

Hunting for Fun: Solitude and Attentiveness in Collaboration

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ABSTRACT

The design of online collaborative computer games and pervasive games can learn from the everyday practice of deer hunting. We present an ethnographic study revealing how hunters fine-tune their experience through temporal and spatial organization. The hunt is organized in a way that allows the hunters to balance between forms of collaboration ranging from solitude to face-to-face interaction, as well as between attentiveness and relaxation. Thus, the hunters deal with the task – hunting down the prey – while managing issues of enjoyment. We argue that understanding these experiential qualities is relevant for collaborative gaming, and adds to our understanding of leisure.

Author Keywords

Hunting, collaboration, leisure, mobility, pervasive gaming, solitude, attention, sound, experience, ethnography, mobile conversation.

ACM Classification Keywords

H.5.3 Group and Organization Interfaces: Computer-supported cooperative work, Organizational design

INTRODUCTION

In recent years, gaming and other leisure activities have become an issue for the design of CSCW technologies. A number of studies have been published which show the applicability of collaborative technologies in gaming in various outdoor or mobile settings, hereafter referred to as pervasive games [13]. First, these consist of field studies of experimental setups, often in the research area of pervasive gaming [13,9,10], in order to try out new mobile technologies and apply CSCW concepts to a new domain. The field is linked to tourism studies [5,6], which aims to

provide collaborative enjoyment for people travelling in urban areas. Second, the studies consist of analyses of social interaction in commercially available, multiplayer, online role-playing games [12,13,22].

In many of these studies, the activity is treated as solving problems similar to work tasks. They deal with the social organization of leisure, but pay less attention to the *enjoyment* of the game. Like the tradition of workplace studies [16] that argues for the necessity of understanding the everyday practicalities of work to be able to design and implement relevant and useful technologies, we need to understand the practicalities of leisure, before introducing new technologies [5]. We still know little about the practicalities of collaborative leisure practices, and we therefore run a risk of copying too much from the work domain, missing important aspects of what spare time activities are often about – relaxation and having fun. Furthermore, the studies of pervasive gaming are not studies of everyday practices. The studies of on-line multiplayer games are confined to the existing technical setting, and could benefit from inspiration from similar non-digital traditional practices. Despite the popularity of simulated hunting and shooting, real hunting is a growing leisure activity in many parts of the world [14].

In gaming and in leisure in a wider sense, the aim is not only to get the job done; it is also to design the activity to make it fun. We take as our point of departure Brown et al.'s argument that in this case, solving the “problem” at hand differs from solving a work problem, in that the activity is “finely tuned to both the problem and the enjoyment of working through the problem.” [5]. The motivation not only affects the selection of the task itself – what the leisure activity consists of – but as we will show, it also affects the ways in which it is organized and performed. In this paper, we focus on the activity of hunting for pleasure. Although traditional hunting has been a major field within anthropology, hunting for pleasure has only been of marginal interest [11]. Dahles argues that it is motivated by the challenge of finding and shooting animals per se. Thus it is a structured activity which is implemented and explored for its own sake, rather than being directed at an ultimate goal. Therefore it is organized to balance efficiency in shooting game with ensuring the attraction of

the challenge. Bronner [4] argues that leisure hunting is motivated by e.g. the blood smearing rituals and traditions of camp life, rather than killing as many animals as possible. However, none of these studies reveal the ongoing practical and organizational achievements of leisure hunting.

Based on an ethnographic study of hunting, a popular sport and leisure activity in Sweden, we draw lessons for the design of both a new breed of pervasive games as well as the enormously successful types of multiplayer on-line games. In addition, we hope to contribute to the understanding of collaborative leisure in general. We have followed a hunting team consisting of a dozen rifles posted at stands, a few dog handlers and a leader of the hunt. The hunters rely on their aural and visual impressions from the surrounding environment. In addition to this, modern hunters are equipped with various technologies including radios, maps, and combined earphones and ear protectors. In this way, hunting has many similarities with the studies mentioned above. Further, the activities at hand have similar characteristics to CSCW leisure applications in that they consist of finding, hunting, and tracking down animals/opponents/tourist attractions. As we will show, hunting can also reveal general features about games, supporting and developing the arguments presented in previous leisure studies on how solving the problem consists of getting the task at hand done, and having fun while doing so. We argue that the technology used and organizational arrangements account for the hunters' attentiveness shifting between concentration and relief, as well as their various forms of engagement in social interaction to provide an experience which balances effective hunting and enjoyment. We conclude that pervasive games are especially suited to draw upon this practice by designing minimalist audio features: mechanisms that balance between high concentration and provide cyclical variations between solitude and rich socialization.

