometimes not enough for them to see a correct execution of the movement in question because they do not know on which specific detail(s) of the movement they must focus their attention. In those cases, it is helpful that the dance trainer rectifies the posture by using her own hands. It is only then that the dance instruction is actually processed and makes sense to the practitioner. The dancer's feeling at that moment of awareness is close to experimenting something that clicks, as Wittgenstein defined aesthetic satisfaction. The dancer is unlikely to be able to put into words what was wrong even after rectifying the movement, or for that matter to explain verbally how it is to be executed.

This difficulty that dancers encounter in articulating their own movements is helpfully explored when considering embodied analyses of language and movement.

2. Figurative language and embodied understanding in dance practice

There is an extensive body of literature on the fundamental role that figurative language plays in cognition. One of the key contributions to the field was *Metaphors We Live By* (Lakoff & Johnson 1980). Its main thesis was that figurative language, and metaphor in particular, often structures our cognitive processes. It has been identified as a landmark on the early work on embodied cognition in the narrow sense because it makes clear that both human experience and metaphors – and as a result, cognition – are shaped by the kinds of bodies we have (Wilson & Foglia 2015). The use of figurative instruction in dance practice can shed light on what I shall call 'embodied understanding', an understanding that is significantly constituted by our body and its interactions with its surroundings.

The kind of animal we are – for which our body plays a crucial role – has an undeniable impact on our dances, for instance, our upright stance on verticality and other core concepts of classical ballet. Likewise, the qualities of the dancer's body have a significant influence on how she dances. I shall show that the dancer's body also has an impact on her cognitive abilities. Let us look closely at the impact that the dancer's body has on her understanding of dance concepts. It is decisive in the cases in which understanding a dance instruction cannot be separated from its instantiation. Think of dance instructions

such as 'Break yourself', 'Cut the movement' or 'Lose gravity'. They make explicit the intrinsic relationship that exists between understanding a dance movement and performing it, a connection pointed out in relation to music by Wittgenstein (1980: §1130).

Let us examine the instruction 'Lose gravity'. Exploring gravitational and anti-gravitational qualities has often been a way in which choreographers have searched for alternative movement (Morris 1965). It is of great importance that there is not a unique response to that kind of instruction. The dancer has to play with the instruction, and improvise around it. Her body plays an essential role in her understanding. Her engagement with the instruction will take place in her movements, and the quality of her movements will be a reflection of her understanding. The dancer would have to experiment with the feeling of not being brought toward the ground. She might move her arm as if she was floating, and try to extend that kind of quality to her torso even if ultimately she needs the support of the ground. One of her tactics might be to *balance* the actual force of gravity that attracts her mass to the ground with the airy quality of her movements. By emphasizing the latter, she might be able to make the spectator focus on them, so that the floating quality prevails over the awareness of the principles of physics in the viewer's aesthetic experience. The difference in weight between her arms and her legs, or the fact that the latter are closer to the ground under normal conditions, might result in distinctive movements in upper and lower extremities. In addition, the unique bodily features of a dancer will shape to a certain extent how she enacts a figurative dance instruction and differentiate her movements from those of a fellow dancer (consider differences in weight, height, elasticity, and so on).

The dance trainer ought to point out to the dancer that achieving these kinds of qualities is ultimately not a question of thinking in abstract terms about the concepts involved in the instruction and acting in consequence. Getting acquainted with a theoretical concept might be only a dimension of the first step to tackle a complex dance instruction. Things often happen the other way around. One might acquire the concept through the practice of dance. A dancer with no clue about the concept in question might gain insight into it from how her fellow dancers play around it. The quality in question, the loss of gravity in this case, has to be achieved in the movement itself. It shall also be understood in the movement, in the embodied physical experiment. In this kind of situation, we often hear expressions like 'Yes! I got it!' coming from dancers still playing with the instruction. When the quality does not show in the movement, it is simply not there, no matter how intensely the dancer is thinking about it.

