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How Physical Work Environment is Perceived to Support Digital Artists

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Abstract

The purpose of the study was to describe digital artists' notions about their physical work environment in an organizational context. It is suggested that digital artists are creative professionals that use personal, creative imagination and skills to practice problem-solving by producing artistic artifacts. Based on four in-depth interviews and nine email interviews a qualitative research effort was undertaken. The results demonstrated that the physical work environment was considered to support the digital artists on a personal level and on a group level. It was also perceived to provide physical, functional and psychological support. In addition the respondents expressed the need for the physical work environment to act as an inspiration carrier for both creativity enhancement and artistic problem solving needs. Further the study discussed the preferred physical work environments for creativity as suggested by the respondents.

Keywords: creativity, human resource management, physical work environment, digital artists

Introduction

It looks like a conventional office, an open plan, white walls, a building in the middle of the city, tables and computers everywhere; but there is a different feeling that infiltrates the rooms. It is in this place that creation happens, abstract visualization comes into expression, creative ideas find implementation and inspiration becomes a real product. I sit among computer graphics artists in t-shirts and jeans and see them carefully moving digital pens across digital tablets while colors and shapes are taking forms as constructions, landscapes and explosions on the screens. Suddenly I realize that I'm observing a new breed of workers, a symbiosis of artists and white-collar employees who produce creativity from nine-to-five on demand (from the field notes).

By entering the digital era, in the 1990s and as a result of the so called “digital revolution”, the nature of work and its implementation has changed for many occupations. For artists, it has opened a whole new field of professional specialization (Marcos, 2007). The impact of digital technology has transformed traditional ways of painting and sculpturing and moved them into a totally virtual realm (Wands, 2007). Together with the traditional art being transformed, whole new fields and their combinations have emerged in the digital era. Virtual reality arts, such as computer games and digital animation, are among them. People work with digital art, just like their traditional colleagues practice visual art, but their tools are different. Digital artists work with computers (hardware) and special programs (software) to create visual images, either still (e.g. digital painting, matte painting), moving (animation) or interactive (e.g. video games). The work of digital artists can be seen everywhere in the modern society: covers of books and magazines, pictures on soda cans, illustrations in IKEA catalogues, movies and cartoons, commercials on TV, webpages, computer games et cetera.

Digital arts professionals, unlike their traditional colleagues, only need a computer with a software package to be able to perform their job. This explains why digital artists can work on a freelance basis since the nature of their job do not necessarily ask for a specific location. However, some branches require digital artists to work closely together in teams to create end products. Computer games developers, movie and video post-production teams can be mentioned as examples of branches in which different groups of digital artists such as concept artists, character designers, visual effects artists, animators, will work together with other professionals in teams.

These professionals usually work for a company, on a company location, in an office-like environment. Just like for many other occupations, the work environments, will differ from company to company and so will their policies for human resources. The only common

trait is that many artists are working with digital media in the same location to create an end product, be that a video game, an animated movie or a commercial.

Creativity and Artistic Problem-Solving of Digital Artists

Levy and Langer (1999) define creativity as “the ability to transcend traditional ways of thinking by generating ideas, methods and forms that are meaningful and new to others”. Sutton (2004) emphasizes that creativity is not only creating something completely new, but also using creative imagination to combine already existing information in new ways. It is possible to say that digital artists are creativity workers who practice “conscious use of skill and creative imagination to produce artistic artifacts and cultural contents using new technologies” (Marcos, 2007). Contemporary researchers agree that creative performance requires both certain personality traits and certain cognitive skills (e.g. James & Asmus, 2001).

Some of the personality traits that were reported to contribute to creativity are self-confidence, flexibility, aggressiveness, attraction to complexity, risk-taking, a desire for recognition, high energy, intuition and creative self-image (Barron & Harrington, 1981). Among the cognitive abilities that contribute to creative behavior are problem-finding, problem-solving, information-organization tendencies and idea generation skills (e.g. Amabile, 1996; Gardner, 1992).

