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To cite this article: Johan Öhman, Marie Öhman & Klas Sandell (2016) Outdoor recreation in exergames: a new step in the detachment from nature?, Journal of Adventure Education and Outdoor Learning, 16:4, 285-302, DOI: [10.1080/14729679.2016.1147965](https://doi.org/10.1080/14729679.2016.1147965)

To link to this article: <https://doi.org/10.1080/14729679.2016.1147965>



Published online: 25 Feb 2016.



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Outdoor recreation in exergames: a new step in the detachment from nature?

Johan Öhman^a, Marie Öhman^b and Klas Sandell^c

^aSchool of Humanities, Education and Social Sciences, Örebro University, Örebro, Sweden; ^bSchool of Health and Medical Sciences, Örebro University, Örebro, Sweden; ^cDepartment of Geography, Media and Communication, Karlstad University, Karlstad, Sweden

ABSTRACT

A new teaching aid—exergames—is increasing in popularity in schools and is regarded as an interesting, varied and effective way of improving students' fitness. These exercise television games often contain references to physical activities carried out in different outdoor landscapes. The purpose of this article is to examine the views of landscape and nature offered by the games and the consequences this may have for students' relationships with nature and future environmental commitment. The methodological approach used is companion meaning analysis: the meaning of nature that follows when playing the games. The results show a controlled landscape that is perfectly arranged for the activity (functional specialisation). It is an obvious anthropocentric base and commands an instrumental value where nature is valuable because it satisfies our felt preferences (demand value). Exergames can thus be seen as a further step in an ongoing detachment process from the physical landscape (indoorisation).

KEYWORDS

Exergames; Wii; environmental concern; physical education; the concept of nature; environmental ethics

Introduction

In recent years a sub-group of computer games and television (TV) games, called exergames from a combination of 'exercise' and 'games', has been promoted as an entertaining and effective way for schools to develop students' physical activity and health (Chen, 2013; Ennis, 2013; Papastergiou, 2009). Even though the games are not primarily designed for educational purposes, they are increasingly used as teaching aids in schools in various countries (e.g. Australia, Canada, the United Kingdom, the USA and Sweden) as a modern way of doing physical training (Quennerstedt, Almqvist, Meckbach, & Öhman, 2014; Vander Schee & Boyles, 2010). Ennis (2013) points out that 'developers, teachers and epidemiologists have held high hopes for exergaming to provide a central activity in public health-oriented PE curricula' (p. 154).

Many of these exergames contain clear references to outdoor activities and take place in a 'natural' environment. What we want to highlight in this article are the possible consequences for students' views of nature if these games replace outdoor activities in schools. Of course, the purpose of the games is not to foster a specific approach to nature. Rather, the overall message in the advertising blurb is that they provide beneficial and enjoyable ways of exercising. However, due to the fact that the games are performed interactively with nature, nature plays an important role in many of the games and thereby affects the activities. Additionally, in order to learn to play the games you also have to learn how nature behaves in them, and how you can interact with it.

For example, the player must consider the cross-wind when cycling and the waves when paddling. John Dewey realised the significance of the kind of 'extra' learning that accompanies the learning of content in a school subject or an activity, and called it 'collateral learning':

Perhaps the greatest of all pedagogical fallacies is the notion that a person learns only the particular thing he is studying at the time. Collateral learning in the way of formation of enduring attitudes, of likes and dislikes, may be and often is much more important than the spelling lesson or lesson in geography or history that is learned. For these attitudes are fundamentally what count in the future. (Dewey, 1938/1997, p. 48)

Similarly, Douglas Roberts emphasises that the messages, for example about nature, that are communicated through collateral learning 'may not have been *deliberately* selected, but their message and socialising influence are no less powerful for that' (1998, p. 11; original emphasis). Our starting point is thus that many exergames communicate messages relating to what nature is, how it behaves and our relation to nature, and thereby potentially socialise the player in a certain direction with regard to attitudes and approaches to nature; that is, way of acting that embraces certain values and interests. The purposes of this article are thus to highlight this potential socialisation, to examine the approach to nature offered by exergames used in schools and to discuss the consequences of this with regard to students' relations to nature. This interest is motivated by the recurring promotion of encounters with nature as a prerequisite for environmental commitment (Beery, 2013; Johnson & Manoli, 2008; Liefländer, Fröhlich, Bogner, & Wesley Schultz, 2013; Mannion, Fenwick, & Lynch, 2013; Sandell & Öhman, 2010; 2013; Sevillano, Aragonés, & Wesley Schultz, 2007; Wells & Lekies, 2006).

In our methodological approach we have found it important to adopt a situated, dynamic and process-oriented concept of nature, rather than a static one in which nature is understood as a particular place or as specific organisms (cf. Nash, 1967/1982; Worster, 1993). In order to analyse which nature and landscape relations the games offer, we have used a method known as companion meaning analysis (CMA) (Roberts & Östman, 1998) and adapted this to studies of TV games. In the analysis, the simulated landscapes of the games and the use of the landscapes are related to an ecostrategic conceptual framework for different landscape relations (Sandell, 1988, 2006, 2007). Moreover, an environmental ethical contextualisation is conducted with the aid of an environmental ethical framework developed by David Kronlid and Johan Öhman (2013). In the discussion, our results are related to an environmental historical perspective of the increased detachment of outdoor activities, nature tourism and outdoor education from the physical landscape—tendencies that have long been evident in sport but that are now accentuated with regard also to these areas (Sandell, Arnegård, & Backman, 2011). The discussion is concluded by a focus on environmental education, where the nature relations that these games offer are compared with outdoor activities involving a more direct encounter with nature. Examples here include the gains and losses when outdoor activities are detached from the physical landscape with regard to students' future environmental concerns.

