

Routes and roots to knowing in Shaun White's snowboarding road trip

A mycorrhizaic approach to multisensory emplaced learning in exergames

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Abstract

This article explores learning during game-play of a snowboarding video game intrigued by questions raised in the wake of the increasing mediatization and digitization of learning. Correspondingly, we answer to calls for more suitable metaphors for learning to cater for the entangled learning processes that changes related to the increase of digital media may infer. Using a short term sensory ethnography approach, we elaborate on the idea of multisensory emplaced learning and propose an organic metaphor – mycorrhiza – to both methodology and learning. Mycorrhiza refers to a symbiotic relationship between fungi and roots of plants in its environment where fungi are the visible effects of the mycorrhiza. The metaphor provides a way to start to unpack sensory, visual and embodied aspects of learning in the complexities of the digital age. By elaborating on the mycorrhizaic concepts fungus, soil, growth, mycelia and symbiosis we show three interrelated ways of moving through this game: (i) a social and cultural route, (ii) a competitive route, and (iii) an experiential route. With help of the metaphor we discern the symbiotic relations between what appeared in our empirical material as visual and other human and non-human aspects of emplacement.

Keywords: exergaming, sensory ethnography, digitalization, methodology, learning

Introduction

Numerous aspects of our everyday lives are increasingly mediated and digitised, and in this way our actions in many senses become entangled with media and digital technologies (Beetham & Sharpe, 2013; Finnemann, 2011; Pink, 2015a, Lupton, 2016). This on-going digitalisation, explored through for example digital sociology, digital anthropology, or digital ethnography is sometimes referred to as studies of digital age (Dicks et al., 2005; Pink et al., 2013; Lupton, 2012). Many studies then engage in analysis of digital media involving complexities of how people interact and learn in relation to social media or technologies like mobile phones, computers or video games. However, this research is just in its infancy and much more needs to be done, not the least in terms of learning (e.g. Favero, 2014; Greenhow & Lewin, 2016; Goodyear & Armour, 2018; Villi & Stocchetti, 2011).

Several scholars have reminded us that understanding learning and the digitalisation of our everyday lives require useful metaphors through which to approach data (Cormier 2008; Beetham & Sharpe, 2013; Engeström, 2007; Enright & Gard, 2016). Metaphors influence the ways we understand different phenomena and open up and/or limit what we see and not see in research (cf. Lakoff & Johnson, 1980; Richardson, 2011). In relation to knowledge and learning, key metaphors like *acquisition* and *participation* have often been used as ways to do research (Sfard, 1998). In line with Enright and Gard (2016) we would argue that these metaphors are not enough to understand the messiness, unpredictability, fluidity and thrown-togetherness of things in digital age.

One area where learning can be seen as thrown together in complex relations is how video and computer games, and apps in smart phones become enmeshed with issues of health and bodily movement (Goodyear & Armour, 2018; Quennerstedt et al., 2013, Lupton, 2014, 2015; Pink & Fors, 2017; Williamson, 2015). Even if these so called exergames are notably and unmistakably digital as well as visual phenomena, they have mainly been explored as a physiological, psychological or public health issue (Papasterigou, 2009; Sun, 2015). This lack in research is scrutinised by Ennis (2013) who argues that we critically need to expand our explorations of exergames in terms of educational values and learning, and we would like to add in terms of its visual and sensory properties.

In this article we aim to remedy this gap by approaching the entanglement of knowledge, learning, video games and visual popular culture by

using snowboarding and a snowboarding video game as an illustrative case of exploring the complexities of learning in digital age. We will in the article draw on the notion of multisensory emplaced learning (Fors et al., 2013) informed by Pink's notion of sensory ethnography (e.g. Pink, 2015b; Pink & Morgan, 2013; Pink et al., 2017) and approach our empirical material using a *mycorrhizaic* metaphor. Mycorrhiza refers to a symbiotic relationship between fungi and roots of plants in its environment where fungi are the visible effects of the mycorrhiza. Using a mycorrhizaic metaphor is in line with Cormier (2008), Enright and Gard (2016), and Beetham and Sharp (2003) who all argue that living, organic metaphors can be a way to start to unpack sensory, visual and embodied aspects of learning in the complexities of the digital age. The purpose is thus to explore the routes and roots to knowing during game-play of a snowboarding video game.

Why explore a snowboarding video game?

In a recent publication on media, experience and representation, Pink (2015a) uncovers the need to explore further how 'the relationality between representational and non-representational elements of media and content might be articulated' (p. 5). Her conclusion draws on implications from cross-fertilizing theoretical and methodological thinking on the senses in anthropology (e.g. Ingold, 2010) with media studies (e.g. Couldry, 2012; Moores, 2012) and non-representational theory (Thrift, 2007). In this article we address this need through examining how exergaming is practiced, and accordingly how representational and non-representational elements of media and content are articulated.