In the first part of the paper we present related work consisting of leisure studies and mobile talk. After presenting the background and the method of data collection, we present the field work. We discuss selected items from the fieldwork, including recordings of radio talk, and interviews with hunters. Finally, we draw conclusions to inform the design of collaborative support for games.

RELATED WORK

This study concerns technology support for collaborative gaming activities, which has recently received growing interest within CSCW. Within this field there have been a number of studies of innovative CSCW types of technologies and applications for pervasive gaming and leisure in a wider sense, as well as studies of social interaction in on-line multiplayer games.

The studies of innovative CSCW applications for gaming include a study of a game called "The Day of the Figurines". Crabtree et al. argue that CSCW can be useful

in unpacking the ordinary work of collaborative gaming [9]. They show that the "control room" orchestration of game/art events depends on technologies that support both awareness and collaboration, which is essential for interpreting messages, crafting responses and managing the unfolding of the narrative. They hint at the importance of managing the temporal "flow of messages" during specific situations in the game [9], which has been further elaborated upon [3]. The findings resemble their analysis of the orchestration of another pervasive game, called Can You See Me Now [10]. Here they focus on how collaboration is conducted, not behind the scenes, but by people acting as in-game characters running around and chasing each other in a city and on the web. Again, the issues concern awareness, and how the gamers deal with technical interruptions in new technologies such as GPS and radio communication over WiFi [2]. Such uncertainties lead to fragmented understanding of the play session. However, these specific characteristics could be used as a resource in game design, as has been demonstrated by Bell et al. [1]. Brown et al. [6] evaluated a system aiming to support co-presence, collaboration and shared experiences between distant individuals for tourism purposes. The system provides resources to create co-experiences among people who are on-line on the internet, and people visiting a particular geographical location. The system provides voice communication, which allows the people on-line to talk with those travelling around. The voice connection was also the feature most valued by the users. It supported them in performing specific tasks, but also allowed for socialization which is argued to be the hallmark of leisure technology [6].

We argue that these studies, in focusing on innovative CSCW applications, bring the social character of gaming and leisure to the fore, and show how concepts such as awareness and coordination reveal the on-going "work" within this field, as well as provide insights into new ways of applying technology. However, these studies provide fewer insights into naturally occurring collaborative leisure activities in the wild, which could reveal new characteristics to be accounted for in game design. Although there has been a turn towards leisure within the CSCW area, the tourism application stands out in the sense that it is to some extent informed by a detailed study [5] of tourism as an ordinary practice. The study revealed the ways in which tourists enjoy doing things together, such as figuring out what to do and where to do it, in a relatively unplanned manner. This social and ad hoc quality transforms what might seem like mundane activities into something enjoyable. Hunting differs from this type of leisure activity in that it is more organized. This organization is justified by the hunters in terms of safety, but we wish to argue that it is also in order to make the hunt more fun. In this way, not all leisure activities are necessarily casual and "tentative" [26], since the hunt is strictly organized in order to optimize, among other things, the enjoyment of the activity.

The success of collaborative massive online multiplayer games (MMORPGs) has also increased the interest for game applications within CSCW. The tension between enjoyment and task efficiency has been discussed by Ducheneaut et al. [12]. They identified difficulties in balancing what they referred to as the instrumental orientation of “achievers” with the enjoyment of “socializers”. Recently they have presented data that question the degree of social activity in these types of games. Intense group interaction is rare. Instead, MMORPGs consist mostly of players working solo in the presence of others (“alone together”) or of engagement in spectacles with audiences [13]. Nardi and Harris [22] argue that MMORPGs become enjoyable because of the variety of forms of interaction ranging from soloing in individual play, groups that form to complete a task of relatively short duration, and on-line chat with friends. MMORPGs are different from pervasive games since the latter activities are not pursued in a setting made for and restricted to leisure. Hunting, pervasive gaming, and tourism compete and draw upon environments where other activities co-occur.

Finally, the paper is related to the study of mobile talk, another issue of relevance for CSCW [17]. Many mobile and distributed activities are coordinated using talk mediated by technology, and talk is also an important media in the applications discussed above. As has been noted elsewhere [19] radio talk in itself has received surprisingly little attention in CSCW and other fields, despite its widespread use in the coordination of many work domains.

METHOD AND DATA COLLECTION

This paper is based on a study of deer hunting in Sweden. In the following, we briefly describe the organization of such a hunt, as well as how we collected this data.

The Organization of a Deer Hunt

Hunting is a popular Swedish sport and leisure activity, with 278 000 licensed hunters [20]. Swedes are positive to hunting, unlike the attitudes in many other countries. In 2002 four out of five Swedes accepted or had a positive view of hunting. In fact, over the twenty year period from 1981 to 2002 attitudes towards hunting in Sweden became increasingly positive [14]. The Swedish deer-hunting season lasts from September to February, with exceptions for certain types of deer and the mating season. The rules for hunting are regulated by a number of laws [24,25].