Embodiment is also crucial for the understanding of what is involved in certain movements and postures, for instance, in movements that are quite alien to our natural and cultural catalogue of movements, or of what I would like to call the 'workings' of the practice, the key concepts at its core. Think of dance movements that involve the thorax. Beginners have a hard time finding out what is wrong when they are told that their thorax is not flexible enough. Their lack of understanding is intimately related to the fact that they have not physically experienced significant forms of elasticity in that part of their bodies. A task in dance might only become clear when one is able to perform certain kinds of movements.

This is also true of other disciplines in which the adoption of bodily postures is essential, such as yoga. One might not understand a particular asana until one has reached a certain stage in the practice. It is practice, the adoption time and again of the same postures, watching fellow practitioners to adopt such postures, and so on, that slowly makes clear what one has to search for, or that one has finally got somewhere. Certain yoga concepts only crystallize when one is able to enact a certain yoga posture

with easiness, and one often understands an asana fully only after comprehending the previous one in the series, and that means, at least in part, adopting the posture well enough. In like manner, core yoga concepts and skills, such as those related to breathing, are only understood by very advanced practitioners, even though beginners are told the basics on their very first day, and yoga teachers continuously draw the practitioner' attention to breath.

All these examples of embodied understanding support the embodiment thesis, which states that «many features of cognition are embodied in that they are deeply dependent upon characteristics of the physical body of an agent» (Wilson & Foglia 2015: 14).

3. The body as constraint thesis and dance vocabulary acquisition

Once the cognitive embodiment thesis is accepted, the question to answer is what physically constitutive roles the body plays in cognition. Three such distinctive functions have been advanced: the body as a constraint, as a distributor, and as a regulator of cognition (Wilson & Foglia 2015). I will use dance practice in order to illustrate the body as constraint thesis, according to which the agent's body significantly constraints both the nature and content of the representations processed by the agent's cognitive system.

In dance practice, it is particularly straightforward that a certain bodily state might make difficult the understanding of specific aspects of the practice. Imagine a dancer that is below average regarding leg elasticity. It might be difficult for her to understand the dynamics of a floorwork sequence articulated around leg elasticity. It is likely that a less experienced dancer's execution, for the simple reason of being more flexible, shows more understanding regarding that aspect of the sequence. There are plenty of examples in the everyday of the dance studio of how an agent's physical characteristics can make cognitive activities more difficult, or even impossible. Similarly, a dancer's bodily characteristics can make certain cognitive activities easier, and make them appear as if they were natural. Dance is thus able to explain cognitive variation in terms of bodily variation.

It can also explain cognitive variation regarding the same agent. After a serious illness or a pregnancy, changes in the dancer's body might directly affect her cognitive abilities, in part due to the impact that the variation in her bodily features might have on her movements. She might have to learn again certain things as a result, but not as if for the first time, since it usually involves a good deal of unlearning.

The body is also a constraint in the creative process of choreography. Notice William Forsythe's acknowledgment of his body's influence on his choreographic work: «My body has determined a lot of our dancing because I sense the body a certain way and it informs me a certain way. So it's a very personal view of the world, and that's the nature of choreography» (Forsythe & Bürkle 1999: 22). Moreover, the fact that it is often possible to distinguish between the choreographic signature of female and male artists is to a great extent due to their different physical features.

There is also a relationship between the capacity to use dance vocabulary and embodied cognition. Findings have shown that exposure to a broader range of embodied interactions, such as the use of gestures, determines lexical richness and vocabulary growth (Wilson & Foglia 2015: 32). In like manner, a certain kind of sophisticated dance vocabulary only becomes available to the agent after she has been exposed to certain movements, and sometimes not until she has executed them herself. It is as if dance vocabulary built up to a great extent upon the agent's embodied cognitive activities.

The role of the choreographer in dance vocabulary acquisition also explains why dancers from dissimilar backgrounds have different kinds of vocabulary.

Choreographers often make gestures and, most importantly, use their movements as gestures, in order to draw the dancer's attention to certain aspects of a movement or of an exercise, when the dancer does not have the words to crystallize what is involved in the task. In fact, it might be possible to identify dancers that have been working with a specific choreographer or that were educated in a certain school by means of both their lexical richness and their use of dance vocabulary. This kind of fact shows that language learning is substantially influenced by the environmental conditions of the agent, and that direct engagement with the world and other individuals regulate language functioning.

