

Playing History: Reflections on Mobile and Location-Based Learning

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Don't know much about history
Sam Cooke, 'Wonderful World'

In this chapter, the author analyses the ways in which mobile and location-based technologies can be used as microlearning tools. He focuses on *Frequency 1550*, a mobile city game that was developed by the Dutch Waag Society in Amsterdam in 2005. In this game, small groups of pupils, aged 12 to 14, playfully acquire specific historical knowledge about the city of Amsterdam. With the help of the Internet, smart phones and GPS technology, Amsterdam changes into a medieval playing-field. After a brief description of the activities of Waag Society, the author describes the pilot of *Frequency 1550*, the game's provisional didactic results, and research plans related to these results. The game will be played ten times in the period 2006-2007. At the end of this chapter, the author describes existing plans for a Dutch National Historical Museum and the role micro-games such as *Frequency 1550* could play in this respect.

1 Waag Society

Waag Society is a media lab located in De Waag (The Weigh House) at the Nieuwmarkt in Amsterdam. De Waag is the oldest secular building in the city. It was built in 1487 as the Saint Anthonis gate, one of Amsterdam's three late-medieval city gates. As such, it was part of the medieval defences of the city. In 1617, the Saint Anthonis gate was converted into the city's weighing house (i.e. the place where commodities were officially weighed for trade).

Waag Society started its projects in 1996, and has since developed into an acknowledged institute that is internationally active in research and development of, and experimentation with, new technologies in the domains of health care, art and culture, society and cultural education (see www.waag.org). Waag Society has been involved in cultural education from its very beginning. In 2001, the Dutch Ministry of Education, Culture and Science made Waag Society the Center of Expertise for Cultural Education and ICT. In September, 2006, its activities in the educational domain came together within the Creative Learning Lab as part of De Zwijger, Warehouse for Culture and Media, in the Amsterdam harbour.

Five basic assumptions are at the heart of Waag Society's domain of cultural education: creation, digital lifestyle, social learning, presentation and reflection. Together, these assumptions form the Waag's didactics. Cultural education is predominantly

seen as a creative process which does not treat pupils as passive consumers with standard skills, but as active knowledge and media producers who focus on innovation and creativity. When producing animations, newspaper articles, stories and web magazines, for example, pupils learn how media work. Whereas the goal of traditional approaches to media literacy is to educate people in such a way that they are not “duped” by media messages (see Gee, 2006), Waag Society wants pupils to become designers and producers of media messages. Through the production of media, pupils learn that media are not presenting reality in an objective way, but are themselves actively constructing reality (creation refers to this aspect). By using digital media such as computer games, cell phones, the Internet and locative technology (GPS), cultural education comes closer to pupils’ lifestyles and, thereby, becomes more engaging in the process (digital lifestyle). Digital media are also used to stimulate collaboration between pupils and their peers, thereby encouraging, instead of reducing, the social learning process (social learning). Finally, pupils find the media content they produce more meaningful if they have to present their results to a wider audience, be it friends and/or family. Pupils learn to reflect on the creative process and the impact of these media by discussing the media messages they and others have produced, the challenges they had to overcome and the choices they have made (presentation and reflection).

From 1999 onwards, Waag Society has introduced games and game elements to improve cultural and historical education. I will give three examples of games made for pupils of primary and secondary schools. Waag Society developed *Teylers Adventure*, a mixed media adventure game, for the Dutch Teylers Museum in Haarlem. In this game, the female character, Minx, asks the players to help her. They can save the museum’s collection by accomplishing all kinds of assignments in the physical space of the museum. In the adventure game *Demi Dubbel’s Teletimemachine* (2002), the vain professor Demi Dubbel uses a time machine to teletransport herself into the era of the Flemish painter Pieter Breughel, in the first half of the sixteenth century. Pupils take on the role of assistant inspector of police, and prevent her from portraying herself in all kinds of Western and non-Western works of art exhibited world-wide. In the online world *MonsterMedia* (2005) pupils adopt and feed little media monsters. By producing an online exploratory expedition of media history, answering questions and completing assignments, pupils can teach these media monsters to become the smartest of the web. Though research into the use of games in educational contexts is still in its early stages, these examples of game-based learning show that games can be effectively used in primary and secondary education.

2 Frequency 1550

In close collaboration with the Montessori Comprehensive School Amsterdam and telecom company KPN Mobile, and with the help of the Municipal Archives Amsterdam, Waag Society developed *Frequency 1550*, a mobile learning game pilot that took

place from 7 to 9 February 2005 (see freq1550.waag.org).¹ It is a location-based city game networked in technology and collaborative in principle, that was developed for secondary-school pupils aged 12 to 14.