Hunting is a complex activity. We will focus on aspects of relevance to collaboration and the design of games. The hunters share a license to track animals within a given geographical area. That region is normally divided into smaller pieces, referred to as drives (“s atar”, in Swedish). In deer hunting there is normally a hunting team where the tasks are divided into three different roles: the leader, the rifles posted at stands, and the dog handlers. The leader prepares a number of drives [4] in advance, bringing with him a map of the area where he has marked where the rifles will be posted for each drive. He is also responsible for checking by radio that everyone is at their stands when the

hunt begins, and that all are released when the hunt is over. The rifles then, are stationary shooters who are placed in different positions, referred to as stands [4] (“pass”, in Swedish), waiting for animals. The dog handlers move through the terrain with their dogs, and the idea is that they should scare the animals and drive them towards the rifles. One thing that complicates the hunt is that only particular animals are legal to shoot. Which animal that one may shoot depends on the time of year and what status you have in the hunting team. All these factors must be considered by a hunter before firing a shot.

Most of the hunters take on the role as what is referred to as “rifles”, on stand. They are placed at locations selected because they have been rewarding in the past. These places are often named after a particular event, and in this way the names of the places evoke memories of stories about previous hunting experiences that can also serve to inform current actions [28]. The idea is then that the rifles will stay at these locations and wait for the prey to be driven towards them. It follows that the experiences and activities of the men with this role are critical for understanding hunting.

Studying Deer Hunting in Action

The data was collected during two weekend hunts in 2006/2007 in the south of Sweden. We followed a hunting team consisting of twelve hunters, all of them men. Several of the hunters travelled, as did the observers, from remote locations to participate in the hunt, and therefore had to stay overnight at a small inn close to the hunting area. This made it possible for the researchers to socialize with them, and chat informally about hunting over dinner etc. In total, we participated in three full days of hunting, including eight drives.

Hunting is an activity that is distributed over a large area, with participants moving about in this area. Several forms of data were collected in order to create a full picture of the hunting experience [29]. We recorded all radio talk that went on during the hunts. Due to the nature of the activity, it was difficult to take field notes while out in the field, and our observations were therefore written down in the evenings. We took many photos, particularly when following the dog handler who traversed vast areas. As we will see, hunting is both a social and a solitary activity. Sitting at stand is the period when the hunters are in solitude, accompanied only by the sounds around them and the radio talk, and many of the rifles did not feel comfortable having an observer with them during this activity. However, we did manage to observe a number of stands (picture 2). Two of these were also video recorded, and the video was then synched with the radio



Picture 2: Rifle at stand

communication. During the second visit in the field we conducted and recorded an informal interview with two of the hunters, asking them about things we had not understood when listening to the radio talk, and requesting that they clarify and describe their views of the hunt in general.

FINDINGS

We will focus on three aspects of collaboration in hunting and discuss how they link to their experience, in particular both to their motivational concerns as well as how they influence their attentiveness. First we will discuss the experience generated through the basic division of labor between rifles and dog handlers, with specific regard to the visual constraints and then the audio constraints of their local setting. Second, we will discuss their collaboration by radio to generate a shared understanding of the hunt, and how it contributes to their experience. Third, we will discuss how they decide to geographically structure their hunting area, and their experiential concerns in doing so.

Collaboration in Solitude – the Experience of the Rifle

The division of labor between rifles posted to stands and dog handlers is the most basic collaborative mechanism in deer hunting. The dog handler releases his dog at a specifically chosen position as far as possible from the rifles. The dogs will then look for deer, which in theory will be startled and run towards hunters at stands. For the rifle, a drive often consists of around two hours of standing or sitting still somewhere in the woods, in order to localize and categorize animals, and perhaps take a shot. He relies on his eyes and ears to discern a moving animal in the surroundings, as the dog handlers and their dogs drive through the woods to push the prey towards him. Thus, it is a form of collaboration, which after an initial drive-planning meeting leaves a rifle to focus on his specific task in solitude – hence our expression “collaboration in solitude”. In this section, we analyze the experience and activity of the seemingly isolated hunters sitting at stands, and reveal how this contributes to their motivation, as well as how these rifles manage their attentiveness.



Pictures 2 and 3: Rifles posted at stand in a tower and deep in the forest.

Visibility and the Experience of a Rifle at a Stand

The hunting experience is influenced by the visibility at a given drive. The visibility at different stands varies, and is taken into account when they are chosen. Standing in a specially constructed tower (picture 2), in the middle of a clearing, gives much better visual overview than being placed deep inside the woods in a depression (picture 3).