There are empirical domains fundamental to dance practice that support the idea that sensorimotor activity and cognition are deeply dependent on one another. I shall explore two of them in the next section.

4. Two empirical domains for embodied cognition relevant in dance practice: self awareness and memory

Improvisation exercises often explore the relationship between embodiment and self-awareness confirmed by scientific findings (Wilson & Foglia 2015: 37). In dance practice, the idea that one gets acquainted to one's own agency through one's own movements is quite well spread. Sensorimotor coupling with the environment provides the agent with a kind of feeling of the ownership of her own movement. After all, our interactions with the environment (fellow dancers, objects, the studio space, a landscape, and so on) can be highly revealing about ourselves. One of the main insights behind contact improvisation is that by touching and being touched, by interacting with the other, we experience ourselves moving and develop the feeling of controlling our own body in action.

We can learn from the social sciences that how human agency exerts itself in dance practice is not a straightforward issue (Carr 2013). There are *human* patterns of physical behavior that depend on our sensorimotor capacities. In addition, there are *social* patterns of behavior. They are often intertwined and conform to what Bourdieu has identified as the tacit hidden conditions that lie beneath conscious awareness (1979). Dance has also been portrayed as a crystallization of the broader bodily culture that informs it (Polhemus 1998). The question is then the following: Where does agency begin, if by the mere fact of being a specific type of animal and belonging to a culture we are already determined to move in certain ways?

Furthermore, dance styles also develop their own 'hidden conditions' that become second nature. That is the reason why a familiar exercise in contemporary dance practice consists in undoing what has become habitual (Noland 2009). Dancers are asked to unlearn the technique they have been trained into, or the signature style of the choreographer with whom they are working, and produce movements that are as 'natural' as possible, with the intention of defeating choreography and getting back to dancing (Forsythe & Bürkle 1999). When dancers are initially exposed to such practices, they realize how conditioned they are and find it puzzling. However, after experimenting in several occasions with instructions such as 'Cut the movement', or 'Show me the animal you are', they feel they are in greater control of their bodies. In fact, being aware of the limits of one's agency is understood as essential for reinforcing one's sense of agency in dance practice.

We can also learn a great deal about cognitive embodiment by observing how dancers memorize choreographic material. Dancers often associate dance steps with specific parts of their bodies. Imagine someone that has to memorize a stop. She might focus her attention on her pelvis being suspended in a specific position. This is not to say that

language does not come into the picture. When a dancer is trying to memorize choreographic material, she might use language in order to remember how movements are arranged. We often hear statements like: 'First, we do this', or 'We stop here like this'. However, this kind of statement usually goes together with an exaggerated execution of the movement in question, in which the dancer, on purpose, takes more time than required. In fact, exaggerating a movement, slowing down while executing it, or even coming to a halt right after, are standard embodied ways of memorizing in the dance studio. This kind of memory tool often leaves a trace in the execution of the movement, and dancers, once they have learnt the choreography, are thus asked to polish their execution, which might appear distorted to the choreographer.

When a dancer is learning an exercise for the first time, or new choreographic material, she does not merely look at the dance trainer's execution of the movements in question. By contrast, dancers usually repeat the movements while they see them. Repeating the movements, enacting them, is their way of memorizing them. It usually takes much longer to learn a new sequence of movements if one just looks at the execution and does not do it oneself at the same time. In fact, it also requires more focus and clarity of mind from the side of the dancer. The same is true of experience: only very experienced dancers are able to learn new choreographic material just by looking at what the choreographer is doing. Likewise, when a choreographer does not remember certain movements of her own choreographic material, the standard way of remembering consists in repeating the dance until that point as many times as necessary (the steps coming just before and right after in particular), as if forgotten movements were to spring from one's (embodied) memory. This sheds lights on why it is more difficult to remember the first steps of a dance than those coming in the middle of it. All these situations can be understood as examples of the claim that motor information is actually a significant part of the memory trace.

I hope to have shown by now that dance practice is helpful to dismiss the idea that cognition is skull-bound. Next, I will pursue the point further and propose that dance practice can be highly revealing about the fact that cognition extends into the agent's world.