Digital artist in the entertainment business use their skill and creative imagination to produce artistic artifacts for a company, and that fact calls for an altered definition of digital artists. Mumford (2000) suggests that in an organizational context creative work involves three stages. In the first stage a problem has to be defined, in the second stage a solution has to be found and in the third stage the solution has to be successfully implemented. One can further speculate what the connection is between creativity and problem-solving. Runco and Pritzker (1999) say that “Problem solving and mature creativity are different in duration and effect, both external and internal. But both creativity and problem solving share a common starting point - incongruity in a problem. Both also require knowledge, motivation, repetition and discovery of unique combinations.” James and Asmus (2001) have found evidence that positive creative personality significantly and positively relate to problem solving. Similarly negative creativity scores were significantly and negatively related to problem-solving. The results suggest that creativity and problem-solving involve related dimensions of personality and individual cognition. As a result it can be speculated that the work of digital artists in an organization is about use of skill and creative imagination to practice problem-solving by producing artistic artifacts.

Physical Environment that Supports Creativity and Artistic Problem-Solving of Digital Artists

Harrington (1999) defines a creative ecosystem as “the entire system from which creativity emerges, including three basic elements, the centrally involved creative person(s), the creative project, and the creative environment, as well as the functional relationships which connect them”(p. 323). Hence a company that operates with creative human resources and delivers a product as a result of their artistic labor can be called a creative ecosystem. Studies have been conducted (e.g. Barron & Harrington, 1981; Hunter, Bedell & Mumford, 2007; Shibata & Suzuki, 2002) about what contributes to the creative performance of an employee. It is being argued that, just as Harrington proposes there are three aspects to the creative ecosystem - personality, socio-organizational environment and physical environmental. The personal influence on creativity, as has been discussed previously, combines personality traits and cognitive skills. Social-organizational context describes the type of tasks, projects, ways of working, leadership et cetera. Physical environment combines physical artifacts of the environment, like furniture, light, sound, floor plan et cetera. Dul, Ceylan and Jaspers (2011) studied the significance and contribution of these three aspects to the creative performance and came to the conclusion that “creative personality, the social-organizational work environment and the physical environment - are all significantly and positively related to creative performance.” Furthermore Dul et al. (2011) came to a conclusion that although all three factors are significant for creativity, personality makes the biggest contribution, even bigger than social-organizational and physical environment altogether and that physical work environment plays slightly smaller role than socio-organizational environment.

Harrington (1999) argues that good physical work environments, although not absolutely necessary, will certainly aid creative performance. He states that creative ecosystems and environments, with availability of tools, equipment and adequate space influence the likelihood that creative people will perform their tasks more efficiently.

Harrington (1999) argues that it is nearly impossible to design a physical environment to fit every employee. It is possible though to design a physical environment to fit the specific tasks that are being performed in the environment (Abdou, 2007). Dul and Ceylan (2011) suggest that a creative employee who is put in a traditional organizational environment may not be able to show the desired creative behavior. Woodman et al. (1993) say that the extent to which an employee can produce creative ideas depends on the support s/he gets from the

environment. It is plausible to suggest that a physical work environment can be designed to support tasks of the digital artists and digital artists in entertainments business in particular. The work of digital artists, as has been mentioned before, is about using skill and creative imagination to practice problem-solving by producing artistic artifacts. Hence it is possible to suggest that a fitted physical environment for the digital artists should support creativity and artistic problem-solving.

Physical Comfort, Functional Comfort and Psychological Comfort. For the past ten years there has been conducted research assessing effects of the physical work environment on employees and effects of the physical work environment on employees' creativity. Vischer (2007) studied effects of the physical environment on job performance. She argues that the physical environment of work affects both job performance and job satisfaction. She proposed a theoretical model of worker-workspace relationship in which stress and comfort play a significant part. The researcher suggests that an employee who experiences discomfort in the work environment will be more stressed. This relates to mismatch or misfit between the demands of the situation and the resources the individual has. Further she describes environmental comfort as an opposite to misfit. The environmental comfort at a workplace can be physical, functional and psychological. The author specifies that physical comfort is related to basic human needs such as safety, hygiene and accessibility. She defines functional comfort as "ergonomic support for users' performance of work-related tasks and activities". Functional comfort combines such aspects of the physical work environment as appropriate lighting, ergonomic furniture and rooms designed for meetings and collaborative work. Psychological support is about "feelings of belonging ownership and control over workspace." According to the author although the three dimensions of the total comfort can compensate for one another, the most optimal workspace is the one that assures quality at all three comfort levels. According to the model of environmental comfort the work environment either supports the tasks and activities that are being performed there or fails to support them and slows them down.