This influences how they manage their attentiveness during the drive. Limited visibility provides for a constantly tense hunting experience as discussed by the hunters in the interview:

Al: *“It’s damn thick, the forest that is. You need to be prepared every second the whole time you are there. And it’s strenuous, both physically and mentally. I’m always standing up at the stand, as you might have seen. Well it might happen sometime that (laughter) but mostly I’m standing up to be prepared.”*

Poor visibility requires that the hunter at stand be constantly tense and allows for little relaxation, which is described as both physically and psychologically difficult. Thus, being posted at a stand with limited visibility creates a more demanding experience, whereas a hunter with good visibility is in a situation where he can manage his attentiveness according to upcoming situations. However, the effort demanded by a stand with limited visibility can be motivated by the experiential benefits when an animal is observed and potentially shot. The hunters said that the enjoyment of shooting an animal was higher where there was low visibility, than in the opposite situation:

Robert: *“No but that’s the charm of hunting: the surprise, the thrill, the unexpected.”*

Al: *“Yeah that’s the way it is. When you can see an animal far away (pause) it is not always so fun either. For that matter it is more fun if it pops up suddenly. That’s what I think. (Robert: Yes) it’s terrible if they come slowly towards you and without (pause) but you don’t have to be on post the whole time if you have an open stand.”*

The limited opportunity to shift between concentration and relief is balanced against the preferred experience of a surprise shot. On the other hand, extensive visual overview improves the possibility to manage one’s attention, but makes the actual killing more problematic. This viewpoint resembles the ways in which Dutch hunters described animals selected as game, as “wild” and “fighting”. Thus, they should be a challenge for the hunter. Similarly, we argue that an un-challenging shot, with high visibility, provide for a less fair “fight” [11]. Although the rifle is solitaire at his stand, his experience is in some sense framed by the hunters’ selection of stands. Good visibility provides for a less tense situation, but makes the actual killing less interesting. The choice of a stand is a trade off between chances to shoot an animal, relaxation, as well as the experience of shooting it. Thus, variations in the visibility for an individual rifle influence attention management in ways where the motivational factors come in conflict. And it is not so easy to identify any straightforward dependencies since there are various forms of enjoyment, e.g. the possibility to relax as well as opportunities for surprise shots.

A Rifle's Orientation to Sounds

At a stand, the hunter's orientation to sound is equally related to balances of motivational factors and attention. The hunters take care not to produce any noise themselves in order not to scare the deer, and to be able to attend to the sort of low toned sounds generated for example by a dog barking from afar. Their concern for their own sound production was visible in their negotiations with taking on us as observers. Many of the hunters were sceptical towards having an ethnographer with them in the field, and it was with great reluctance that we were allowed to follow along even though we promised to be very quiet and not move. Several team members revealed that they did not enjoy having any other observers around, including interested family members. Sitting at a stand was best done alone. The orientation towards silence was also observable during the field study when a hunter broke off a branch that was touching the ethnographer's rain trousers, producing a very soft sound:

Day 1, drive 1, 3rd stand: *One ethnographer is allowed to accompany Peter during his pass. He is a guest in this team, but has participated several times over the years. He has previously mentioned that some persons talk way too much on the radio. I understand that I need to be quiet and not move during my observation period. He invites me to sit on his foldable chair, and shows me a spot halfway into the branches of a spruce tree. I'm not allowed to wear my jacket because it is too brightly coloured. I sit down, the rain is pouring down. Peter is standing, with his back towards me. Nothing happens; it is completely still around us. On the radio, we can hear the other rifles reporting that they are in position at their stands. Then, silence. After a while Peter comes up to me, breaks and removes one of the branches of the tree I'm hiding in, which was scratching my rain trousers, making a small sound. He goes back to his position and continues looking and listening.*

The field notes reveal the hunter's careful focus on sounds in his local environment, as well as on the radio. This particular hunter was wearing a pair of earphones which sharpen the sounds around him. In this way, he augments his hearing, so that he can be even more attentive to the sounds in the forest. It is not only a matter of managing the hunter's own local and mediated sound environment; the hunters also attend to the deer's hearing.

The Role of Radio Conversation in the Organization and Enjoyment of a Hunt

Being a rifle posted at a stand consists of long periods of solitude, as was described in the previous section. The rifles' listening and observing the local environment provides fragments with which to build an understanding of the ongoing situation. In addition, we will show how the radio is an important tool in the ongoing process of creating an understanding of the hunt.