So why explore a snowboarding game? Snowboarding has been described as an experience-based and intense physical activity that includes elation and delight (Thorpe, 2012; Bäckström, 2005), but at the same time it is a complex activity to learn. Snowboarding videogames are also quite popular among snowboarders, and the gaming industry is using values of popular culture in snowboarding to enhance the experience in the millions of games sold worldwide. These values and contexts are transferred into the digital worlds of video games, and the importance of certain brands and the idea of going on a road trip adds to the games credibility. For snowboarders used to the social and material environment, these connotations might reflect previous experiences of snowboarding as well as cultural content from diverse forms of media, and confirm social rela-

tions (cf. Christensen, 2001; Bäckström, 2005; Parmett, 2015; Thorpe, 2012, Woermann, 2012). However, how is snowboarding related content experienced by people when exergaming who have little experience of snowboarding culture or practice? This is what the article is going to unpack further.

Exergaming and the senses

In order to understand learning in a snowboarding video game, it is important to grasp the relation between exergaming and the senses. However, using a design that draws on linear media is criticised by research, stressing that this kind of design does not address what has been referred to as the core of game experience (Isbister 2006). Just focusing on the content and the players' interpretation of content does not account for the constructive and non-representational expression of emotional responses by the player. Instead, these issues are addressed by research exploring experiential imperatives in gaming. Grodal (2003) argues that video games fruitfully support 'full experiential flow' linking perceptions and emotions with actions, and engaging the broad spectrum of sensory modalities involved. Studies within this body of research show that an intrinsic combination of pleasure and displeasure adds an aesthetic quality to the gaming that supports further playing (Maivorsdotter et al., 2015). Studies also show how players are able to discern, discriminate and differentiate different aspects of bodily moving throughout gaming (Nyberg & Meckbach, 2015).

Research exploring exergaming has also paid attention to the technology in terms of being a mediator between body and screen. Griffin (2005) state that commonly used hand controllers act to normalise and standardise player response and could therefore be said to operate within regimes of power, as Griffin remarks, the 'idiosyncrasies and pleasures of the body are extraneous when interaction is equated to functional value' (p. 2). On the other hand, a more physically involving interface between body and screen does not necessarily lead to more meaningful gameplay experiences (Bogost, 2007).

Media representations and cultural contexts of snowboarding

To understand the content of the snowboarding game it is also important to acknowledge the social and cultural snowboarding context. Both

the social and cultural in snowboarding, as well as the affective and sensorial, is visible in representations of snowboarding in board sport media such as niche magazines or videos on YouTube. Not least is the ‘dream glide’ together with peers ubiquitous, and travelling to remote locations to snowboard has similarly been a common narrative “to experience new terrain, meet new people, or ‘live the dream’ of the endless winter’ (Thorpe 2012, p. 325).

As a sport, snowboarding shows a rapid growth since the early underground phases in the 1960s and 1970s, where controversies between snowboarders and skiers were common (Heino, 2000; Humphreys, 1996; Reynier & Chantelat, 2005; Rinehart, 2005). However, Sisjord (2012, p. 83) argues that in contemporary snowboarding ‘the “rebellious” sting has weakened’. Parallel to technological development snowboarding has gone through a process of sportification nurtured by the International Ski Federation turning it Olympic in 1998 (Bäckström, 2005; Coates, Clayton, & Humberstone, 2010; Thorpe & Wheaton, 2011). At the same time a lingering social and cultural idea of core boarders, i.e. insiders and outsiders, prevail (Reynier & Chantelat, 2005).

A mycorrhizaic methodology

In order to explore multisensory emplaced learning during game-play of a snowboarding game, we chose ethnographically inspired video recordings as our empirical material (Pink & Morgan, 2013). Ethnography has the advantage of focusing what people do, i.e. people’s practices, to a larger extent than many other types of methods. For our study, this is of utmost importance since experiences come through practices. Sensory ethnography, as a way to explore multisensory emplaced learning in particular, centers on the sensing body and mind in a material environment (Howes 2003). In this vein, Pink proposed an ‘emplaced ethnography that attends to the question of experience by accounting for the relationships between bodies, minds, and the materiality and sensoriality of the environment’ (2015b, p. 28). Pink (2015b, p. 122) further suggested that ‘we might think of digital media as multisensory, rather than viewing it through the limited prism of a five-sense sensorium’. Following Ingold (2000), Pink argues in favor of understanding the visual in practice and of considering it as interconnected among the other senses, not as the dominant sense. Both our filmed sequences including exergaming

in practice, and our ethnographic interviews about the experiences of exergaming, are informed by Pink's (2015b) multisensory approach to ethnography. The interviews are in this context treated as reflections of both representational and non-representational contents of the game, the practice and the experiences of playing.

To explore learning, as Fors et al (2013) argues, not only as embodied but as emplaced and thus investigate how 'human experiences, practices and culture figure and become interwoven in processes of learning' (p. 182) we, like Enright and Gard (2016) and Mazzei (2014), argue that we need other metaphors through which to approach our data. Since sensory ethnography is always theory laden it is in fact impossible to separate method and theory (Pink 2015b). The mycorrhizic metaphor used in the study may thus be explained both as a guide to look at the empirical material and as deeply entangled in the process of collecting this material (cf. Jungnickel & Hjort, 2014).