Back-Story. *Frequency 1550* is an interesting game and story mix. The interplay between game and story is one of the central issues of the so-called ludology-narratology debate. A standard reason in this debate for describing games as narratives is that “most games feature narrative introductions and back-stories” (Juul, 2005, p. 219). This is, indeed, the case with *Frequency 1550*. Before the pupils actually start playing the game, the designers of Waag Society place the game in the context of a larger story (back-story), and create an ideal story that the players have to realize. Theo Hug describes the purpose of such a storyline in an educational game such as *Frequency 1550* as follows. A storyline:

constitutes a narrative framework for the structuring of learning contents, networked episodes, tasks and activities. It follows a narrative outline (setting the scene in time and place, introducing characters, creating ways of living) and a pedagogical outline with reference to key questions, learning tasks, activities, resources, media and cooperative interactions (Hug, 2005, p. 11).

According to the back-story of *Frequency 1550*, the Waag Society development team ran into some technical difficulties with the Amsterdam UMTS-network during network testing. *Frequency 1550* is magically interfering with a different time period, the year 1550 of the late medieval era. Via the UMTS-network, the medieval city’s bailiff is getting in contact with the present, that is 21st century Amsterdam. Through all kinds of misunderstandings, the bailiff takes the developers – and then the pupils – for pilgrims visiting Amsterdam in 1550 in order to visit the Holy Host, a special relic associated with The Miracle of Amsterdam.² The relic has mysteriously disappeared, and the bailiff suggests a deal: he will give them easy access to citizenship, provided they help him retrieve the holy relic. Six teams of four pupils – two of them located at

1 The following people collaborated on the making of this game: Aske Hopman (game design); Saar van Kouswijk (educational design); Joes Koppers (interaction design); Ronald Lenz (mobile phone software development); Just van den Broecke (game server software development); Bente van Bourgondiën (HQ software development); Marco Meijer (media design).

2 “According to tradition, on 15 March 1345, a man lay seriously ill in his house on the Kalverstraat. [the name of a street in Amsterdam]. Thinking he was about to die, he called for a priest to administer the last rites, including the Blessed Sacrament. After receiving the host, the man became sick and finally vomited. As was the custom, what he had brought up was thrown on the fire. The next morning, the host was discovered undamaged in the ashes. It was put into a box and taken by a priest to the parish church (the present-day Oude Kerk), but on two occasions it miraculously made its way back to the house on the Kalverstraat. This was the beginning of the tradition known in Amsterdam as the Miracle Procession, since people had taken it as a sign that they should spread word of what had happened.” Available from: http://www.stille-omgang.nl/pagina_eng.htm [accessed 17 September 2006] According to Dutch historian Geert Mak, “the remarkable blossoming of Amsterdam after 1350 was not due simply to trade. Almost certainly it also had a religious stimulus (...) The city was an extraordinarily popular place of pilgrimage” (Mak, 1999, p. 45).

Headquarters (HQ) at De Waag, the other two walking the streets of Amsterdam – each take up their roles as competing pilgrims, and thus step into the game’s world.

Technical Infrastructure. The two members of the team who wander through Amsterdam are equipped with a Nokia 6600 GPRS Gamephone linked to a Global Positioning System (GPS) receiver, and a Sony Ericsson Z1010 UMTS Videophone. Their two colleagues at HQ have a Videophone too, and a laptop with an Internet connection. All smart phones have Internet connection, and the Gamephone is constantly connected to the Game Server at Waag Society’s lab.