As has been mentioned, for hunters, one of the main issues is to keep track of animals. The hunting team makes numerous animal sightings during one day. Only a few of

these lead to shooting an animal. These sightings are discussed within the hunting team, on the radio during the hunt, to localize and categorize the animals, but also during the breaks, to recapitulate what happened and account for the absence of shootings. So it is of relevance to know how many animals they are dealing with. Their resources for localizing the animals are *visual* – observing an animal passing by – and *audio* of two kinds: hearing an animal passing by without seeing it, and signals from the dog. They need to establish where in the drive the deer are located, and what type they are. Radio is important in this localization and categorization of animals. In the following, we analyze an excerpt from the transcriptions of the communication within the hunting team, and show how the localization and categorization are carried out.

In the excerpt below (drive 1 2006-11-25¹), the hunters deal with understanding whether the deer they are currently following are still within the drive, where they are localized in relation to the different stands, and finally, distinguishing them from other deer observations. Four different hunters participate: the leader of the hunt, one dog handler, and two rifles of which one is a guest. The distinct characteristics of the radio technology make it possible for all the hunters to hear the ongoing conversation and break in when relevant.

1. Kurt: did he go out?
2. (1 min 55 sec pause)
3. ((noise from radio, inaudible))
4. Kurt: g11 to g1[↑] over hh
5. (3.0)
6. Bill: was it (to) g1 (that) called (for)?
7. Kurt: yes I called for you, was that close to you?
8. (7.5)
9. ((noise from radio, inaudible))
10. Kurt: was it below you?
11. (1.5)
12. Bill: that's the question (really)
13. (2.4)
14. Robert: g11 from g4.
15. (0.8)
16. Kurt: >I'm here, over.<
17. Robert: yes it probably went out around the cross-roads up there (.) to the underground road over.
18. (0.5)

¹ G4 = Robert, dog handler; G11 = Kurt = leader of the hunt; G1 = Bill – rifle; Jack = guest without radio number, rifle

19. Kurt: yes: (.) can imagine that (.) I guess I'll turn back .hh and walk b- the path back and try to call (it in again) .hh
20. (2.9)
21. Jack: those three went back now (xxx)
22. (4 min 23 sec pause)
23. Robert: g11 from g4
24. (2.4)
25. Kurt: # is here, over
26. (2.0)
27. Robert: I think it disappeared west from me. I'm on the heifer stand and it's quite far out west. I don't hear him any longer; either he stopped or he's on the other side (.) of the mountains over
28. (0.7)
29. Kurt: okay↑ (2.0) that was unfortunate. hh (4.8)
30. Robert: but those three animals that e:: Jack saw that's probably not the animals we were hunting,
31. (3.5)
32. Jack: no that's my understanding as well ((clears throat)) they were just bothered by the dog and (then they went back)

In line 1, Kurt, the leader, asks whether “he” went out. “He” here is not the deer, but rather the dog, which is a source of information about the deer. In asking whether the dog has left the drive, he can also get a clue about whether the animals they are following are still within their hunting area. He asks this on the open channel on the radio, without addressing anyone in particular, and on line 4 clarifies by addressing Bill, one of the rifles, and then asking “was that close to you?” (line 7). This displays the leader’s awareness about where different stands are located, and who is sitting at what stand. They continue the localization work, trying to establish where the dog was heard – “was it below you”. Bill is uncertain. Robert, a dog handler, says that “it probably went out around the crossroad up there (.) to the underground road”. In presenting this candidate localization, he uses landmarks well known to the hunters, i.e. the crossroads and the underground road. It seems now that the animals have left the drive, and so there is no point in keeping up the hunt for them. The leader says that he will return (line 19). Then, a fourth person joins the conversation, and without introducing himself or calling for anyone in particular says: “Those three went back now.” He thereby provides relevant information that the deer they are searching for are back in the drive again.

This is not commented upon; instead there is pause for more than four minutes, before one of the rifles continues to discuss the dog’s whereabouts (line 23). He provides details

specifying his observations, and his interpretation of what this means. “I don’t hear him any longer either he stopped or he’s on the other side of the mountain”. This shows how the hunters rely on what they can and cannot hear. Such information about local circumstances is shared over the radio, and adds to the ongoing process of creating a sense of where the deer are localized. Robert then suggests that the three animals that Jack reported having seen (line 30) were not the animals that the dog was following. Distinguishing between a number of animal observations is important, in order to know what the hunting team is dealing with.