In relation to the use of metaphors, Cormier (2008) criticises ideas of knowledge suggesting that learning occur organically while knowledge is something independent with clear boundaries. Cormier instead argues that both learning and knowledge is organic and that botanical metaphors like the *rhizome* – as suggested by Deleuze and Guattari (1987) – could be a way to understand the fluidity and mobility of knowledge for example on the internet. A rhizome refers to the subterranean stems of a plant like irises, or ginger where the horizontal stems send out new roots and shoots from its nodes. Cormier argues that:

The rhizome metaphor, which represents a critical leap in coping with the loss of a canon against which to compare, judge, and value knowledge, may be particularly apt as a model for disciplines on the bleeding edge where the canon is fluid and knowledge is a moving target. (Cormier, 2008, p. 1).

According to Enright and Gard (2016) a rhizomatic metaphor foreground the messy and unpredictable, and as a way to understand learning it reminds us of: '... the interconnectedness of ideas, the multiplicity of possible starting points, resistance to organisational structure, disregard for boundaries and the diversity of possible learning trajectories' (p. 51). Whitton and Moseley (2013) further argue that rhizomatic learning have no centres; they have semi-independent nodes, and spread on their own while Beetham and Sharpe (2013) state that learning in this way can be seen as an organic process without clear start or end. Hence, the meta-

phor of the rhizome helps in accounting for, as Cormier (2008) argues, knowledge as socially constructed, spontaneously shaped, negotiated and social where basic parameters constantly are shifting. ‘... in the same way that the rhizome responds to changing environmental conditions’ (Cormier, 2008, p. 3).

While the metaphor of the *rhizome* offers theoretical support to discuss unpredictable, messy and embodied learning processes, we would argue that it does not in the same way offer a reasonable approach to take into account the symbiotic relations between what is apparent in our visual data and other aspects of emplacement. In relation to our study the rhizomatic metaphor seem to lack in interest in what Engeström (2007) describes as ‘invisible’ organic and mobile aspects, and in line with Engeström we suggest that the metaphor of *mycorrhiza* can be a way beyond these limitations. The fact that it is not explicitly obvious in the data does not mean it is not open for analytical scrutiny.

Mycorrhiza refers to the symbiotic relationship between fungi and roots of plants in its environment where fungi are the visible effects of the mycorrhiza. At the same time, hidden from plain view, is a myriad of mycelium threads growing in unpredictable ways with no end or starting points, functioning in mutualistic relations to plants and trees as well as the soil around it. According to Iyer et al (1980) mycorrhiza needs to be understood in relation to issues of rhizospheric mycelia, fungi, tree-fungus symbiosis and soils, as well as the development and distribution of the mycelia. So, what we see in the data (a fungus) and what we have more difficulty to unpack (the symbiosis, the growth, the mycelium threads, the soil) can by using the metaphor of mycorrhiza be a way to explore the unexpected, as in a rhizomatic approach, but also to take into account growth, the soil and ‘... the invisible organic texture underneath visible fungi’ (Engeström, 2007, p. 10). In this way we can take more aspects of multisensory emplaced learning in digital age into account in our studies in terms of symbiotic relationships between embodiment and environment (cf. Pink, 2011; Fors et al., 2013).

Empirical material

The study is part of a four-year project funded by the Swedish Research Council with the aim to investigate the meaning-making regarding the body and health taking place in young peoples’ playing of exergames. The empirical material in focus here comprises video recordings of two

university students playing Nintendo® Wii. For the purpose of this study we use Shaun White's snowboarding road trip produced for Wii and launched in 2008.

To play this game, two male athletes, 21 and 24 years old with long experience from other sports (taekwondo and soccer, respectively) were chosen on the basis of their previous physical experiences.¹ They were both habituated to physical activity and sports, i.e. they had previous experiences from this type of sport. They had played videogames before, but they explained this practice as having minor importance to them in their present daily lives. For confidentiality reasons, their real names are concealed.² Our participants, Victor and Josh, were instructed to play the game from its beginning to its end, and our research interest in the sensory experiences of gaming was made clear.

The research participants were filmed by the first author of this study on various occasions during four days including the early attempts of the game and final tries in their favorite courses. They were also interviewed as an attempt to grasp their verbal explanations of the experiences of their gaming. The data produced for this study consist of 127 minutes of filmed gaming practices and 29 minutes of filmed interviews.

Data analysis

In the study we use the five mycorrhizal concepts presented earlier in four analytical steps. In our process each concept was first used separately. During the process we realised that the concepts growth and mycelia were difficult to separate in our data and as a consequence these concepts were analytically dealt with in one and the same step. The results are presented in terms of three different routes. These routes are the results of all four steps and represent the symbiosis of the routes and roots to knowing.