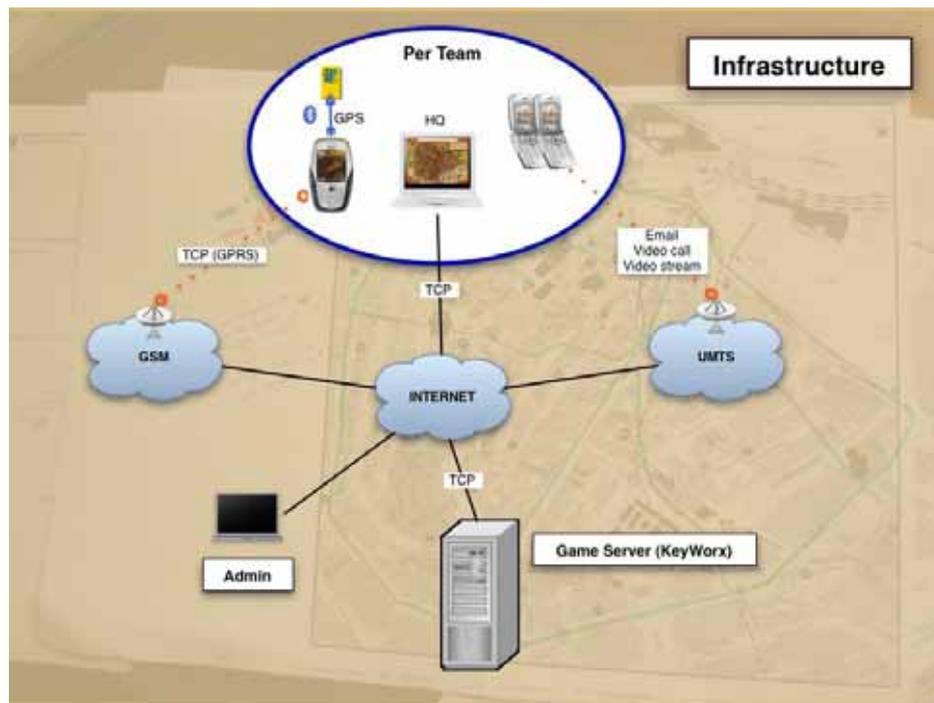


Figure 1. Infrastructure *Frequency 1550* © Waag Society

With the help of a GPS receiver, a Gamephone displays the position of its team on a medieval map of Amsterdam. Using their Videophone and Gamephone, a team can make (video) calls to their HQ, receive and watch pre-recorded video messages figuring medieval characters, and make and send assignments (video clips and pictures) to HQ located at De Waag. Using their laptops, team members at HQ have a game application with Internet access in order to look up information, check out historical references and send relevant information to the players out there in the city, thereby helping them to make their assignments (figure 2). Because they are able to see each player walk through the city in real time as colored dots – on a medieval map (figure 3), as well as on a current map of Amsterdam (figure 4) – they can work out the team’s strategy and use their phones to guide their team toward scoring locations. At the end, HQ is responsible for the collection of all the data in an online presentation.

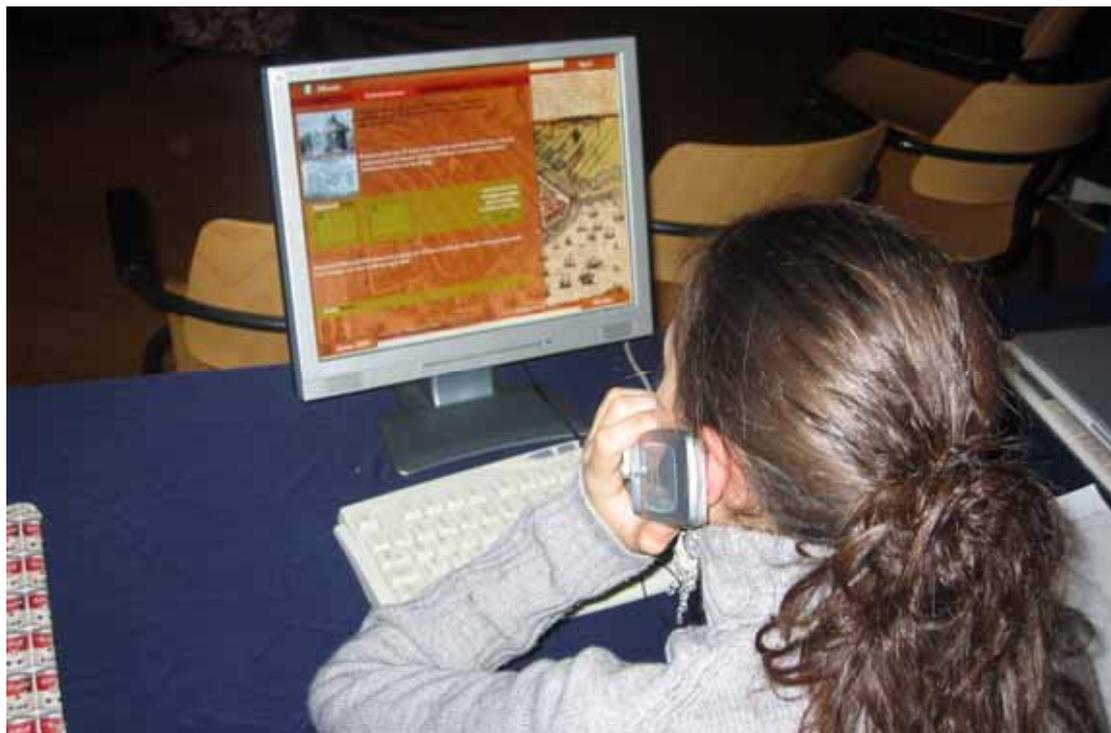


Figure 2. Playing at Headquarters © Waag Society



Figure 3. Map of medieval Amsterdam © Waag Society



Figure 4. Contemporary map of Amsterdam © Waag Society

Goal of the Game. “You are a member of a pilgrim’s order that comes to town to see the Host of the Miracle and to found its own monastery in Amsterdam. But first of all, you have to deserve the right to built a monastery by becoming a burgher (citizen),” according to the game’s manual. A team can earn burghership or citizenship by collecting as many of the required 366 so-called “Days of Burghership” as possible. According to Aske Hopman: “These 366 points refer to the medieval year-and-a-day rule, which is the period you had to be living inside the city walls to earn citizenship rights.” The team which manages to acquire burghership first earns the right to keep the Holy Host in its monastery and wins the game. Each team of pilgrims gets assigned a certain starting sector of the city it needs to explore, map, and master in a multimedial way. As the team moves around in the streets of (medieval) Amsterdam, it receives pre-recorded video clips with characters from the Middle Ages who provide information on historical locations and on the strange disappearance of the holy relic. Along the way, these medieval characters reveal bit by bit what happened to the relic, allowing players to piece this story together.