This example from the radio conversations of the hunters shows how the radio is used to localize and categorize animals, and how this is a collaborative achievement. Several hunters take part and provide information they have locally, to add to the mutual understanding of what is going on in this distributed environment [cf. 17]. The localization of animals is related to the attentiveness of the hunters. The radio talk is important for managing the attention of the hunters in whose vicinity the animals are moving. The hunters can direct each other’s attention to potential deer in the vicinity. It enables them to be alert when an animal gets closer. In analysing a radio conversation in this way, we get the view of the people who participate in the current conversation. This conversation is typical in the way that much of the radio talk goes on between the leader of the hunt and the dog handlers, with the rifles jumping into the conversation when relevant. However, we miss out on the perspective of the silent rifles, who are only listening in. It is relatively rare that a rifle speaks over the radio. There is a tension between talking on the radio, thereby interacting with the other hunters, and being quiet, to avoid, revealing themselves to the animals. As one hunter formulates it:

Al: *“I don’t say anything when I’m out, because then the animals can hear you. Some speak a whole lot, but then no animals come to them.”*

The hunters complained that there was sometimes too much talk on the radio. On the other hand, many of the rifles wanted the dog handlers to use the radio to reveal when they have observed an animal, and to tell everybody where they are. The radio talk was important to enable a balance of attention, i.e. planning a shot in a very short time frame. Here they can specifically arrange their focus and their attentiveness. Thus, getting awareness through the radio both makes hunting more interesting and improves efficiency.

One hunter reports on an event where he is sitting at a narrow stand with bad visibility. As he is looking in one direction, he can hear a very big deer “breaking” as he himself had been identified by the animal. There is no time for him to hoister and aim the rifle, and the deer is quickly gone into the forest. Afterwards, the dog handler arrives and tells him that he had heard it before it got to Robert:

Robert: *“If he had just said that then my concentration would have gone up to the maximum (pause) suddenly bang*

and out comes (laughter) a giant looking at me and the dog gave no warning.”

Al: “I think it is better...actually they should say something at certain points (Robert: yes) now I’m here and I haven’t seen anything and now the dog went away.”

Robert: “It makes it more interesting to know what’s happening (laughter) it makes it a bit more exciting to be at a stand.”

Hearing the radio talk can influence the way the rifle listens and looks into the woods. When the shooter is sitting at his stand he concentrates on listening and looking for animals. He listens for barking dogs or the very soft sounds a deer makes as it moves through the landscape. The deer are not always easily spotted since they can be obscured by trees and bushes. If there is little radio conversation about ongoing activities, a shooter might fail to attend to an approaching deer.

Like a train driver, as discussed by Heath et al. [15], the rifle at stand has a fragmented view of the activities. He himself can see and listen to things in his immediate environments. Sometimes he can hear the dogs barking from a longer distance, which gives him some indications as to where the deer are moving. The radio traffic gives him pieces of the other hunters’ observations, mostly the activities of the dog handlers, and occasionally of the other rifles. Thus, his understanding of the ongoing collaborative effort is fragmented. The hunter has to make an effort to map out what is happening within the drive, given the radio talk, between other hunters, and his own visual and aural experiences from the local environment. He struggles with both locating animals as well as identifying them. We argue that in this case, enjoyment and task solving are part and parcel of the same thing, i.e. the challenge to track down an animal. The challenge of piecing together all these indications is *both a necessity for efficient hunting, as well as an enjoyable challenge*. Thus, the task-oriented activity of tracking an animal co-occurs with the enjoyment of it. The hunters went so far as to say that they “did not hunt to kill, but kill to hunt.” It places the search and chase at the top of the experience.²

Radio Talk Supports Attention Management

Social interaction over the radio seems to decrease some of the tension inherent in the demands on their attentiveness. The radio talk affects the ways in which they can adjust their attention, i.e. shift between concentration and relaxation. They can adjust their attention not just based on their own sense perceptions, but also according to what their colleagues hear and see. When they listen to radio conversations on the topics of localizing and categorizing animals, it seems to improve the efficiency, to generate a

less tense attention though without influencing the enjoyment negatively. Furthermore, radio mediated conversation enables the hunter to vary between concentration and relaxation *individually*. A shooter can balance focus and relaxation, depending on the radio conversations’ relevance for his particular situation. If we juxtapose the experience and efficiency with visibility and radio conversation, we note an interesting difference. The hunters expressed an experiential downside of increased visibility, as mentioned above. Sitting at a stand in a tower could give too much visual information. However, no such experiential concern was revealed regarding radio talk. It might be that the radio traffic, in providing a fragmented view of the situation, is more imprecise compared with high visibility, in a way which preserves the sought-after “surprise” when an animal finally reveals itself in the wood. Radio talk mediates a better balance between experience and fun, than would increased visibility.