5. 'Dancers are the dance' and extended cognition

McFee showed that «danceworks depend on the specific physicality of the dancers», to the degree that, unlike in music, «dancers do not *cause* the dance; rather, they *are* the dance – their movements instantiate it» (McFee 2013: 28). He very rightly quoted Collingwood in order to point out how the dancer is required to fill in the details in the dance with the aim of bringing the concrete performance into being. Each dancer will do it her way. One of the greatest pleasures of a competent viewer is to distinguish how each dancer fills in those details. This process is intrinsically related to the dancer's bodily features. One might notice the elasticity of a particular dancer's plié, or the overall character of her physical presence. There are dancers whose movements appear relaxed, other dancers whose movements seem active and energetic, or others whose movements are specially parsimonious. Comparison plays an essential part in this active kind of contemplation. When different dancers execute the same set of movements, the competent viewer contrasts their executions in order to notice differences. In this regard, dancers have a constructive role in the dance[4].

[4] I won't enter into the debate regarding whether the dancer has to be understood as a co-author.

Choreographers usually channel and develop choreographic ideas and material by making use of the dancers' bodies, of the embodied actions of others. I understand such a process as an example of extended cognition (which itself is characteristic of functionalist embodied cognition; Gallagher 2017: 35-37). According to the Extended Mind Thesis, cognition is not «contained within the boundaries of the body», but instead «extends into the agent's world» (Wilson & Foglia 2015: 51). Apart from being deployed to increase dancers' spontaneity, self-awareness or autonomy, improvisation is used by choreographers in order to create, develop or, most importantly, think through choreographic material. Choreographers often use improvisation exercises in order to gain clarity about how to continue a dance work, as a tool for understanding what they are actually after. They select a number of the movements executed by the dancers and work from them. By giving instructions to the dancers, they might alter them slightly, or modify them in a significant way. In the process, one often hears statements such as 'The hand there feels right'.

In addition, choreographers might self-embody the exploration and execute the movements themselves. In this regard, the feedback between extended and embodied cognition is constant. They might continue the movements, exaggerating or elongating them, slowing them down or making them more elastic. It is as if they thought through the body in action, as if the body in action was one of their most powerful cognitive tools.

Examining the role of the audience in the dancer's understanding of her own performance can foster the idea that cognition extends beyond the body. After not getting the expected response from the audience, backstage one often hears expressions like 'Something went wrong', or 'No worries! We'll keep working at it'. It is as if the response from the audience was enough to realize that there is still much work to be done.

Scoring can also be understood as a form of extended cognition. Notation has a direct impact on how performances are thought through, conceived and enacted. Aware of this relationship, Forsythe (1998) predicted that we would have a new kind of notation mediated by the computer that would have a direct impact on the art of performance and spoke of a fusion of performance, recording and notation that would warrant that each member of the triad influences the other two. But the use of the mirror in both dance training and choreography is probably the best example of extended cognition in dance. Dancers and choreographers literally think by means of the looking glass and they keep checking with it that everything is in order.

Choreographic works could also be understood as instances of extended cognition. It has been argued that the main question behind certain choreographic practices is not what kind of object a dance performance is but what kind of concept of dance it proposes (Cvejić 2006, Protopapa 2013). Such concepts and ideas are embodied in the artworks. Although spelling them out might be useful, they cannot be reduced to verbal descriptions. This explains why we keep drawing attention to the performance's visual features when we try to put it into words. As a result, the artworks themselves are part of the dancer's cognition, and of everybody who is actively engaged in dance.

These examples help us leave the skull further behind than in previous sections. Let us free ourselves now from the idea that perceptual experience is contentful.

6. Seeing details and change blindness in the dance studio

Noë warned us against the tendency to conceive of perceptual experiences as snapshots: «To suppose that what is experienced, like the content of a snapshot laid out on paper, is given all at once *in the head*» (Noë 2006: 412). Experience exceeds what we actually see.

How is the detail that we actually do not see present in our perceptual experience? Noë advances that it is present as absence because it is available to us by means of our sensorimotor capacities, because it is «*within reach*», and that our sensorimotor dependences constitute a very basic form of knowledge how, the «implicit understanding, that by a movement of the eye or the head or the body I can bring bits of the cat into view that are now hidden» (*ivi*: 423). Nonetheless, Noë seems to remain under the influence of the view that such internal pictures in fact exist. I will discuss this idea in the next section.