At the same time, the teams are competing with each other. Each team of pilgrims has to decide to stay away from other teams or call on a confrontation – their order determines who wins. The winning team takes away hard-earned medieval Days of Burghership from the team who loses. Team members can also earn a monk’s habit,

which makes them invisible to the other teams, and they can drop virtual bombs to kill each other's communication facilities with HQ.

According to Henry Jenkins, the ludology-narratology debate I referred to earlier over-emphasizes "the question of whether whole games tell stories and not whether narrative elements might enter games at a more localized level" (Jenkins, 2004, p. 121). The fact that the game's spatial experience of moving around in the city of Amsterdam is crucial to *Frequency 1550* does not mean that there is no narrative context. On the contrary, I would like to argue that the way in which the game space is structured facilitates different kinds of narrative experiences. That is why Henry Jenkins refers to the design of these "spatial games" as "narrative architecture" or "environmental storytelling" (idem). The back-story of the Holy Host gives structure and meaning to the pupils' gaming experiences and provides a play area or staging ground where they can perform historical micro-narratives in order to fulfill their assignments.

Assignments. As soon as a team of pilgrims has reached a certain location, video assignments are automatically sent from the server of De Waag to the UMTS Videophone with the help of GPS. The team receives commands such as: "Now watch a video clip of the Schreierstoren [Schreierstower]." In order to obtain Days of Burghership, a team needs to demonstrate its knowledge of medieval Amsterdam by doing small location-based media assignments and by answering specific questions on the city's history, for example regarding the Schreierstoren.

Each team can complete all of the eighteen assignments that are related to specific locations. Pupils are encouraged to fulfill at least two assignments per sector, in order to open up a new sector with a new story and assignment locations. They can win points for these assignments, helping them to win the game. To be able to do so, they have to study the historical buildings and sources. At the same time, they are experiencing the story, and reaching the game's learning goals. All the assignments are short-term learning activities that deal with relatively small learning units, two aspects of what has been called "microlearning" (Hug, 2006). These assignments enable the pupils to participate actively in the learning process without forcing them to obtain a complete overview of Amsterdam's history. Each assignment starts with an introductory video clip, and then the pupils are asked to do research and enact some kind of historical situation that they have to register and send to HQ with their smart phone.

The first example of such an assignment I will discuss here is related to the Schreierstoren. The pilgrims have to portray the development of the legend of the name of the Schreierstoren in a video clip. HQ helps its team members by searching the Internet for the two possible explanations of the tower's name and communicating them as quickly as possible.

The Schreierstoren is a defensive tower in Amsterdam that was part of its city wall. The building of the tower was completed around 1487. It is the only remaining defensive tower. Its original name was the Schreihoeckstoren, because the city wall makes

a sharp (= ‘schrey’) angle (= ‘hoeck’) on this spot where the Geldersekaade and the Oudezijds Kolk – two streets – meet. However, the Schreierstoren has gone down in history as the “wailing tower.” At this spot, the wives of sailors bewailed the departure of their beloved husbands. In 1569 or shortly after, a tablet that depicts this scene (figure 5) was placed in the tower adding to this second interpretation. With her right hand, a female figure in a long robe points to a ship that is sailing away. She keeps her left hand in front of her face in desperation. Above this scene it says ‘Scrayer-Hovck 1569.’

Although this story is frequently told and believed by many, historians agree that its authenticity is problematic. As Geert Mak writes: “it is commonly assumed that the name [Schreierstoren] means ‘wailing tower,’ though in fact it has nothing to do with sobbing sailors’ wives waving goodbye and everything to do with the *schreye*, the sharp angle on which it is built” (Mak, 1999, p. 58).



Figure 5. Tablet Schreierstoren © Municipal Archive Amsterdam (Gemeentearchief Amsterdam)

The second assignment concerns the building at Zeedijk number 1. The pilgrims have to find the name of the building and discover its relation to a well-known saying and express the latter in a video clip. An additional question concerns a change in the construction of wooden houses. A special law of 1452 forbade owners to use wood for the sidewalls of their houses. HQ is asked to help its team members via an Internet search.

The building’s name is ‘t Aepgen (the Little Monkey). The house is one of the oldest in Amsterdam and was built around 1550. Apparently, the following Dutch expression, which is still frequently used, finds its origin in this house: “in de aap gelogeed zijn” (to be housed in the monkey) meaning “to be duped.” According to the story, the owner of the sailors’ inn kept monkeys that sailors brought back home from their voyages around 1600. These animals had fleas and other vermin and when somebody

walked around the Zeedijk having a good scratch, he was said to be “housed in ’t Aepgen.” As is the case with the Schreierstoren, this story is disputed. According to Riemer Reinsma: “The core of the story is false. In the past centuries, there was no bar residing in that house at the Zeedijk” (Reinsma, 2006, p. 204). According to Reinsma, it is plausible that the saying is related to a notorious inn called The Ape, but that is all we know. “The sailors and the fleas are made up. Meanwhile this nonsensical story is almost ineradicable” (idem). Today, the building’s ground floor is a café and the upper floors are part of the Barbizon Palace Hotel.