Finally, radio conversation also provides them with non goal-oriented leisure and relief. We identified some teasing between the dog handlers in the radio conversation. In response to this, the hunters at the stands turned toward the ethnographer and laughed. Thus, the radio conversation provided them some enjoyment during the hunting, even though they did not take part themselves. The situation where the hunters are sitting at a stand in isolation at the same time as they are passively listening to the radio conversations is somewhat similar to Bull’s notion of “accompanied solitude” [8] or Nardi and Harris’s “alone together” [22]. In this case, they are visually isolated from each other, and in solitude, but they are accompanied by the social interaction of others.

Spatial and Temporal Organization of the Hunt

The hunters have a licence to hunt in an area which is normally too vast for a single drive. This area must therefore be structured into smaller parts. In this case they had split their total area of 1200 hectares into nine smaller bounded locales: drives. The hunters we interviewed explained that the size of a drive depends on the local geographical topology and the number of rifles, but also on organizational issues concerning attentiveness and their motivational factors. Efficiency was an important concern when deciding the size. The size of the drive decides the length of the boundary each rifle has to cover. A large size, covered by a few rifles, increases the deer’s opportunities to escape:

Robert: “And then it becomes hard to handle, because if you consider that we have this area you cover with fourteen hunters. Then you do it like this. Then you get very sparse rifle coverage making your chances to be properly placed low.”

Thus, the larger the drive is, the less *efficient* will be the hunt in that area. The size also affects the enjoyment, since it influences the time it takes for the dogs to walk or run through in their chase for prey. The deer hunters we studied

² That expression also refers to the way they want to morally account for their activity, since the experience of killing often is put in question by non-hunters [11].

covered their drives in two to three hours. But they told us that they had been on moose hunts where the drives were so big that they had to sit alone for eleven hours three days in a row:

Al: *“The longer you’re standing there, the more unpleasant. You (addressing the researcher) have been at a stand. It’s really gruelling to be standing the whole time. You have to be super aware all the time. You can’t relax a second really in principle and that’s hard. If you’re standing there for three hours, that’s not good for many reasons, safety reasons being the first.”*

The shooter needs to be focussed all the time, and a big drive demands that he be focussed for a long time, which makes hunting strenuous. The longer they have to stay focussed the more strenuous it gets, and finally it gets dreary as expressed by Al: *“everything in the end... in the end it gets boring.”*

The size of the drive influences the time the hunter has to remain tensed, which then impacts the enjoyment of the activity. Furthermore, the size determines how many breaks there will be. The hunting team we studied got together before and after every drive for a snack and a cup of hot coffee. In the middle of the day, they also fried up some sausages over a fire provided by the leader of the hunt. They argued that the enjoyment of this form of social interaction was important for the overall experience:

Robert: *“A large part of the hunt which is rarely observed or considered is the social gathering, and there isn’t much of that if you’re at a stand the entire day, all men out in the forest. But the business of lighting up a fire and barbecuing and chatting (laughter).”*



Pictures 4 and 5: Short break between two drives.

Al had previously experienced hunting where the drives were so large that there were no breaks:

Al: *“You were standing there the entire day at stand more or less. I was bundled off to the “hea” drive in the forest. I could be standing there the entire day cut off from the rest of the world. It was dead quiet. But it was a good drive because animals turned up rather frequently. But I was standing there in solitude the whole day. Then I asked sometimes couldn’t we take a little break in the middle of the day and see each other and light up a fire and fry some sausages? They said ‘what’s the point of that’.”*

A prolonged stay at a stand, given a large drive, turns the experience of solitude into a feeling of “loneliness.” If they split up a licensed area into several drives, they get to meet

several times during a day and socialize as well as relax. Interestingly, this is an activity where the motivational concerns favour enjoyment over efficiency. Furthermore, it is the sole opportunity, apart from the planning meeting, where the hunters meet face-to-face during the day.

In all, we identified three forms of social interaction which balanced enjoyment and efficiency differently. First, *solitude in collaboration* occurred when a rifle posted at a stand stood alone in silence, waiting for the dog handlers and their dogs to scare the game towards him. This was a central part of the hunting experience, but it sometimes became boring and tedious. Second, the *accompanied solitude* with a hunter at a stand engaged in radio-mediated interaction, which could both help and disturb the hunt. Third, the *face-to-face* interaction as it occurred during their breaks. This provided them with relief and a chance to socialize with their fellow hunters.

The different activities in hunting provide for experiences which blend enjoyment and efficiency differently. But it would be misleading not to account for the whole day as a combined experience. We argue that there is an organized balance in the temporal structure of a day. The temporal organization also provides a cyclical variation between isolation at the stands, accompanied solitude through the radio, as well as active face-to-face interaction. Thus a hunt, when viewed over the course of a whole day, is a varying social activity.