Creative Performance and Work Environment Support. Stokols, Clitheroe and Zmuidzinas (2002) assessed general qualities of work environment that promote perceived support for creativity. The researchers studied 97 university campus-based full-time supervisors and staff-level employees. The results show that individuals who perceive support from their work environment show higher creative performance. The authors assessed the quality of social climate and levels of physical distraction and found that a more positive social climate was associated with greater perceived support for creativity at work and higher

environmental distractions were associated with lesser perceived support for creativity. Evolving the topic of physical environment support for creativity. Vithayathawornwong, Danko and Tolbert (2003) studied the role of the physical work environment in supporting creativity in organizations. The researchers compared four organizations that are acclaimed for their innovative social-psychological work environment but that have different physical environment. The results of the study indicate that physical work environment influences creativity by contributing to two social-psychological conditions that are related to creativity – dynamism and freedom, discussed by Ekvall et al. (1983). Based on the qualitative and quantitative analysis the researchers described dynamic physical work environment in terms of layout and spatial arrangements, enclosure of office or workspaces and accessibility; openness in both layout, spatial arrangement and greater accessibility were connected to a more dynamic physical environment. The results also show that no ambient conditions of the physical environment like temperature, air quality, or acoustic quality were mentioned to be associated with dynamism. Freedom was discussed to be high in open-plan offices, and work places that provided with stretch-out facilities and break areas. Office layout and access to resources was also discussed as important contributors to perceived freedom of the physical environment. The study adds empirical evidence of how the environment and the interior design support creativity.

Interior design. To address interior design, McCoy and Evans (2002) conducted two empirical studies investigating the role of specific interior design elements on creativity. In the first study the researchers used a number of photographs picturing different types of physical work environment and asked participants (60 undergraduate psychology students) to rate the creativity potential of each presented environment. The results of the first study suggest that a physical environment with greater perceived creativity has complex visual details, view of a natural environment, use of natural materials, fewer cooler colors used and less use of manufactured or composite surface materials. In the second study two actual physical environment settings were tested, one that was rated as high in creativity potential by the participants of the first study and one that was rated relatively low. The researchers measured creative performance of twenty participants (high school students) in these two physical environments. The result show that creative performance was greater in the setting that had been rated higher in creativity potential by the participants in the first study. A study similar to the first part of McCoy and Evans (2002) was conducted later by Ceylan, Dul and Aytac (2008). The researchers examined whether physical work environment can stimulate manager's creativity. A total of 60 managers from a manufacturing company evaluated 25

photographs showing different types of work environments. The results indicate, just like the previously mentioned research, that physical work environment differ in terms of creativity potential. However the results differ from McCoy and Evans (2002) on several points. Their results indicated that offices with high creative potential have lower complexity, brighter lighting conditions, windows and cooler colors; however both studies do agree that many plants are helpful. Ceylan et al. (2008) address the possible explanations for differences in the results compared to the study of McCoy and Evans (2002). They argue that the latter studied creativity potential of educational environments for undergraduate students and hence suggest that the two studies are not comparable in terms of study population, environment, also cultural differences and methodological differences. It is also been argued that it is difficult to compare the studies on the effects of the physical characteristics, if the range of levels of physical characteristics is different.

Creative Environment and Creative Performance. Later Dul and Ceylan (2011) studied general work environment for employee creativity with a large sample of 409 employees from different Dutch companies. The researchers used a conceptual framework for the effects of personal, social-organizational and physical factors on employee creativity to develop a Creativity Development Quick Scan (CDQS) checklist as an instrument in assessing work environment and perceived creativity potential in it. Based on the result of the study the researchers came to a conclusion that a creative work environment enhances creative performance. The researcher discuss further that companies can develop practical tools and solutions for designing creative work environments and creative physical work environments in particular.

Human Resource Practices. In another paper Dul et al. (2011) present results of the study in which they assessed a different group of workers, namely knowledge workers and the role of physical work environment for their creativity. They studied 274 knowledge workers employed in small and medium-sized enterprises. The results of this study suggest that Human Resource practices should focus on the individual, on the social-organizational work environment and on the physical work environment to enhance knowledge workers creativity.