In the *first step* we identify the visible – the fungus – in the ethnographic data. The fungus is the visual and verbal representational elements in relation to the purpose of the paper like images of the Eiffel tower or Mount Fuji, and the clear use of specific language from snowboarding such as grip, rails or spin.

¹ Josh had played soccer in a club since he was five, but was now at the age of 25 only playing for fun with friends. Victor, 21, held a title in taekwondo. He exercised this sport several times a week and also functioned as a coach for younger adepts.

² Consent to use the images and the video for this publication was obtained from both participants.

The *second step* investigates the soil in terms of the social and cultural context that the identified representational element is part of or enmeshed with. In this step the results from step one is explored in relation to contextual elements identifiable in the empirical material as well as in relation to the contexts of gaming and snowboarding.

In the *third step* growth and mycelia is explored in terms of the routes and roots of knowing. These concepts are difficult to separate in our data so both concepts are handled in the same step to identify in what direction the results from step one and two is taking in terms of knowing and learning. The roots of this ‘movement along’ certain lines of knowing expands and grows in expected and unexpected ways. This can be illustrated by which different previous experiences gamers re-actualise in the situation and in which possible directions these experiences take in on-going gaming.

In the *fourth step* the symbiosis of the fungus, soil, growth and mycelia is focused in-depth in terms of how they engage, negotiate and connect in symbiotic relations. One example of this is how the digital game evoked feelings of awe when the avatar was airborne in the game. In this step we also scrutinise symbiotic relations beyond the obvious in the specific data considering reasonable symbiotic relations part of the mycorrhiza but not necessarily clearly identified in the verbal or visual. The symbiotic relations particularly draw on the idea of emplacement with its entangled and enmeshed nature (cf Fors et al., 2013; Ingold, 2000; Massey, 2005; Pink, 2011).

The data was analysed by all four authors of the paper, first separately and then together, where all four steps were deliberated about and then categorised into different routes to knowing. Through this process we tried to establish credibility of our analysis through a deliberative process where we endeavoured to minimise any bias from one singular researcher and open up for a range of voices (cf. Goodyear et al., 2019; Kvale, 1995).

Results – three routes to knowing formed through game-play

The multisensory emplaced engagements with digital technology show particularly three routes through the game: i) a social and cultural route, ii) a competitive route focused on achieving and iii) an experiential route

including experimental elements. The three routes unfold in this text as parallel traces; in practice however, they are far from separate. On the contrary, they must be considered as intricately interwoven and entangled as mycelia with soil. In the following, for clarity, we will still address the routes one at a time. The three routes are also illustrated with edited visual data in order to give a fuller illustration of the three routes (VIDEO).

A social and cultural route

Taking the social and cultural route through the game is by no means a surprising way to go. Movement in geographical space is what structures this game. The cover of the game entices future players with the words: ‘Go on an exciting globetrotting adventure with Shaun White as your partner. The mountains are all yours!’ Geographical locations are places to visit, but also to move through or in. As such they become what Thrift calls ‘movement-space’ (Thrift 2007). Contrary to airports in real life, which have been discussed as non-places and non-events (Pütz, 2011) and spaces of constant flow (Castells, 2010), the airport transit hall in the



Image 1. In-game airport transit hall

game is the only consistent location to where the snowboarding avatars return (see image 1). The airport transit hall has large windows facing imagined runways and has a number of seats for probable passengers.

The only ones present however are the avatars of the game in their snowboarding outfits sitting in slithered positions, sleeping, chatting or playing video games. This is also the place where the prize for being the World champion – the golden cup – shows up once it's achieved. Speaking with our mycorrhizic approach the *fungi* are abundant at the airport, and so is the *soil*. The visual representational elements, such as the cup, clothing, goggles and the Nintendo® gamepad are characteristic *fungi* growing in the social and cultural *soil* of both snowboarding and game playing (cf. Freeman, 2003; Grodal, 2003; Parmett, 2015; Thorpe, 2004).

The goggles are particularly interesting *fungi* here as they are both a visible representational element strongly rooted in the snowboarding *soil* (Bäckström, 2005; Sisjord, 2012; Thorpe, 2004, 2012), and devices to look through that provide filtered sensory information when snowboarding in real life. On the cover of the game the goggles also mirror the snowboarding practice where layers of looking at snowboarding performance appear in the reflection. The prominence of the visible and the visual in snowboarding are thus highlighted and a clear *symbiosis* between cultural values in snowboarding (Thorpe, 2012) and the marketing of the game (see image 2) can be traced. We look at the cover and Shaun White looks at us looking at him. We see snowboarders in the reflections of his goggles and can assume that this is what he is looking at, behind our backs. This intricate practice of looking and reflecting with clear representations of snowboarding culture may be termed a root to knowing, which forms our understandings (as researchers) of the social and cultural route the gamers may take.

However, neither Victor nor Josh have visited mountain resorts similar to the areas presented in the game. They are by no means familiar with the snowboarding lifestyle and the transnational snowboarding migrants of the FIS world cup (cf. Heino, 2000; Hoffmannová et al., 2016; Humphreys, 1996; Thorpe, 2012). When asked how to recognize or how to differ between the countries, Victor point at visual national symbols such as the flags and also at what can be heard such as what languages are spoken by the commentators. Both the flags and the languages spoken are certainly visible and audible *fungi* along this route.