Previous research about exergames

Computer games and TV games (of which exergames are a sub-group) have played a large part in the lives of children and young people for some time (Staiano & Calvert, 2011).¹ Research concerning the content analysis of computer games and TV games has largely focused on traditional gender roles and violence (Dietz, 1998; Lee & Peng, 2006). Brand, Knight, and Majewskis (2003) conducted a quantitative study in an attempt to understand the textual landscape of the games. They investigated the games in terms of outside/inside environment and described how the weather in the games is portrayed (percentage values of clouds, sun, fire, fog and rain).

There is a considerable amount of research pointing to the benefits of including exergames in school contexts for improving physical activity and health (e.g., Papastergiou, 2009; Staiano & Calvert, 2011). Recently, a special issue of 'Exergaming in Physical Education' (2013) was published

in the *Journal of Sport and Health Science*, covering the effects of physical activity and its physiological benefits when playing the games. Papastergiou (2009, p. 603) argues that those games 'may improve young people's knowledge, skills, attitudes and behaviours in relation to health and fitness'. In this research, exergames are promoted as an enjoyable tool that complements other physical education activities (Papastergiou, 2009) and Thin (2010) argues that exergames are enjoyable because they are exciting and competitive. Quennerstedt et al. (2014) carried out a systematic review exploring the arguments for and against using exergames in school settings found in popular and research texts. They show that the idea of using exergames in physical education is to counteract the growing problem of child obesity, which in turn threatens the health of the population. By using exergames as an energy-consuming and enjoyable physical activity, it is argued that both a behaviour modification and the establishment of good healthy habits can be achieved.

There seems to be significant agreement in the research community that the introduction of exergames as a teaching tool is a positive thing for students' learning as well as their health (Ennis, 2013). An exception is Öhman, Almqvist, Meckbach, and Quennerstedt (2014), who critically examine the messages about health and body that emerge in the games. The results of the study highlight the dangers of using exergames in the teaching of physical education in schools. The messages communicated by the games have a number of potentially harmful consequences, particularly with regard to the creation of specific health and bodily norms based on a measurable ideal. The authors argue that the use of this tool in education is far from value free, and the problems that might be solved when using the games are not necessarily those that education should privilege.

However, Ennis (2013) claims that there is a lack of studies concerning potential learning outcomes and points out that no studies address the learning possibilities or the knowledge-oriented educational goals that are central to educational approaches to physical education. Research in this area has so far neglected to explore the consequences of the introduction of exergames as a teaching aid in school, or critically discuss their use in terms of educational values and student learning (Ennis, 2013). No studies have specifically looked at encounters with nature and the approach to nature that these games offer from an eco-educational perspective. Answering the call from Ennis to further explore the educational aspects of exergames, this article critically examines what approaches to nature are offered by the games.

The concept of nature

The concept of nature is culturally defined. What different groups in different time periods and in different situations claim as 'nature' varies, and in the current industrial society it is often argued to be something very precisely located in space (e.g. a nature reserve). But when studying nature experiences in exergames we believe that the concept of nature should not be viewed as a specific place or something totally separate from the human world, but as an aspect of most of our everyday life experiences. In any landscape (a forest, a shopping centre, a mountain area or a suburb with houses and gardens) aspects of both nature and culture are present. Even though nature is much more apparent in a forest than in a shopping centre, it is nevertheless present in the mall in terms of aspects such as physical laws like gravity, biological aspects of the human body like fatigue or thirst and the weather-dependent sunlight from the roof windows. What is nature is then a question of elements and processes in every environment. Even a motor vehicle, so obviously created by humans, involves aspects of nature in terms of many elements and processes that only to some degree are controlled (exhaustion of metal, physical laws, microbes in the fuel tank, etc.). This complex and blurred situation is of course further emphasised if interaction with a human driver is considered. In short, a running vehicle is an intricate mix of nature and culture. Instead of nature the concept of landscape is often preferred, with nature regarded as an integral part. An important consequence of this is that nature's presence can be experienced in all kinds of

environments, and that a central pedagogical point of offering students experiences in a 'free' or 'wild' environment could be to make this aspect of nature's continuous presence obvious and to be looked for also in other environments.

Consequently, for the analysis presented in this article, the concept of nature is understood as the uncontrolled aspects of elements and processes that create our world (Sandell, 1988; cf. Buijs, 2009; Cronon, 1995; Macnaghten & Urry, 1998; Whatmore, 2002; Worster, 1993). An inclusive nature concept like this then implies that different landscapes—environments—will always be characterised by nature to some degree or other. Based on this, and bearing in mind the computer-based landscape relations such as those found in exergames, from an educational perspective it is quite different to experience nature via a direct physical landscape relation (e.g. walking in the woods), a distanced landscape relation (e.g. looking at the forest through a window), a virtual landscape relation (e.g. a computer game set in a wooded area) and a media-based landscape relation (e.g. a TV programme about a forest). All of these landscape relations have very different qualities and could serve different educational purposes, but it is not very easy to draw a clear-cut line saying 'this is an experience of nature but that is not an experience of nature'. In short, this is an acceptance of the cultural construction of the concept of nature and shows our preference for a landscape perspective with an intertwining of nature and culture when discussing the relation between humans and the environment (see, e.g., Doevendans, Lörzing, & Schram, 2007; Ingold, 1993, 2011; Jones & Stenseke, 2011; Mannion et al., 2013; Massey & Jess, 1995; Tuan, 1990). We will use this concept of nature to highlight the relations that humans and culture have with the uncontrolled elements and processes in the landscape environments that constitute the educational framework of the studied games, and examples of how nature is manifested in the games will be given.