Zeedijk 1 is one of two remaining wooden houses in Amsterdam. It has sidewalls of stone. Initially, Amsterdam consisted of wooden houses. Stone houses were only built on a large scale from 1600 onwards. Most of the wooden houses burned down in the two big city fires of 1421 and 1452. The latter fire destroyed three quarters of the city. In the wake of this fire, the sidewalls of the houses had to be of stone.

The learning goals of both assignments are diverse. Pupils were asked to indicate the place of the Schreierstoren and Zeedijk 1 on contemporary and medieval maps. They learned about the city walls, for instance that the Schreierstoren is the only remaining part of the wall and that its name can be explained in several ways. Though a definite answer was not always at hand, they had to learn to choose the best explanation and argue for it. This example shows that the mere facts are insufficient to construct a true image of the past and that one has to select, organize and interpret these facts, a process in which stories can be helpful. Pupils learned that originally all Amsterdam houses were made of wood, that fire was one of the biggest dangers facing a medieval city, and that the city council took all kinds of measures to reduce the devastating effects of a city fire. Furthermore, they learned all kinds of skills related to historical knowledge: how to use arguments in discussions, how to be critical of all kinds of interpretations and of Internet or physical sources (such as parts of a building, e.g., the Schreierstoren tablet), how to determine differences and similarities between past and present situations.

3 Learning Results

Frequency 1550 had six different learning targets: five of them are a specification of the basic assumptions of Waag Society’s domain of cultural education I discussed above. The sixth one is specific to *Frequency 1550* and concerns the acquisition of historical knowledge about Amsterdam.

Creation. One of the research findings of the *Frequency 1550*-pilot is that the use of smart phones, GPS-technology and the Internet, but also and foremost the creation and communication of images (pictures, video), sound and an online presentation had a positive impact on pupils’ digital media literacy. According to Saar van Kouswijk, educational staff-member of Waag Society, the game showed that: “learning by doing

(constructive learning) does, indeed, provide better results than learning by being taught (instructive learning).”

What *Frequency 1550* also shows is that the strict dichotomy between instructionist and constructionist philosophies of education is an untenable one. When we adopt the split between “playing” and “making” games in education as discussed by Yasmin Kafai (2006), *Frequency 1550* clearly reveals aspects of an instructionist philosophy of learning. For pupils are instructed how to play this well-designed game, both by exploring an unknown medieval world and by selecting possibilities that were programmed in advance. In this way, the game makes it easier and more pleasurable for pupils to learn the medieval history of Amsterdam. At the same time, however, these pupils have to construct the knowledge essential to playing and winning the game – what is generally called “constructivism.” They have to construct multimedia messages to do so, elements that belong to a constructionist philosophy of learning. What we are witnessing here is what Paul Kirschner has termed “a fusion of the extremes” (Kirschner, 2006, p. 5). *Frequency 1550* shows that pupils are no longer mere consumers of culture, but that they also can be instructed in how to participate in its production, namely by exploring, selecting, and constructing all sorts of cultural and historical meanings and practices (see Raessens, 2005).

Digital Lifestyle. The second result showed that pupils felt motivated to learn about Amsterdam’s history not only by using digital media such as computer games, cell phones, the Internet and locative technology (GPS), but also by using a combination of a game and a story. Although *Frequency 1550* takes place outside the classroom, it is not a form of “informal learning,” but of “formal education” involving intention and commitment. What is remarkable about the game is that it appeals to the informal learning skills that pupils playfully acquire using digital technologies outside school (see Smith, 1999). It is important to notice that the success of the game depended largely on faultless, rather unobtrusive technology. On the first day, the pupils Savannah and Scarabee thought the technology difficult to handle: “It took a while before we got used to it. But on Tuesday [the second day] we already did much better” (Rippen, 2005). Both pupils agreed that, in the end, playing the game had enhanced their technological skills. And according to Saar van Kouswijk, the technology was transparent enough not to disturb the game play.

We understand better how pupils became motivated by the gaming elements of *Frequency 1550* by referring to three different relationships between entertainment and education (Ritterfeld & Weber, 2006): the motivation paradigm, the reinforcement paradigm, and the blending paradigm. Firstly, the game experience serves as a motivational facilitator for processing information about the history of Amsterdam. The educational content on the Middle Ages is enriched through entertainment (the motivation paradigm). Secondly, the scores, the achievement of the assignments, and the reward of progress by the game are reinforcement strategies to keep the pupils interested in the game’s educational value (the reinforcement paradigm). According to

Ritterfeld & Weber, “both the motivation and the reinforcement paradigm are based on an additive concept of entertainment and education, in which educational information is added to an entertaining program or vice versa (...) Yet (...) entertainment-education unfolds its greatest potential strategy if the information provided becomes an essential part of the entertainment experience” (Ritterfeld & Weber, 2006, pp. 407-408). According to both authors, role-play is a game-format that perfectly blends education and entertainment: “we assume that the mimic of role-play is most sufficient in providing highly immersive experiences with entertainment and education combined. We consider the experience of nonmediation (presence) an indicator for a successful blend” (idem, p. 410) (blending paradigm). As players take on the identity of pilgrims and immerse themselves in historical practices to perform acts like the sobbing of the sailors’ wives, they experience these moments of presence.