Image 2. Game cover

Victor: 'There are flags along the courses. And at least in Sweden, the commentator speaks Swedish. Well, in the other countries too.'

Other national symbols are also recognized by Victor. In London Big Ben is visible, in Paris the Eiffel tower and in Japan the mountain Fuji.

As an athlete in his sport, Victor visited Japan recently and recognized the environment in the game.

Victor: 'Yes, the mountain. Yes, I recognize that. We visited the area at the rear where the mountain is. And the sea, I recognize that too. That's what I recognize the most. And I got a feeling, I have been there, that's the feeling I got'.

The pleasure of recognizing the landscape in the background added an aesthetic dimension to gaming for Victor, which also made the game meaningful to him (cf. Maivorsdotter et al., 2015). This cultural *soil* not only supported further playing, but can also be understood as the roots and the *growth of mycelia* along which the social and cultural route moved.

Victor and Josh have very little experience from any winter sport although both have lived their entire lives in Sweden where winter sports are popular. When asked to describe snowboarding as presented in the game, to someone who does not know anything about the sport, Josh points at the roots of its audacity and diversity.

Josh: 'Snowboarding is an adventurous sport with different branches, almost like track and field'.

From the comparison with track and field he moves on to re-actualising the roots of another board sport, surfing. The similar roots between these two physical activities seem probable to him (cf. Ford & Brown, 2006). As Victor and Josh both lack previous experience from snowboarding, they pay little attention to the high status of belonging to the globe-trotting snowboarding community when confronted with the social and cultural *soil* of the snowboarding game. Instead, they refer to other social and cultural representations that they are familiar with. To them, without previous experience from snowboarding culture, this route, although unquestionably both social and cultural, is nurtured by different elements in the *soil*, rather expanding from the social and cultural *soil* of taekwondo and soccer.

Josh: 'It's the game which is similar [in all the countries and in all the courses]. Then it's the atmosphere. All countries have different culture.

Åsa: 'You think about soccer now?'

Josh: 'Yes'.

Åsa: 'Does it look like this in Taekwondo too?'

Victor: 'Yes. As a matter of fact, the form of the game, the mats look the same, the arenas and the stands. But the culture and the atmosphere are different in different countries'.

In their respective social and cultural route through the game, they both overlook the cultural representations (*fungi*) with its roots in snowboarding. Instead, Josh and Victor replace the apparent snowboarding representations in the game with personal previous sporting experiences and prior travel experiences in their joint description of similarities and differences. In this way their movement along the game can be described as a *symbiosis* between *soil*, *mycelia* and *growth* different than maybe intended by the marketing of the game (see image 2).

A competitive route focused on achieving

Another way that our research participants moved through the game was by taking the competitive route (VIDEO). It was a route largely afforded by the game through the logic of gaining points, achieving prizes and unlocking new courses (Griffin, 2005; Maivorsdotter et al., 2015). Representations of progression through the game are displayed on the screen

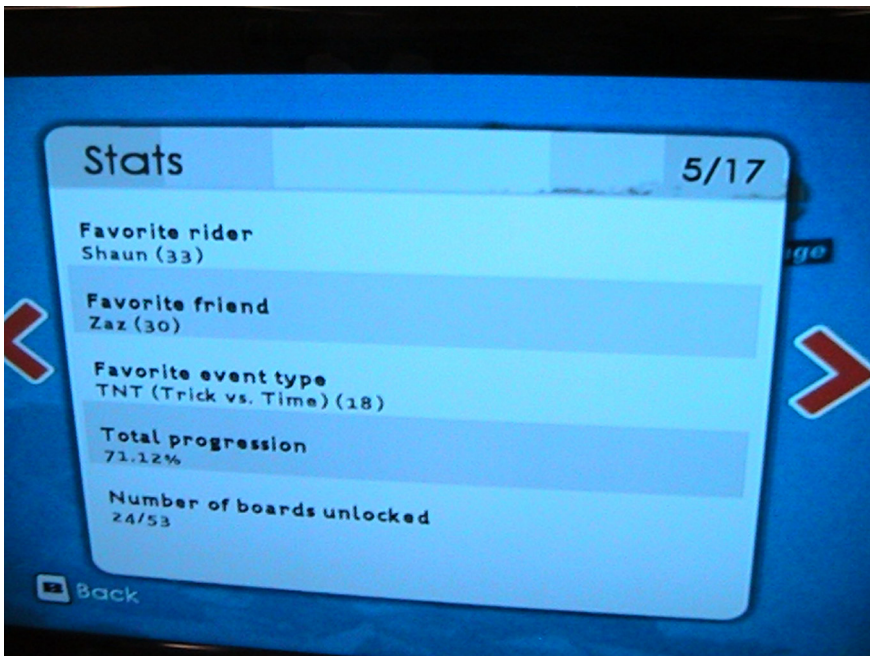


Image 3. In-game stats section

where the players' 'world ranking' is shown (see image 3). Advancing through the game by unlocking courses (26 in total), avatars (13 in total) and snowboards to use (53 in total), as well as moving up in ranking are all achievements, which are measured quantitatively. These measurements are obvious *fungi*, i.e. visual representational elements along this route. These accomplishments were recorded and listed in the so-called 'stats' section. For instance, after 7 hours, 3 minutes and 10 seconds, Josh and Victor had performed the trick called Indy 151 times and executed 228 double tail grabs, tricks firmly embedded in snowboarding *soil*. The stats could be obtained on a screen in the airport transit hall.