Data and analytical approach

The games that have been chosen for analysis are the two best-selling Nintendo games 'Wii Fit Plus' and 'Wii Sports Resort'. When playing these games, the player stands in front of a TV screen and carries out different kinds of physical activities by using, for example, balance boards, step-up boards and a remote control (e.g. as a paddle or a tennis racket). The reasons for choosing these games are that: they both contain a number of physical activities that would otherwise be pursued outdoors in 'nature' (e.g. cycling, jogging and canoeing; see Figure 1); these games have proved



Figure 1. Computerised nature in the form of an exergame, here jogging with the aid of two remote controls (Animation Wii Sports Resort gameplay, Nintendo).

popular in many countries and are bestsellers;² and according to a review of both the research and popular literature they are the most widely used games in schools (Quennerstedt et al., 2014).

The specific activities that have been selected for analysis take place in the same virtual landscapes in both games. These activities are jogging (different kinds), cycling and canoeing. In addition, the activity of jet-skiing has been selected. Although it is not relevant in a school context, it does contain interactions with nature that complement the other activities.

To analyse how the activities in these games interact with the images of nature and landscape and with the nature and landscape relations that are offered, we have used a method known as CMA (Roberts & Östman, 1998). Methodologically this method belongs to the family of discourse analysis. The concept of 'companion meaning' was created by Leif Östman and Douglas Roberts to describe the meanings that 'accompany' the learning aimed at by an activity. The concept is very close to Dewey's (1938/1997) idea of 'collateral learning' and grew out of an ambition to conceptualise the collateral learning that is connected to learning epistemic meanings. The method was later refined by Östman in the form of CMA, with a view to analysing companion meanings and their moral significance (Östman, 2010). The method is based on a neo-pragmatic conception of meaning-making; that is, the idea that paying close attention to language use makes it possible to get a grip of the discourse practice and thereby clarify the meanings offered (Cherryholmes, 1988). In this way, meaning-making is something that is examined as being connected to an activity and intimately linked with its rules or specific language norms. Language should here be understood in its broadest sense as not only involving written or spoken words, but also, for example, bodily expressions and pictures. Östman (2010) stresses that the point of CMA is to identify norms in an activity that is associated with the learning of knowledge and to treat them as moral in character. In other words, the purpose of CMA is to identify potential value-critical targets in education, teaching and the learning of knowledge content.

It is important to note that CMA focuses on the companion meanings offered in terms of the meanings that would most probably and reasonably follow from participating in a certain discourse practice. It does not involve the specific meaning-making of individual participants, which of course can vary depending on previous experience.

In our study we view exergames as a specific discourse practice that involves a certain language and norms. In order to learn how to play the game, you also have to learn this language and these norms. Some of these norms concern nature and the relationship between humans and nature, and it is these norms that are the focus in our analysis.

In previous studies CMA has been used to analyse textbooks where the language use is directly reachable. In this study, we use a variation of CMA that has been specifically tailored to analyses of computer games and TV games. When studying such games, you have to play the game in order to make the 'text' or language emerge in the form of moving images on the screen. Data have thus been generated by the authors playing the different exergames themselves. As methods for studying the approach to nature that is communicated in computer games and TV games through image analysis are to all intents and purposes absent in the research literature, the development of such a method can therefore be seen as a secondary purpose of this article. This method is outlined in more detail in the following.

The analysis was conducted in three steps: description, norm analysis, and moral contextualisation.

Step one: description

In step one of the analysis, the outdoor-related activities in 'Wii Fit Plus' and 'Wii Sports Resort' were played a number of times. All three authors contributed to this data collection, which made it possible to document the activities by video filming and making simultaneous notes based on the discussions that took place while playing the games.³ Using these data we then returned to the games and photographed particularly interesting sequences. These photographs then formed the

basis of a more detailed description of how nature relationships were portrayed in the games. This description was based on the following questions:

- *The formation of the outdoor landscape*: What does the landscape look like? How obvious are the cultural-natural characteristics of the landscape? How are the natural characteristics manifested? Are there any unpredictable aspects in the landscape, and if so, to what extent do these have natural or cultural connotations?
- *The player's interaction with nature* (as it appears in accordance with the above questions): What possibilities for interaction with nature are there? Are there other actors in the landscape?

Step two: norm analysis

The second step is about clarifying what is included and excluded in the games' interpretations of nature and people's interactions with nature. In this way, the analysis is concerned with identifying the norms that the games communicate with regard to attitudes and approaches to nature. A comparative strategy has been used for this analysis (see Edwards, 1997; Edwards & Potter, 1992; Fairclough, 2000); that is, the representations that are made in the games are compared with other possible and reasonable portrayals of nature. We have used two models for these comparisons: one which focuses on the motives for outdoor activities; and one that structures different nature and landscape relations.

The model of norms relating to motives describes two basically different ways of motivating outdoor experiences (Sandell & Öhman, 2013):

1. Outdoor experiences are motivated as means for different purposes, and the valuable outcomes of outdoor experiences are separated in both time and space from the outdoor activities. This is the more or less obvious point of departure for all forms of education.
2. Outdoor experience is motivated as an aim in itself, and the values are inseparably bound up with encounters with nature and the experience of various non-human forces. Here, it is not just a means for, or the achievement of, something that comes after the outdoor experience (e.g. learning ecological knowledge or gaining environmental awareness). This value dimension is directly linked to the alternative values you experience while living out-of-doors in contrast with the driving forces of modern urban life. This focus also allows for an identification with nature as a complex, living whole—the environment—including humans and culture.

In order to analyse norms concerning nature and landscape relations, we use a framework describing different 'ecostrategies' which has previously been used for discussing outdoor recreation, public access, nature reserves and so forth (see, e.g., Sandell, 1988, 2006, 2007; Sandell & Öhman, 2013). The conceptual framework is constituted with the aid of two areas of tension. The first tension area is between functional specialisation in relation to multipurpose use. This is about whether we are searching for a specific desired function (instrumental value) as the starting point for our landscape relation or whether we identify with a certain landscape and all its characteristics. The second is a tension area between actively making use of and changing the landscape versus passively (in relation to the landscape) contemplating, enjoying and coping with it. Based on this, four principal attitudes to the landscape ('ecostrategies') can be identified (Figure 2):

1. *A museum for external consumption* implies a large-scale identification of special landscape values. Attempts are then made to preserve these values by active measures such as preservation and conservation. This relates to function-specialising a landscape on the basis of specific chosen values that can be enjoyed in line with the traditions of, for example, national parks.