Furthermore, the temporal structure also provides a general cyclical variation between concentration and relief. Sitting at a stand demands that the shooter tensely attend to sights and sounds, although with some variations depending on what is revealed in the radio conversation and the geographical arrangements. The breaks between the drives provide opportunities for relaxation. In this sense, cyclical variation between concentration and relief is collectively synchronized, and not pursued individually as was the case when they used radio traffic on the stand.

DESIGN REQUIREMENTS

In the following we discuss the ways in which emerging digital applications to support collaborative leisure, and especially pervasive games, could learn from the analysis of the everyday practice of deer hunting.

Balance Concentration and Relaxation: Sutton-Smith has discussed how concentration, as intense focus on play, is important in gaming [27]. We note how similar concepts, such as “strenuous” and “relief”, are important when the hunters discuss their experience of radio conversation, visual sight etc. We have seen how these concepts are important for understanding the ways in which hunting is organized and how the collaboration is pursued. However, we cannot see that this experiential aspect has been discussed either in the design and evaluation of pervasive games or MMORPGs.

Minimalist Audio Design: The hunters were not altogether in favour of as much visibility as possible, since this could impair the shooting experience. However, no such complaints were raised regarding radio communication. We conclude that this is due to talk not revealing too much, and thus taking away the excitement of a surprise event. Thus, we suggest that designing technology support based on audio-centric enhancements would be an interesting path to follow. At the same time, the positive experience arose from very limited sounds from the woods, and rather constrained radio conversation – hence our suggestion for minimalist audio design approaches.

Designing a Slow Pace: It is important to notice that the type of hunting studied here occurs over the course of an entire day, and that a single drive takes from two to three hours. Still, hunting seems to support such sustained focus of attention for rather long times, at the same time as there is not much activity going on from the perspective of a single hunter at a stand. This highlights the different pacing of game events which could be created, e.g. in a pervasive game, where the world as such is part of the action. The temporal organization of hunting resembles some features of gaming, as discussed by Salen et al. [23]. They argue that so called cut scenes, that is pre-designed short clips or “movies”, provide necessary release from action. The design of the number and length of such scenes is a way of controlling the overall pace. In hunting, the sizes of the drives and the length of the coffee breaks provide for the pacing. Again, the experiences differ, since hunting is a more sustained activity, and is slower, than a computer game. Being alone for an hour or more, without any interaction, looking attentively, and listening to soft sounds in the environment are commonplace for the hunter, but would probably not be considered fun in existing computer games.

Arrange for the Occurrence of Various Forms of Social Interaction: Hunting depends on the balance and combination of various forms of social interaction: solitude in collaboration, accompanied solitude, and face-to-face interaction. The hunters value all these forms, and the hunt is organized to make room for all of them. The design of technological support should account for the ways in which game experiences combine and draw upon different forms of social interaction.

Provide Fragmented Interaction as a Challenge: The challenge in piecing together the whereabouts and activities of deer, dogs and fellow hunters is an important part of the enjoyment of hunting. In this respect, it is similar to leisure in the innovative applications for tourism and pervasive games [6,2]. Our study supports future leisure design in not solving the leisure problem. The design for leisure should be sensitive to the ways in which “problems”, e.g. fragmented interaction, are what the enjoyment is all about. Some of these problems could easily be solved by technology, but that would make the activity less of a challenge.

CONCLUSION

The analysis reveals important aspects of the ways in which technology and social interaction are appropriated and organized to enable motivational concerns of efficiency and enjoyment. The activity is pursued and supported by technology, both to track and shoot the prey and as a form of enjoyment. As a main concern, we return to Brown et al.’s [5] concern for how task solving and enjoyment are “fine tuned” to each other. In general the combination of task solving and having fun occur in two different ways. These motivational concerns can be *aligned* in a specific activity. Then, task solving and enjoyment are pursued as the same thing. But they can also be somewhat *incompatible*, and then one must make choices about which aspects that should dominate over the other. We argue that such experiences occur with respect to the effort that goes into concentrating on identifying the prey, as well the ways in which the hunters are able to interact with other people.

We believe that the hunting experience provides useful inspiration for the design of computer games. It is remarkable how the hunters manage to enable an interesting experience spanning days of activities that are temporally fine tuned to provide rich variations of social interaction, as well as variations between high tension and relief. Computer games on the internet often have a very different tempo, and provide much more fast-paced action, or struggle with the organizational support for the fine tuning of attentiveness and social interaction. In this sense, they do not succeed at providing an interesting experience without adding a lot of game play features. Many new pervasive games aim to combine experiences of gaming with naturally occurring settings. However, while the hunting study shows that this direction might be promising; it also shows that we need to carefully consider the temporal organization of these activities, as well as variations of attentiveness, to achieve balanced experiences.

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