Both Josh and Victor quickly adjusted their way of gaming to cater for this logic. In fact, their gaming turned instrumental towards maximizing their scores already during the first hours of playing. In their conversations they rapidly address the scores, and particularly the lack of points hindering them from advancement.

Victor: 'Did you receive zero again?

Josh: 'Oh, yes' [with an ironic tone].

Later on they finally succeeded in achieving the needed amount of points to move further in the game, and they express great relief.

It may be argued that the competitive route reflects a linear design of the game in its logic of counting points (Griffin, 2005). Following Freeman (2003), this design both seems conceptually interesting and provides emotional response to support further playing. To begin with, they took turns in using the balance board when they did courses where both of them could ride at the same time, and they engaged in a quite sophisticated cooperative practice of trial and error helping each other regarding which movements to make and what buttons to push.

Josh: 'Do you have to push hard or...?'

Victor: 'I think you have to push A. I always hold...?' [moves Wii remote upwards].

Josh gets off the balance board and reaches for the Wii remote which Victor hands over to him.

Victor: 'Try to hold A. When you do the tricks you need to...?' [twists the motion controller to the right then to the left].

In the above example the practices of pushing, twisting and turning, as well as the joint working out of what to do and how, illustrate the roots of knowing deeply enmeshed in a quite behaviouristic *soil* of gaming.

These roots are intricately interwoven in the formation of the routes. Further underpinning the competitive route, Victor and Josh abandoned the balance board as a more effective way of advancing through the game. Instead they exclusively used the handheld motion controllers to manoeuvre their avatars. At the same time, this strategy minimized their physical movements and discontinued the engagement with the game through the specific technology simulating snowboarding activity. To them it was a choice made for better accomplishments in the game rather than experiencing the roots of the sensoriality of snowboarding (Christensen, 2001; Thorpe, 2011).

As previously mentioned, taking the competitive route was afforded by visual representational elements in the game (*fungi*). Moreover, our research participants' competitive sporting background also provided a fertile *soil* for this chosen route.

Josh: I have played soccer all my life and I follow a lot at sport. I am very competitive. So I really want to be as good as possible. Succeeding with the jumps, scoring the points contains some kind of satisfaction ... which is hard to find anywhere else, except in sports. It is the aspect of competition. It doesn't have to be against someone else, it could also be in relation to your own achievements.

It took our gamers less than seven hours of playing to win the World cup (see image 4). In other words, moving from novice to expert along this parameter was a fairly quick achievement. This indicates that the game *per se*, apart from affording a competitive route focused on achieving, also indicates an expectation of achievement in a fairly short stretch of time contrary to the difficulties connected with learning to snowboard. In the game, there is diminutive risk of failing as long as playing is persistent. Their experiences from other sports, the behaviouristic logic of the game and competitive aspects of snowboarding should thus be understood as part of the *symbiosis* of their emplaced learning.

Even though winning the World cup was the explicit goal for our research participants, Josh and Victor continued to gain points in order to defend their title. Part of the competitive route focused on achieving is furthermore the choice of riders, friends and their powers, as well as the choice to combine skill of the avatar and difficulty of the course. These options affect the ease with which to gain points. While Josh had no trouble adjusting his prerequisites along this route endorsed by the logic



Image 4. Participants winning the World Cup and finishing the game

of achievement, Victor did, and jokingly accused Josh of cheating when he continuously chose Shaun White as an avatar.

Åsa: 'Has Shaun become the new favourite?'

Josh: 'Yes'.

Victor: 'Yes, he likes to cheat.'

Åsa: 'What do you mean by that?'

Victor: 'When you use an avatar that's good at almost everything. An over powered avatar. OP.'

Accordingly, advancing along the route of the game in terms of achieving may mean achieving skilfully, or achieving the easiest possible way. These variations of the competitive route indicate a way to willingly complicate the game on an individual level, as a way to make it more interesting.

An experiential route

The third route through the game is the experiential *route* characterised by sensing and, in so doing, also testing various movements and interactions with the screen content and the technology (VIDEO). Although it would be easy to describe the experiential interactions as more prominent when Josh and Victor were still using the balance board, this explanation is too hasty. As we will show, the Wii remote also encouraged the experiential route. The route has different aspects involving the contra-

dictory denial of sensory experience, yet interacts with the whole body and shows extraordinary connections.