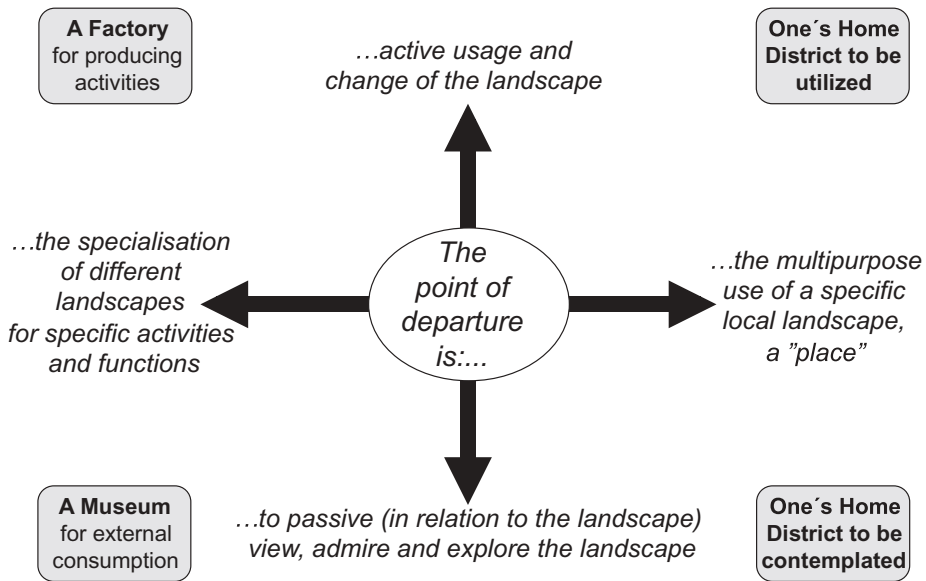


Figure 2. The points of departure for the two basic tensions in the conceptual framework of ecostrategies, and the four main landscape perspectives identified and labelled. Source: Adapted from Sandell (2007).

2. *A factory for producing activities* is about actively function-specialising the landscape and in the landscape building features in order to satisfy the practitioners of selected outdoor activities (e.g. by creating ski slopes for downhill skiing). This means that the activity is the point of departure for recreational enjoyment of the landscape and that certain pre-determined places are sought out for the pursuit of the activities (this applies to both the 'museum' and the 'factory').
3. *One's home district to be utilised* is based on the local physical and cultural landscape characteristics—a place one identifies with (e.g. where one lives)—and the landscape is seen as something that one can and ought to actively change and utilise for a variety of different purposes. Here we find traditional outdoor activities such as hunting and fishing, and picking berries and mushrooms. This is a combination of multipurpose use and the active change of a local landscape.
4. *One's home district to be contemplated*, like *One's home district to be utilised*, takes its point of departure in a specific landscape that one identifies with—a 'place' (Cresswell, 2004)—but here without actively wanting to influence and change the landscape. This is a combination of multipurpose use and enjoying but not changing the landscape. Here we find people's everyday contact with their local landscape (e.g. walking, skiing and exercising the dog). An important characteristic for both 'One's home district to be contemplated' and 'One's home district to be utilised' is that the activities are adapted to the more constant features of the landscape (hills, woods, coastline, etc.) and to more chance relations, such as those created by the seasons and the weather.

Step three: moral contextualisation

In this step of the CMA, the potential moral consequences of the descriptions and the norms identified in steps one and two are explained. This means that the identified attitudes and approaches to nature are put into a moral context and the norms are considered from different

environmental ethical perspectives. For this contextualisation, an environmental ethical analysis scheme developed by Kronlid and Öhman (2013) was used (Figure 3). This scheme is based on a compilation of central environmental ethical positions featured in the environmental ethical literature over the last 20 years. A main issue in environmental ethics is whether only humans are moral objects, and hence have intrinsic value, and nature's value is merely instrumental, or whether nature is also a moral object and has intrinsic value. This question is vital, because being a moral object and having intrinsic value means that someone's well-being, interests, health, preferences, flourishing, functions and so on ought to be taken into account beyond whatever instrumental value he or she might have. On the other hand, having an instrumental value means that things are valuable to the extent that they are means to what is perceived as being good.

The analytical questions in the scheme correspond to different environmental ethical positions in these considerations. The vertical and horizontal arrows in the scheme (see Figure 3) correspond to analytical paths used in analyses of the environmental ethical content of, for example, a text, a discussion or, as in our case, a TV game:

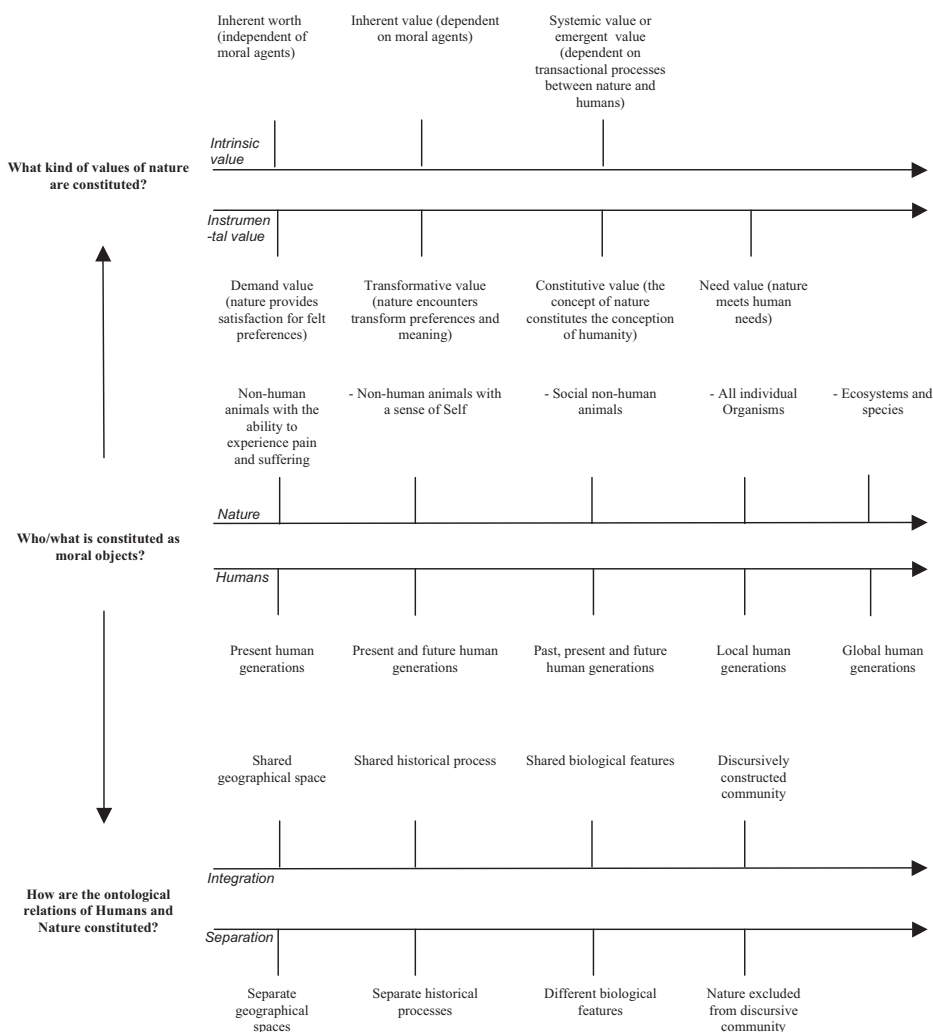


Figure 3. Analytical scheme for value-oriented environmental ethical positions. Source: From Kronlid and Öhman (2013).

- The centre horizontal path deals with the question of whether humans or nature, or both, are considered as moral objects and who or what is to be included in these categories.
- The upper path concerns the kinds of values of nature that are constituted in the analysed material and the reason for this particular value.
- The lower path describes the different possible ontological positions concerning the human–nature relationship—whether and why humans and nature are separated or integrated.

Results

Based on these three analytical steps—description of the games, including interpretation and interaction; norm analysis of motives and landscape perspectives; and moral contextualisation—the two games ‘Wii Fit Plus’ and ‘Wii Sports Resort’ have been analysed with regard to the relations to nature that they offer.

Step one: description

The analysed activities—jogging, cycling, canoeing and jet-skiing—take place on an island that has obviously been specially designed for outdoor recreational activities. The landscape is varied, with an open sea, sandy beaches, pebbly beaches, open areas, woodland groves and hills. In general, the landscape is a combination of tailored cultural landscapes, such as golf courses and urban areas with hotels, open-air cafés and streets, and natural landscapes with dramatic features such as volcanoes, the open sea, precipitous hills and rocky beaches (Figure 4). As far as we can judge, the climate is Mediterranean. The vegetation resembles that of a park or golf course, with well-clipped lawns throughout the island. Apart from the sea and the hills, all of the areas are cultivated. The countryside is stylised, like an animated film, and the colours are gaudy (like a Disney landscape). In other words, there has been no attempt to portray countryside that is realistic. Instead, the landscape clearly constitutes a backdrop for the activities. All of the houses on the island form a holiday village, and there are no other buildings in the landscape at all. No agriculture or forestry is visible, and the landscape is not used for anything other than recreation (an exception being the wind power plant). There is therefore no danger of any clash of interests while pursuing the outdoor activities. Neither is there any risk of conflict with other outdoor activities; if you are jogging on the roads there are no cyclists in the way at that particular time, and *vice versa*.



Figure 4. Approaching the resort island in the exergame ‘Wii Sports Resort’, here from a bird’s-eye view (Animation Wii Sports Resort gameplay, Nintendo).

In short, the landscape is ideal for the activities that the games offer. Nothing of nature's uncontrollability—like the weather, animals or seasons—is problematic or prevents any of the activities. The sun is always shining, the clouds are beautiful and there are medium-sized waves on the sea. Nature is exciting in so far as there is no knowing what lies behind the next bend in the river, the hill on the jogging track, the other end of the tunnel when biking and so forth. A tension that is nevertheless 'embedded' is the fact that it is a virtual landscape and that physical injuries are, in principle, eliminated. At the same time, the landscape is spatially limited; every activity must take place within a specific area that cannot be left once the game is in progress. The only activity that can be pursued is that which has been chosen and is being played. You cannot stop and study anything, explore nature or turn back if something has been missed.

As already indicated, our point of departure for the concept of nature is that it is related to that which is not controlled by humans (e.g. physical laws, biological processes, the movements and behaviour of wild animals, plant succession, etc.). But in TV games and computer games there is also a need to introduce some measure of non-control. Aarseth (2003, p. 4) writes: 'The linear structure of adventure games /.../ is unnoticed the first time you play one, and perhaps also the second or third game you play, but after a while the boredom hits, and even the most enjoyable game becomes un-re-playable'. It is therefore interesting to study how elements of surprise are incorporated into the various activities in the studied games in an attempt to eliminate 'the linear structure' by the introduction of more or less uncontrolled elements. One example is the appearance of a cross-wind when emerging from a tunnel when cycling. On the other hand, this happens every time the game is played—and a written warning appears on the screen before the wind is encountered (Figure 5).