The pupils described their motivation for the game as follows: “You take much of it in. But especially the struggle with the other teams makes it really nice. Much nicer than a normal history lesson. We are very glad that our teacher was able to arrange this.” (Rippen, 2005) In response to the question whether they had learned more from playing the game than from a book, they answered: “H’m, yes I think so.” (idem) The pupils had no difficulties with the non-linear structure of the game; they enjoyed the freedom that it provided. The narrative scenario also turned out to be an effective way to make them enthusiastic about this historical game.

But some aspects of the story and the game were problematic. Some of the pupils identified themselves so strongly with the story that they had difficulties differentiating between the fictional story elements (such as the role of the medieval city’s bailiff in the game’s back-story) and the real source material (such as the story of The Miracle of Amsterdam). And though it seems to be a good idea to use a narrative framework for bringing together the micro-elements of the game, some pupils thought that the storyline was not sufficiently sustained by the game elements and vice versa. Some also thought that the scenario was too complex, which made it difficult for them to fully understand the goal and the mission of the game and limited the flow of the game. One of the aims of this pilot was to find out how long the game ideally ought to take. Many commented that the game should take no more than a few hours, instead of two days. Last, but not least, some of the pupils thought there was too much emphasis on the learning part, which spoiled the fun part of the game for them.

Social Learning. While playing the game and discussing game tactics, for example, pupils used and further developed their communication and collaboration skills. Therefore, Waag Society seems to be right in calling *Frequency 1550* a form of social learning, or, as Paul Kirschner says, a form of dependent learning. This is “the acquisition of competencies which include not only individual knowledge and cognitive skills, but also attitudes and interpersonal skills (i.e. social and affective). The learning process is a group process leading to group achievement and is assessed as such” (Kirschner, 2006, p. 8). At first sight, the game does, indeed, seem to oppose “inde-

pendent learning.” Within the independence paradigm, “learning, which is often seen as the acquisition of knowledge and skills, is considered an individualistic achievement of each learner herself/himself and is assessed as such. Goal achievement is autonomous and unrelated to what other students do” (idem, p. 7).

According to Paul Kirschner, however, “independence” versus “dependence” is another dichotomy we have to criticize, comparable to the “instructionism” –“constructionism” dichotomy I discussed earlier. A better way of understanding what happens in *Frequency 1550* is what Kirschner calls “interdependent learning.” *Frequency 1550* has both an independent aspect (each pupil has his/her own individual responsibility) and a dependent one (as part of a team, they are all dependent on each other). An individual pupil is not ‘only’ or ‘just’ an element of a team of pilgrims, but an entity on his/her own that has to be taken into account. A team of pilgrims can profit from the recognition that each individual member already possesses specific knowledge and skills necessary for the group as a whole to win the game. And the effects of the game depend heavily on previous experiences of each individual pupil. The learning effects of *Frequency 1550* seem to be the result of a productive interplay between dependent and independent aspects.

Presentation and Reflection. On the third day, after two days of playing, all teams gathered at HQ to see what they did best, and to collectively reflect on the media produced, their answers to the questions, and the strategic decisions taken during the game. These aspects became even more meaningful to them when they had to present their results to a wider audience of classmates. By discussing the results, their choices, and the challenges they overcame with team members, but also with ‘outsiders,’ they learned to reflect better on the creative process in which they were involved.

In this whole process, pupils were encouraged to play with, to take on and reflect on old and new identities. As James-Paul Gee writes: “Learning (...) requires identity work. It requires taking on a new identity and forming bridges from one’s old identities to the new one” (Gee, 2003, p. 51). One of the identity issues involved is related to the question of whether learning about Amsterdam’s cultural legacy influenced pupils’ Dutch cultural identity – a question I will return to at the end of this chapter. Another identity issue relates to the question of how playing the game influenced their identity as “problem solvers,” for example. Pupils could only play *Frequency 1550* when they were willing and able to take on the identities of problem solvers (the pupils at HQ searching the Internet for solutions), and/or performers (those pupils who were performing as the sobbing wives of sailors). Although this aspect was not researched thoroughly, pupils who felt comfortable with their new identities must have profited greatly from their old identities, for example, if they already had ICT and/or theatrical competences. It is likely that the presentation and discussion of the game helped them to transform their identity and to reflectively take on these new identities, and, by doing so, internalize them.

History. Is it the case that an active experience of history through the immersing qualities of a location-based game really adds to historical awareness, knowledge and appreciation of the city and its history, and enhances competences such as the interpretation of historical sources and references? This question can be answered positively. However, it is more difficult to determine whether this playful instrument of historical education ought to be privileged over traditional means of dealing with the curriculum.