DENIAL OF SENSORY EXPERIENCE ...

Reflecting on their game-play, our participants maintained that they did not sense anything in their bodies while playing. The snow, the speed, the inclinations of the slopes, falling and getting covered in snow – they expressed ignorance to all types of physical sensations in relation to what they experienced through gaming. Although familiar with winter conditions, and habituated to compensate bodily movement when slipping and sliding in the streets, Josh lend weight to his words when he agreed to Victor's denial of any sensorial input from imagined physical movements in the colder climate on the screen.

Victor: 'No, you don't get a feeling of that. It's not like I'm freezing or anything'.

Not even the tiny patches of ice in one of the slopes are 'sensed', although the avatar is increasingly difficult to manoeuvre on ice in comparison to the snow in the same slope. Further, Josh talked about friction and the absence of it as a way to explain what happens in the game. Victor spoke about balance and the direction. He also spoke about the grip, crucial to anyone who is familiar with downhill skiing or snowboarding (Thorpe, 2011). Grip in our analysis is a verbal *fungus* with its roots deeply entrenched in snowboarding *soil*.

Josh: 'Gripping. It becomes very different when that happens. It becomes easier to turn. You have to take that into consideration.'

Åsa: 'How do you notice? Do you sense that in your body?'

Josh: 'No. It doesn't feel a thing'.

Accordingly, if there is such a thing as a specific experience with roots in snowboarding (Thorpe, 2011), it is not present for our research participants. Their experiences of the sensorial aspects of the game clearly opposed customer reviews of the game, where for instance Mellowspaz pointed at the similarities between gaming and snowboarding.

'I've snowboarded for several years and with the balance board, Shaun White Road Trip feels surprisingly true to snowboarding. This isn't a simulation of snowboarding obviously, but for fitness fanatics, you're going to have a fun workout when playing. I can actually feel the same

muscles burn, as I would from snowboarding, after a 3 minute run.' (Mellowspaz, November 19, 2008).³

In a similar vein, PT Cruiser, praised the sensorial aspects and engagement of the game.

'When you go flying down the slopes on your snowboard (aka balance board), I swear you can almost feel the rush it in the pit of your stomach [sic], it's that much of a total immersion.' (PT Cruiser, November 16, 2008).⁴

Customer reviews may of course be part of marketing practice and they are difficult to judge in terms of trustworthiness; however, as detached voices from a place of promotion they are interesting as indicators of the *soil* where the game's intention and potential is clearly rooted (cf. Burton, 2003; Christensen, 2001; Thorpe, 2012). The expected *symbiosis* thus end up in nothing.

... YET INTERACTING WITH THE WHOLE BODY ...

Despite denial in their verbal utterances of sensory experiences, the data clearly shows how our research participants interact with the visual content on the screen through their bodies and the technological devices. For example, Josh stood on the balance board, moved his feet forwards and backwards, flexed them and in doing so also bent his knees (see image 5). Josh bounced his whole body on the balance board in order to make his avatar jump on the screen. Although leaning the upper part of the body does not really affect the balance board, he swayed, tilted and rocked. Simultaneously, he moved his right hand holding the pink Wii-remote up and down with the intention of manoeuvring the avatar, his eyes fixed on the screen and what happened there. At one point, he lost his balance and fell off the board when using his whole body to try to do a steep turn. The interaction between the balance board, the screen and Josh's body was unmistakable and clearly rooted in body-screen gameplay (cf. Bogost, 2007; Griffin, 2005).

3 http://www.amazon.com/Shاون-White-Snowboarding-Road-Trip-Nintendo/dp/B001BrW3KM/ref=sr_1_1?s=videogames&ie=UTF8&qid=1454922797&sr=1-1&keywords=shaun+white+road+trip

4 http://www.amazon.com/Shاون-White-Snowboarding-Road-Trip-Nintendo/dp/B001BrW3KM/ref=sr_1_1?s=videogames&ie=UTF8&qid=1454922797&sr=1-1&keywords=shaun+white+road+trip



Image 5. Participants during game-play

In our mycorrhizaic vocabulary, Josh and Victor draw on the gaming *soil* to reflect on playing the game and relating to its content. They describe

it as more of an arcade game than a game that mimics experience (Freeman, 2003).

Josh: 'For us with no experience from snowboarding it is not easy to detect what comes from snowboarding. Maybe if the game had been more of a simulation we would have picked up the characteristics better'.

Conspicuously, on the specified question about what they had learned about snowboarding from the game, they talk about physical movement, not the social or cultural content. Although pointing out that because of their inexperience from snowboarding in real life, the physical movements described and learned from the game may not be comparable to 'real' snowboarding.

Victor: 'I have learned, maybe it's like that for real, that if you want to turn you should stress the weight on your back foot and then lean a bit backwards or forwards'.