Here follows some other observations from the descriptive step in the analysis. First we could note that nature in the form of the topography can also offer some kind of resistance, such as having to work harder when cycling uphill. An exceptionally large sea wave is also something that needs to be taken into account, and can be utilised when jet-skiing. However, resistance like this is never of the magnitude that can prevent the activity being pursued, for example that the water activity would need to be discontinued because the waves are too big. Another observation is that the player often receives reminders about his or her own bodily needs; for example, fatigue when cycling uphill and the need to drink after extreme exertion. The relation to one's own body can also be seen as a nature relation (something that to a great extent is not controlled). We can regard this as a reminder of nature's presence in the game, even though it is an encounter with nature that is not primarily linked to a traditional landscape relation.



Figure 5. The computerised landscape in the form of an exergame, here cycling with the aid of a remote control (for pedal) (Animation Wii Sports Resort gameplay, Nintendo).

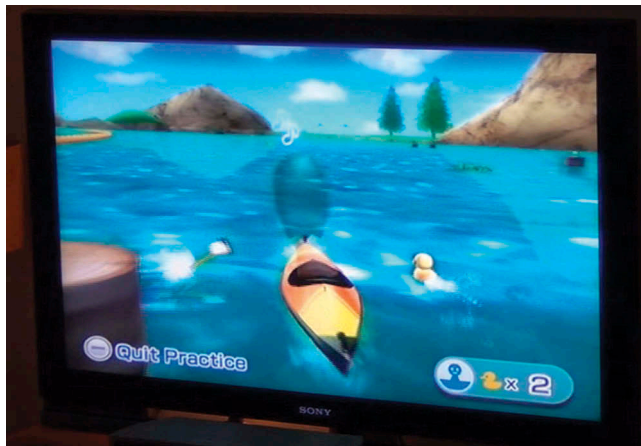


Figure 6. Computerised canoeing in the form of an exergame with accompanying ducklings (Animation Wii Sports Resort gameplay, Nintendo).

Another observation from the descriptive step of the analysis of the games is that in the canoeing activity, ducklings swim around in the water in an unpredictable way (Figure 6). They are also part of the game, in that the player is rewarded if he or she paddles close to a duckling and leads it back towards the mother duck (the situation is thus the reverse of a real situation, where one would avoid paddling too close to ducklings and risk separating the family). Other animals can also suddenly appear out of nowhere. For example, a whale appears in the distance when jet-skiing, fish jump out of the water when canoeing and dogs appear when jogging. The sudden emergence of these creatures could of course distract and affect the player but is not involved in the game and does not change the activity as presented for the player (Figure 7).

There are soundtracks to the activities as well, and when playing the games music (similar to listening to music through headphones when pursuing various activities) and landscape-related noises are heard, such as the splash of paddles in the water, ducks quacking and so forth. Also we could note that the weather is always 'fine' and is elucidated by indications of the wind's direction (converging lines) and strength (e.g. '7 m/sec'). In general, the weather is portrayed in terms of blue sky, fluffy clouds and bird song. With regard to other people, they are either seen doing their own



Figure 7. The exergame of power cruising around the resort island by sea (Animation Wii Sports Resort gameplay, Nintendo).

thing in the environment or watching an activity and encouraging or shouting a player on. As a final observation from the descriptive step in the analysis we want to highlight that the reference frames of sport and competition are very clear throughout, and the creator of the games obviously does not think that the activity in itself (e.g. physical exercise) and the experience of the games' environments (e.g. views, obstacles etc.) is sufficient motivation. Instead, competitive and ranking elements are constantly visible in the form of collecting points, counting calories or breaking one's own or other people's records.

Step two: norm analysis

With regard to the norm analysis' interest in motives, we can ascertain that in the games outdoor activities are both means and ends. They are means to the extent that they can be pursued in order to compete with one's fellow players, in which case the games became means for creating winners. Even when you play alone you are awarded points and can compare the results with your own record and the points gained by others (the system keeps track of the 10 best results). The games are also means towards a better physical status with regard to your own body, and here the consumption of energy is the measure of health. When the activity has been completed the game tells you how many calories have been burned (applies to 'Wii Fit' but not 'Wii Sports Resort'). The burning of calories is calculated on the basis of the player's weight (which can be recorded via the balance board), a value of the activity's intensity and the time taken to play the game. Calorie consumption is thus not dependent on how intensively the hand console has been turned (e.g. in order to simulate cycling). The pleasurable experience of playing the game can be regarded as the purpose of the activity. It is fully possible to disregard the above external values of points and calorie consumption and simply enjoy the challenges that are presented and develop one's own skills using the console and balance board. But even here it is not the encounter with nature—with something that is beyond human control—that is the goal, but rather the physical activity itself. With regard to motives, the outdoor educational norm encompasses exergames both as a means and an end, even if the latter is obviously something that the practitioner is expected to prioritise.

The ecostrategic norm that characterises the game is 'A factory for producing activities'. The landscapes in the games are obviously virtual constructions, although the focus of our analysis is the landscape as it appears in the game when it is played. What we are then faced with is a specialised recreational landscape format that suits the different activities and at the same time is sufficiently exciting for the player to want to return to and play the game again. The open landscape and the sparse vegetation mean that it is easy to perform the activities and to acquire an overview, at the same time as the hilly terrain means that new panoramas are constantly opening up. There are plenty of features which show that humans have transformed and/or influenced the landscape to adapt it to the actual activities or to facilitate them. For example, the tracks for jogging and cycling are designed so that you can jog or cycle around the island through tunnels, the canoeing area is demarcated by lines and buoys, grassy swards make for fine views when cycling and jogging, and well-pruned trees and bushes aesthetically frame the various onshore activities. The landscape has very few natural features that are either 'untouched' by humans or 'natural' (with the exception of the volcano island, the sea and the beaches). There is no competition between the different activities and other activities in the landscape, which further shows that this is a specialised recreational landscape, where all tendencies towards multipurpose use are linked to recreation.