On the third day of the pilot, educational staff-member of Waag Society Saar van Kouswijk extensively evaluated the game with the participants. The pilgrims had to do a test to determine what they had learned. The test consisted of twelve questions, partly related to the game's back-story, partly related to the factual historical knowledge they had acquired. Some of these questions were: What is the story behind the Miracle of Amsterdam? How did this miracle contribute to the rich and prosperous nature of the city of Amsterdam? What is a bailiff? What is a burgher? How did one become a medieval burgher of the city of Amsterdam? Can you think of a contemporary profession that is comparable to the bailiff's job? What is the meaning of the Schreierstoren (optional question, depending on the zone in which they played the game)? According to Van Kouswijk, "It is clear that they have learned a lot, and that they are also very enthusiastic. The results of the test were better than we had expected. Such a view on the daily life in the Middle Ages has apparently stayed in their memories quite strongly." But the educational concept of the game was also problematic in some respects. Though the test results were positive, some pupils also thought that there were too many assignments, which were too complex for this target group. They also remarked that there were too many learning goals.

Frequency 1550 partly matches the goals of the official History curriculum, in particular those concerning the period: "The time of cities and states: 1000-1500." It is important to notice that the game is not meant to replace, but to complement and reinforce small units of the compulsory subject matter. *Frequency 1550* avoids the criticism of traditional histories that pass on from the past only that which seems relevant today, as formulated by the Italian philosopher Gianni Vattimo: "At school we studied the dates of battles, peace treaties and even revolutions, but they never told us of radical changes in forms of nutrition, or in sexual attitudes, or things of that kind. History speaks only of events involving those who count, the nobles, the sovereigns, or the middle-classes once they became powerful. The poor, and those aspects of life considered 'base,' do not 'make history'" (1992, p. 3). *Frequency 1550*, on the other hand, enables people to participate in a game that is a guided tour along the most significant historic buildings and sites of Amsterdam (such as the Schreierstoren) and learn about their architecture and preservation on the basis of episodes from the life stories of ordinary people (such as the innkeeper of 't Aepgen). The game offers a compelling reconstruction of micro-aspects of everyday life in the medieval city of Amsterdam.

4 Future Research *Frequency 1550*

In 2006-2007, *Frequency 1550* will be played ten times with a slightly adapted educational concept. The effects of the game will be researched more systematically and in more detail when compared to the pilot. The learning results I described earlier are based upon the evaluation of the game by the designers and players, their personal observations, and on the test, not on an extensive evaluative study. This future research will focus on four aspects: the knowledge of Amsterdam's cultural heritage acquired by pupils; the impact of gaming and storytelling on pupils' motivation for, and engagement with, the learning process; cognitive skills, such as spatial abilities, media literacy, decision making, problem solving; and the pupils' potential for further, life-long learning (so-called metacognitive learning-to-learn competences). Metacognition refers to the fact that pupils are conscious about their strategies for knowledge acquisition or problem-solving for example. We will also look at the possible restrictions of this approach in terms of costs and application in other fields such as physics, mathematics, biology, etc.

In educational terms, *Frequency 1550* is a mediated learning environment in which pupils cooperate and communicate with each other on historical locations, using today's technology, such as PCs, the Internet, cell phones, and GPS. What makes this a special case is the presence of the game and a story line which situates pupils in the historical context itself. The teams interact with the system and compete with each other, and, thus, they influence the course of the game. In order to measure the effects of *Frequency 1550*, the game will be compared with a project-based collaborative learning environment in which the game and story elements are missing.

Two hundred and fifty pupils will play the game, from ten classes at the Montessori Comprehensive School Amsterdam and the Open School Community Bijlmer (both are secondary schools). The same number of pupils from ten other classes at these schools will receive comparable assignments in a learning environment where small groups of pupils will be collaborating via PCs and the Internet. The four types of effects will be measured immediately before, immediately after, and two months after the playing of the game. The comparability of the game and non-game settings are guaranteed by taking into account four variables that can interfere with the end results, namely the differences between boys and girls, between competent and less competent students, between students with a varying degree of ICT competences, and between students with different ethnical backgrounds. Why is the latter variable important? The *Yearbook ICT and Society. The Digital Generation* (De Haan and Van 't Hof, 2006) argues that migrants' use of the Internet is decreasing when compared to native students. If the number of migrant and native students in both populations differs considerably, the researchers could end up with a study of ethnic differences instead of a study of the impact of gaming.

Qualitative and quantitative empirical research will be carried out by the Graduate School of Teaching and Learning (University of Amsterdam), and the IVLOS Institute

of Education (Utrecht University). Research assistants will observe the students, and students and teachers will be interviewed. The four effects will be measured quantitatively. Research will look at the different effects of *Frequency 1550* on the groups mentioned above, taking the four variables into account. Research of the identity issues at stake is part of the research program *Playful identities. From narrative to ludic self-construction* (see www.playful-identities.nl). The impact of these kinds of spatial games and environmental storytelling on learning processes will be researched within the GATE-project: *Game research for training and entertainment* (see www.gameresearch.nl). Both projects belong to the New Media and Digital Culture department (Utrecht University).