Clearly, the intention of the balance board is to come at least a little bit closer to simulating snowboarding in real life. However, as Bogost (2007) suggests, new technology such as a balance board in this case, does not automatically render playing more meaningful or enhance the experience of playing in terms of narrowing the gap between actions by



Image 6. Josh illustrating his favorite course as majestic



Image 7. Josh's choice of representational image

the players and the emotional, social or cultural *soil* of the gaming. Josh and Victor certainly exemplify this.

... AND SHOWING EXTRAORDINARY CONNECTIONS

The experiential route is also prominent in Josh's way of highlighting his favourite course as 'majestic', further explained as 'grandiose'. In our analytical frame, 'majestic' and 'grandiose' are verbal representational elements, *fungi*. His favourite course is one of the courses involving a big jump that consist of a singular track where the rider speeds up towards one large obstacle from which the rider flies off to perform as many nice looking tricks as possible during airtime followed by a solid landing. This practice has its roots in the discipline big-air included in the snowboarding world cup calendar.

Josh: 'I like it because you are in the air for a long time. It feels majestic to be in the air for such a long time. And you have the opportunity to do as much as possible in the air, so if you succeed with your tricks it is very comfortable'.

Asked to explain what majestic implies to him, Josh talks about something that is out of the ordinary. Both the verbal description and how the avatar is visually portrayed comprise a floating-in-air-movement (see images 6 and 7). It embraces weightlessness. The majestic could certainly indicate connecting *mycelia* from the snowboarding *soil*. The airborne snowboarder is a manifest visual representational element which we have mentioned previously, an obvious *fungus* as in the reflection in Shaun White's goggles from the cover of the game (cf. Bäckström, 2005; Christensen, 2001; Thorpe, 2004).

Consequently, some of the representational elements in the game infer the majestic lightness sought after by Josh. Other representational elements do not support the multisensory emplaced learning in the same way. This indicates that the *growth* and *mycelia* of their game-play rather can be traced through their roots as emotional responses to gaming (Grodal, 2003) instead of emotional responses of snowboarding (Burton, 2003; Thorpe, 2011). However, it is also reasonable to assume that the extraordinary for Josh also can be traced to other roots, undetermined by the data in this research project.

Conclusion – on symbiotic relations and movement through mediating technology

This article set out to explore the routes and roots to knowing during game-play of a snowboarding game intrigued by questions on learning raised in the wake of the increasing mediatization and digitization of learning (e.g. Favero, 2014; Villi & Stocchetti, 2011). Parallel to this we responded to scholars who argue for more suitable metaphors for learning to respond to the entangled learning processes that current societal changes related to the increase of digital media may necessitate (e.g. Cormier, 2008; Engeström, 2007; Enright & Gard, 2016). Using a short term sensory ethnography approach (Pink & Morgan, 2013), we elaborated on the idea of multisensory emplaced learning in line with Fors et al (2013) and proposed a mycorrhizal conceptualisation to both methodology and learning. We developed our thinking around botanical metaphors to emphasize the organic understanding of learning and knowing (cf. Cormier 2008), and in line with Engeström (2007) we suggested the metaphor of *mycorrhiza* to be able to describe 'invisible' organic and mobile aspects. The 'invisible', we argued, was just as inter-

esting and open for scrutiny as the ‘obvious’. With respect to previous research drawing on rhizomatic conceptualisations (Deleuze & Guattari, 1987), we acknowledged the fluidity and mobility of knowledge without centres (Beetham & Sharpe, 2013; Whitton & Moseley, 2012), as well as the messy and unpredictable learning processes (Enright & Gard, 2016, p. 51). However, by rather elaborating on the mycorrhizaic concepts fungus, soil, growth and mycelia we were able to discern and take into account, and even stress the symbiotic relations between what appeared in our empirical material as visual and other human and non-human aspects of emplacement. The mycorrhizaic conceptualisation also has the advantage of highlighting symbiosis, thus indicating dependency and synchronicity.

With the mycorrhizaic concepts, which are both playful and complex, we could fruitfully describe apparent fungi in the social and cultural snowboarding soil, such as the goggles. We were also able to outline certain mycelia in various soils, such as how our research participants’ previous cultural sporting experience informed and spontaneously shaped their understandings, and their competitive experience which lead them to respond to the measuring logics afforded by the game. In exploring game-play of a snowboarding game we have shown three ways of moving through this game: a social and cultural route, a competitive and an experiential. The social and cultural route indicates the formations of knowing in relation to social and cultural contexts, not necessarily the intended or expected ones. The competitive route through the game was afforded by the logic of the game, but also by the players own motivation. The experiential route, verbally denied yet visually apparent in the data, became a contradictory route in various ways. Obscured in oral statements, this route even risked to be overlooked if the study were based on interview data only. In other types of empirical material, however, the experiential route was clearly demonstrated. For instance, emplaced physical interactions showing multisensory engagements were distinctly visible in the filmed sequences. The routes, as previously mentioned, shall not be considered separate from each other, rather we suggest that they need to be understood as part of a messy, unpredictable, fluid and thrown-together process of learning, as multi sensory emplaced learning (cf. Fors et al., 2013).

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