In short, we have an extreme example of function-specialised landscape integration in an affected landscape that is always optimally designed to suit the activity being performed. This differs from territorial integration, where the various human and natural elements and activities attempt to share the same landscape according to the principles of multipurpose use and common land (Figure 2; cf. Friedmann & Weaver, 1979). In this way, and to use ecostrategic vocabulary, the landscape resembles a factory that produces the best prerequisites for the desired recreational

activities. The ecostrategic norms of the game offer the player a tailored landscape for the activity in question, where one can be sure that the weather, animals, climate, seasons or other uncontrolled aspects of and processes in the environment—nature—will not throw up any obstacles other than the built-in challenges that make the activity attractive (sufficiently large waves, relatively steep slopes, etc.). There is also a passive aesthetic framing in the form of backdrops, such as the horizon, mountain peaks, woods and riverbanks. If we look for parallels in the physical landscape, we can imagine a holiday resort located in, or close to, a wilderness reserve. That is, a reserve mentality (see, e.g., Zachrisson, Sandell, Fredman, & Eckerberg, 2006) where nature is either curbed or limited to specific places. In short, the dominating approach to the landscape is completely in line with the ecostrategy 'factory', with the 'museum' as an aesthetic backdrop.

Step three: moral contextualisation

What then is the environmental ethical content of the most prominent norms—the means for creating a winner, a better physical status and the ecostrategy factory—that should here produce prerequisites for recreational activities? The point of departure of the games and the landscape relation is obviously anthropocentric. It is only humans who are constituted as moral objects, and this is restricted to the present local human generation—those who visit the island when playing the game. Nature thus only has instrumental value. This kind of instrumental value can be called demand value—nature is valuable because it satisfies our felt preferences. Nature gets its demand value from its role as aesthetic backdrop and the quality of the different outdoor activities. This can take the form of active stimulation in the actual activity; for example, a single large wave that makes a long jump possible when jet-skiing, or passive stimulation in the shape of a beautiful view when cycling or jogging. Here, preferences are defined on the basis of the activity's requirements, which also allow humans to remodel nature to suit their own needs and interests. The gaming environment—the recreational island—is a very clear example of this. From the perspective of the aims of the various activities, the forces of nature are never allowed to have a limiting or negative role. In the games, humans and nature are geographically/spatially separated—nature on the holiday island is a place that one only visits to pursue the relevant activities. The separation is also historical, since there is nothing to suggest that nature and culture have developed together over time.

In short, the environmental moral message—the companion meaning—can be said to be that nature exists for humans and is something we can and ought to control and adapt according to our own preferences.

The only obvious exception to this statement is a situation in the canoeing activity, where several ducks appear as moral objects. In this sequence, as already described, the ducklings are led back to their mother. The ducks are clearly portrayed as creatures that can experience loss and love. There is a similarity here with qualities that integrate humans and nature. This creates motives for carrying out this—from the ducks' perspective—favourable action, which also gives rewards in the form of 'points'. At the same time, we can see that the 'patriarchal' role that is assigned to humans in relation to the ducklings would not be particularly realistic in terms of real ducklings in a physical landscape.

Discussion

In this study we have used a variation of CMA to examine the view of nature that accompanies the playing of exergame activities with outdoor recreation characteristics. This method has made it possible to conduct a multi-step analysis that makes the games' norms with regard to humans' nature relations visible, and that also shows the environmental ethical content of these norms. The method has been developed and adapted for the analysis of TV games and computer games, and can therefore be regarded as a contribution in itself in this article. We also maintain that CMA is not

just a useful tool in scientific studies, but that this way of thinking can also help educationalists to critically relate to 'hidden messages' in various teaching aids and textbooks (see Roberts & Östman, 1998, p. ix). However, it is important to emphasise that the method does not provide any knowledge about how the games' messages are understood by individuals. It simply makes the meanings in the games visible (i.e. what they offer in terms of approach).

Before discussing the environmental education consequences of the companion meanings of nature and humans' relations to nature which our analysis has made visible, it is important to put exergames into an environmentally historical context. The way in which exergames has transformed traditional outdoor activities into indoor activities in front of a screen with a digital landscape is not an isolated phenomenon. Rather, this can be seen as a further step in the successive detachment from the physical landscape that re-creative physical exercise cultures have undergone in parallel with the growth of the industrial society. Based on an environmentally historical perspective, modern society can be said to have been characterised by functional specialisations (cf. Friedmann & Weaver, 1979). Instead of being part of the hunt, fight, play and search for resources, sporting activities such as running, jumping, throwing the javelin or dance have been turned into specific activities with specialised rules, time limits, equipment, assessments and specially designed (often indoor) settings (Bale, 2006). However, parallel to this dramatic detachment from the physical landscape, traditions requiring uncontrolled spatial environments have also been evident. With concepts like outdoor recreation, adventure education and nature tourism, recreational-oriented and experience-oriented activities were established that were often more inspired by Romanticism's embrace of emotions and personal experiences of nature than by industrial society's functional specialisation and cultivation of nature (see, e.g., Callicott & Nelson, 1998; Nash, 1967/1982). Now, strong signs seem to indicate that these borderlands are being dramatically 'renegotiated' in the form of multipurpose, lifestyle, risk and action sports. Also, more and more activities that were previously only carried out in outdoor natural landscapes are now also pursued in specially designed indoor milieus; a process that is sometimes labelled 'indoorisation' (Sandell, Arnegård & Backman, 2011; Van Bottenburg & Salome, 2010; cf., e.g., Arnegård, 2006; Eichberg, 2009). Both these tendencies—renegotiation of the borderlands and indoorisation—are well illustrated by the exergames. So even though some will perhaps discuss exergames in terms of a qualitatively totally new twisted, hybrid landscape relation, we believe it is more reasonable to see exergames as another, albeit accentuated, step in an ongoing detachment process from the local physical landscape.