There is much we do not see of what we experience when we are on stage. We might not see the backsides of our fellow dancers. We often do not see anything at all, and yet we do not consider for a second that everyone has suddenly disappeared. We have the certainty because we have a history. We might have danced with them previously, or even rehearsed that piece several times, and after we finished, even if we could not see their backs all the time, they in fact had them in the right place.

It is a familiar situation. We experience it early on, and in all kinds of environments, with our fellow classmates in school, with strangers walking along the street or in the beach, and so on. In many cases, we finally had access to see what initially escaped our visual fields by means of our sensorimotor abilities. It would not make sense for a dancer to be skeptic in that respect. It is a part of our framework. It is the kind of thing one does not doubt under normal circumstances. We take it for granted. Such certainties are not knowledge. As Wittgenstein advanced, they are not empirical (1969: §308). This kind of certainty regulates our practices, even though it does not function as a foundation (§94-98, 196-206). They are the other side of the coin of some of our natural dispositions to action, and as such neither rationalized nor thoughtful.

We find plenty of instances in dance practice of the fact that we do not turn to internal representations in order to give detailed information of our surroundings. In fact, in a dance context the thesis of the snapshot does not make sense at all. By contrast, it seems more sensible to use the metaphor of a film. And there are so many things we miss when we look at a film, even though they are right before our eyes! When one is asked to describe one's room, one does not stay quietly at a corner and searches within one's head, dusting one's internal representation of the room (Nöe 2006: 421). On the contrary, one moves around the room and re-explores it in order to produce a detailed description of it. That is exactly how the dancer relates to the space around her.

When asked to describe a space, a dancer explores the space physically. She might explore it by means of movements that she is used to so as to see how those movements feel in that space. Those movements and her bodily features will shape her description. Above all, it is a human body. We can easily imagine that a dog would explore the same space in a different way. Dance instruction often aims at liberating dancers from their human bodily features by means of experiments in which they are asked to imagine themselves in the body of other animals and explore their surroundings from those perspectives. Furthermore, agents from different training backgrounds shall explore the space in distinctive ways. While a ballet dancer is likely to explore the space vertically, a contemporary dancer, given her training's focus on floorwork, is prone to use the space horizontally much of the time.

It is equally interesting to observe how choreographers probe the stage where their works are going to be performed. They walk in it, jump and run around, they sit down on the floor, lie down and roll, in order to make sense of the space. They execute some of the movements of the choreography themselves and, very importantly, they carefully observe how the dancers and the dance 'feel' on the stage. If they had to describe the room, they would take all this into account.

Choreographers' use of video recording in order to polish their works can also be taken as an indicator of the fact that we do not have access to such a detailed internal picture of what is going on around us. They look for such a detailed picture outside. When asked whether the performance went well, choreographers often say things like 'I don't know it yet. I have not seen the video'. I understand such a relationship to video recording as a form of extended cognition. We also observe in this context continuous shifts from extended to embodied cognition and vice versa, as well as feedback between the two. After watching the video, when the choreographer identifies something problematic, she *dances* it out until the problems disappear. She will also use her body in order to examine an interesting detail that she has noticed in the recording. She will explore it by enacting it and ultimately understand it through her movements.

Change blindness – the fact that large changes in a visual scene sometimes go unnoticed – is understood as a sign that the snapshot conception must be wrong[5]. An experienced dancer cannot abandon herself to change blindness. On the contrary, she has to be able to perceive every aspect that has changed on stage to make sure that the performance goes well. But she does not do that by developing very accurate internal representations. The dancer has to develop a special kind of sensitivity in order to cope with change blindness, and above all the capacity to react spontaneously to changes, no matter how late they are noticed. This kind of sensitivity is heavily embodied. She has to awaken her senses, so that hearing and touching in particular make up for what she is actually not able to see. The idea is that one has to sense the changes, even if one is blind to them. The whole body is at work here. Besides, one also senses changes thanks to the reactions of fellow dancers.