5 Dutch National Historical Museum

In September, 2006, the Dutch government decided upon the establishment of a National Historical Museum in the Netherlands (NHM³). Just as is the case with *Frequency 1550*, the goal of the NHM is to reinforce the Dutch population's historical knowledge and understanding. Taking as its starting point "The Canon of the Netherlands," the things everybody should know about Dutch history and culture, the museum wants to present a complete and coherent chronological overview of Dutch history that is divided into ten periods. As we have seen above, one of those periods – "The time of cities and states (1000–1500)" – is at the center of *Frequency 1550*. The museum is aimed at a wide audience, in particular pupils of primary and secondary schools, and will be part of the teaching activities within the History curriculum. To reach this audience, the NHM wants to be a place of "living" instead of "frozen" history. The basic principle underlying the NHM is that not only Dutch historical consciousness, but also Dutch cultural and historical identity need to be strengthened, in order to improve the social cohesion of Dutch society. "Without knowledge of their history the Dutch do not know who they are" summarizes the motto of the NHM succinctly.

The idea of a National Historical Museum was disputed from its beginning in 2003, not only because the idea of a single history of a single nation is being undermined by processes of globalization and fragmentation, but also because such a history is undesirable to some critics. In their view, it would ignore the cultural diversity and multiculturalism so typical of the Netherlands. This does not mean, however, that it is impossible to define cultural identity or that cultural citizenship forming would not be desirable. Citizenship can be defined as the membership of a community based on a set of common values, not only in an economical and political, but also in a social and cultural sense. It is crucial that people have the right "to belong to an identity, to contribute to its definition or to withdraw from belonging in order to create new meaning" (Alberto Melucci, 1989, as cited in Uricchio, 2003, pp. 9-10). They must be free to

3 See <http://www.nationaalmuseum.nl>

question old values and identities and search for new ones. The ability to do so, that is, to participate in the kinds of cultural practices the NHM wants to focus on (as I have discussed in this chapter), constitutes an important condition for the formation of citizenship and the diversity mentioned before. As I have discussed above, pupils who play *Frequency 1550* have to collect so-called “Days of Burghership” to acquire burghership or citizenship. Because they want to win the game, they acquire competences that are a necessary condition for becoming empowered social and cultural citizens in today’s world, to echo William Uricchio (2003).

We could take Jenkins’ idea of “environmental storytelling” as a metaphor for such an interplay between a unified and diversified identity. The chronological overview of Dutch history could function as a back-story that not only gives structure and meaning to the performances of a multiplicity of micro-narratives, but also functions as a play area or staging ground for these performances. In the plan that sketches the outlines of the NHM, the author Wim van der Weiden pays attention to this. According to Van der Weiden, the NHM must not only focus on “the ‘highlights’ of our history” (think of the Schreierstoren), but also on “the history of everyday life” (think of ’t Aepgen), not only on “those things we can be proud of” (our self-image as a tolerant nation, for example), but also on “the black pages of our history (for example the slave trade and the police actions”⁴ (Van der Weiden, 2006, p. 6). This is why on Prinsjesdag 2006, Queen Beatrix referred to the founding of the NHM with the words “Culture binds and enriches.”⁵ In conformity with these words, the NHM must have in mind the cultural enrichment of Holland as the result of migration, and the solidarity between the different cultures present in the Netherlands.

Digital media play an important role in this plan. Thanks to the media-specific characteristics of cell phones, the Internet, and serious games, the public will be able to experience the history of the Netherlands in an interactive and multi-medial way. Though *Frequency 1550* is not mentioned in the plan, Van der Weiden is enthusiastic about elements that also play a decisive role in this particular game: the use of quests inside and outside the museum, short documentary video clips received on cell phones, the use of various media that strengthen each other, and the use of a strong story that a visitor to the museum can experience him/herself. All of these elements evoke the image of a game like *Frequency 1550*. Games and stories are not only appropriate metaphors for cultural identity, as I suggested above, they are also important and powerful tools for individuals and collectives to actively and reflexively construct their identi-

4 “The police actions (Dutch: politionele acties) were the two military operations that the Netherlands undertook on Java and Sumatra against the Republic of Indonesia to reestablish colonial rule after World War Two. The first operation took place from July 21 until August 5, 1947, the second in December 1948 and January 1949. The operations took place during the time of the Indonesian fight for independence.” Available from: http://en.wikipedia.org/wiki/Politionele_acties [Accessed 17 September 2006].

5 On Prinsjesdag, the Queen of Holland delivers a speech to a joint session of the Senate and House of Representatives, in which she sets out the government’s plans for the year to come. Available from: <http://www.koninklijkhuis.nl/english> [Accessed 17 September 2006].

ties (see www.playful-identities.nl). It is likely that mobile and location-based learning games like *Frequency 1550* are going to play an important role in a future Dutch National Historical Museum. Although they are still small in number and micro-sized, the impact of these kinds of serious games on established cultural practices may turn out to be greater than we would expect at first sight.

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