There is evidence to suggest that this detachment process has, and to a greater extent will, characterise the activities that are used in various educational activities. The inroads that exergames have made in school physical education can be seen as an example of this. This development is quite understandable, especially as specialised indoor activities have many educational and practical advantages. Many physical education teachers are in favour of exergames because they make it possible to 'avoid being out in the difficult nature', which is either seen as 'too cold' or 'too hot' for recreational activities (Quennerstedt et al., 2014). From a socio-economic perspective, there are often obstacles to activities such as skiing, canoeing and so on in the form of travel and equipment. These are obstacles that as a rule are much lower in 'indoorised' activities. Also, from a sustainability perspective, one can argue for indoor activities in the form of, for example, exergames in order to avoid relatively long environmentally-unfriendly trips to places that are suitable for outdoor activities. Accessibility is naturally a great asset from a health perspective. As physical training is very important in a modern urbanised society and a session with, for example, exergames is always available and possible, there is no need for special buildings, set times, travelling, instructors or groups. In addition, exergames are based on a gaming logic that children and young people recognise and often find attractive.

In this article we have highlighted the specific relation to nature that these games mediate. From an environmental educational perspective, the outdoor tradition characterised by nature encounters and experiences in uncontrolled environments has been considered to have a special

value with regard to creating nature connectedness and environmental concern. This relation has also been confirmed and discussed in numerous research papers (see, e.g., Beery, 2013; Johnson & Manoli, 2008; Leifländer et al., 2013; Mannion et al., 2013; Sandell & Öhman, 2010, 2013; Sevillano et al., 2007; Wells & Lekies, 2006).

On the other hand, competition-oriented physical exercise in controlled environments has a very limited environmental education value (Sandell & Öhman, 2013). Exergames, which can be seen as an extreme in these types of exercises, and their environmental education failings, are also confirmed by our study. As we have seen, exergames are characterised by a view of nature as a factory that produces recreational experiences. Nature is simply an instrumental value in relation to the pleasure and benefits that it can create for humans. The perspective is thus typically anthropocentric, and humans and nature are regarded as two separate entities. As pointed out earlier, the exergames chosen in this study are not designed to foster connections with nature, and we have not had an opportunity to study the extent to which the various intentions and designs of the exergames enhance the connection that players have with the environment/nature interacted with while playing. In fact, comparing the different parallel layouts of the games would be an interesting study in itself.

The games lack the values and experiences that are often associated with nature encounters and experiences in uncontrolled environments (e.g. respect for the forces of nature, or feelings of care and respect for animals and plants). There are few things in the games to suggest that creatures in nature have an intrinsic value, whose well-being, interests, health, preferences, flourishing, functions and so on ought to be taken into account. That humans should take responsibility for nature or future generations is not mentioned in the games either (apart from the example with the ducklings—which in any case fosters a very doubtful nature conservation strategy). In addition, none of the sequences suggest that humans and nature are holistically integrated, that we are dependent on nature and that respect for nature is necessary for sustainable development.

The view of nature that characterises the examined exergames is not likely to lead to an increased nature connectedness or environmental concern, but rather strengthens the approach to nature which has been characteristic for the growth of the industrial society, and which has given rise to the extensive environmental problems that we are wrestling with today. From an environmental education perspective, we see obvious risks with digitalised forms of activities replacing activities consisting of physical, sensual and direct encounters with nature. This is especially the case for younger children, whose direct encounters with nature are thought to contribute to a sustainable nature connectedness (Liefländer et al., 2013).

If the educational aim is not just to create a pleasurable physical activity, but also to encourage a responsible approach to nature and the environment, then we as educators ought to pay attention to the 'hidden messages' about nature and humans' relations to nature offered by teaching aids such as exergames.

Notes

1. For example, in the USA 36% of youths aged between 8 and 18 had Wii game consoles in their homes in 2009 (Rideout, Foehr, & Roberts, 2010).
2. Up to and including March 2012 more than 30 million copies of 'Wii Sports' and over 20 million copies of 'Wii Fit Plus' had been sold (Nintendo, 2012).
3. In line with Aarseth's (2003) methodological suggestions, we chose to play the games ourselves. He claims that the analysis has the best potential for success when the games are played hands-on. We also added observations and video recordings of those playing the games.

Acknowledgements

Financial support from The Swedish Environmental Protection Agency and the Swedish Research Council is gratefully acknowledged. The authors would also like to express appreciation to Sue Glover Frykman for her help with the

English language, and to Mikael Quennerstedt for all his help with the technical equipment and for his valuable comments on earlier versions of the manuscript.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

Financial support was received from the research programmes Outdoor Recreation in Change, funded by The Swedish Environmental Protection Agency, and Learning and Exergames in School, funded by the Swedish Research Council.

Author biographies

Johan Öhman is Professor of Education at the School of Humanities, Education and Social Sciences, Örebro University, Sweden. His area of research is in environmental ethics and democratic issues within the sphere of education for sustainable development, environmental education and outdoor education.

Marie Öhman has a PhD in Sociology and is Associate Professor in Sport Science at the School of Health and Medical Sciences, Örebro University, Sweden. Her main area of research is observational studies in physical education. Drawing on Michel Foucault's work, several of her publications have focused on questions of health, body, socialisation, power relations and governing processes.

Klas Sandell is Professor of Human Geography at the Department of Geography, Media and Communication, Karlstad University, Sweden. His research focus is the interrelationship between development strategies, environmental concerns and human relations with 'nature' (in terms of landscape, views and practices), especially with regard to outdoor recreation, public access and nature-based tourism.

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