Next, I will show that Noë's focus on visual experience can be taken as a sign that he is held captive by the very picture against which he is battling.

7. Dance and radical enactivism

Sensorimotor enactivism and radical enactivism part ways on their conception of the relationship between perceptual experience and know-how. According to the former, the exercise of practical knowledge of sensorimotor contingencies functions as a necessary mediator in perceptual experience, which is presented as contentful, thoughtful and conceptual, and essentially as «a *way of thinking* about the world» (Noë 2004: 189). By contrast, radical enactivism identifies such a view with an unconscious commitment to classical cognitivism, as a sign of an intellectualist understanding of perceptual experience, and ultimately as a form of propositional knowledge in disguise (Hutto & Myin 2013).

Although sensorimotor enactivism has a peculiar conception of the nature of concepts as abilities, or practical skills (Noë 2004: 193), it is not clear at all why we need to articulate perception in terms of concepts, in particular if concepts are turned into such vague mental images. Radical enactivism advances instead that mentality does not need to be contentful, that perceptual experience is non-conceptual, and aims at explaining basic cognition in terms of direct, non-mediated concrete embodied engagements with the environment: «in so engaging with their environments there is no a set of facts that organisms know, or need to know, at any level» (Hutto & Myin 2013: 30).

Maxine Sheets-Johnstone's (2010) scientifically documented insights into how infants have an elemental, non-linguistic experiential concept of space can illustrate well what radical enactivism is after. Such concept of space is rooted in agents' immediate bodily

[5] On the relevance of change blindness experiments for a sensory motor account of vision and visual consciousness, cf. O'Regan & Noë (2001: 954).

experience of themselves and the world around them. Our early experiences of ourselves as objects in motion are possible only on the basis of a series of learnings – our having learned our bodies and our surroundings in motion – that provide us with a fundamental kinetic dynamics that unables us to move effectively in the world. Infants do not have a concept of space as a container of objects, but instead relate to themselves and their surroundings as being simply there. The child is born into a tactile-kinetic spatiality that is slowly displaced by a visually forged concept of 'being in space'.
Likewise, we can find sophisticated forms of human perceiving in dance that are not essentially contentful and representational, exactly of the kind that radical enactivism is after. Many of the examples discussed in this article could be explored in that direction. For instance, improvisation has been defined as visceral thinking in opposition to traditional conceptions of rationality, in which language plays a leading role. In fact, the impossibility of putting improvisation experiences into words was emphasized by its founder (Paxton 1988). Besides, the practice is often understood as contentless, as an attempt «to let go of wanting to produce meaning» (Cvejič 2015: 132). Even those that understand improvisation as a participatory meaning-making activity propose that it is contentless and non-mediated (Merritt 2013, Sheets-Johnstone 2009).
Improvisation takes us back to our early tactile-kinetic spatiality and invites us to proceed free of the (visual) container notion of space that ties perceptual experience representationally. Improvisation is a question of refining «responses so as to bring the current situation closer to an optimal gestalt» (Dreyfus 2002), and thus illustrates well the anti-representationalist view of cognition.
The examples on memory in section 4 could also serve well our purpose. When a dancer has to memorize a set of movements, she cannot turn to crystal clear snapshots, or to a pre-existing way of thinking about the world. By contrast, she can only rely on executing exaggeratedly certain movements so as to make sure that the body remembers how to proceed. Representation is decouplable from context, but her exaggerations are not. They can be understood as intuitive and emotionally informed responses that make room for an intentionality of the body in action that does not involve relevant interpretation and that is not representational. In other words, those exaggerated movements are an example of the kind of intentionality that is not representational (Gallagher 2017: 103-105). It is of great importance that the dancer does not proceed as if she had a picture of the whole dance in her head. It is her body in motion instead that most of the time takes her from one movement to the next. It is also worth noting that such exaggerated movements are often ineffable and accordingly very hard to polish once they have accomplished their task.
Noë's idea that it is the world that constitutes perceptual experience «in the way a partner joins us in a dance, or […] the way the music itself guides us» (Noë 2006: 412) seems to be quite far from his characterization of perceptual experience as thoughtful and conceptual. Let us join the world in a dance.

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