Human Resource Management and Physical Environment Design for Creativity

Dul et al. (2011) state that human resource management (HRM) plays an important role in strengthening organizational innovation and creativity. They argue that HRM can also contribute to employee creativity by developing physical work environments that stimulate creativity. They refer to several studies from Denmark (Koch, 2003), Sweden (Edvinsson, 1997) and Netherlands (Hogens, Dul & Haan, 2007) with HRM involvement in change of the

physical work spaces. It can be speculated to what degree changes such as these in physical work environment can stimulate individual creativity. Several scholars such as Brockbank (1999), however state that office layout is a strategic HR practice to create a desired organizational culture of innovation and creativity. In the light of the abovementioned studies, it is plausible to suggest that HRM can be used to design and organize physical work spaces in order to aid its human resources. It also means that by manipulating the physical work environment in the ways that stimulate and promote creativity, the company can potentially achieve greater productivity of its creative human resources.

Motivation for the Study

A physical environment should reflect the tasks that are being performed there (Abdou, 2007). A misfit of environment can cause stress and lower productivity (Vischer, 2007). As with any other occupation, digital artists require a physical environment that will fit their needs to successfully perform their tasks. However, no studies have been done to study digital artists' requirements and notions on their work place. In a full-time employment, in the entertainment business, digital artists spend between 40 and 100 hours/week at the work location (previously gathered information), directly interacting with their physical environment. To my current knowledge no studies examining effects of the physical work environment on creative human resources have been conducted. Dul et al. (2011) present results of their study that suggest that highly creative people can benefit more from creative physical work environment than non-creative people. The lack of research in the area and the importance of better understanding the work environment of these creative individuals has been the main motivation of this study.

Aims of the Study

There are three primary aims of the study. The first aim of the study is to capture digital artists' notions regarding their physical work environment and what role they perceive it has for them when working in a full-time employment in a company. The second aim is to investigate what role the respondents regard an inspiring work environment has on their creativity. The third aim is to, based on the interviews, come up with suggestions for the environmental design that suits digital artists in particular, by attempting to outline an environment that, according to them, supports and enhances their creativity and efficiency in artistic problem-solving. The research questions are:

What role do digital artists think their physical work environment plays in supporting their work in a company?

What role do digital artists think an inspiring and creative physical environment plays in supporting them and their work in a company?

How should a physical work environment be designed according to digital artists to best support their needs?

Method

Participants

Thirteen respondents participated in the study (12 men and 1 woman). All participants are full-time employed in either video games or movie business, hold a title of an “artist” or work with computer graphics, have experience with working for several companies in more than one country and have at least 4 years of professional experience. Participants for this study were chosen based on their professional title, type of company and nature of the work they are performing on a daily basis. The participants come from Sweden, England, Germany, Norway and USA and were recruited through recommendations. Four participants participated in a face-to-face, semi-structured, in-depth interview and nine answered the same interview questions via email.

Instruments

This study has a narrow focus and is aimed at yielding a deep understanding of a topic. According to Patton (1990) “qualitative methods permit evaluator to study selected issues in depth and detail”. The strength of the method is that the researcher gathers data that go beyond numbers (Patton, 1990) and this approach shows to be most valuable in particular in in-depth studies of a selected group of people that has a specific niche in a broader population, which digital artists in the entertainment business are. Because there have not been conducted studies yet assessing thoughts of the artist in an office environment, an in-depth interview design was chosen. Interviews allow deeper and broader understanding of the research subject. The questions were prepared beforehand based on the literature study and previous observations of three samples of work environment. The interview aimed to gather information about participants’ preferences for their physical work environment. It was also aimed to capture thoughts and previous experiences participants have had of physical work environments. The interview was constructed in a way, where the first part consisted of factual questions about who the participant was and what type of job he was doing, the second part had only open questions about physical environment in general and the third part had questions about specific parts of the physical environment. The idea behind the categorization of the questions was first to assess what the participants himself deemed important and would

bring up to the table, while the more specific questions aimed to follow up on the topics that were not touched. The idea was to cover all the main aspects of physical work environment, but to let the participants guide the order in which different aspects would appear in the interview. The same interview questions were rewritten to better suit an email format and were sent out to participants who agreed to participate via email. The email survey participants did not work in Sweden, hence the choice of data collection via email.

Procedure

Data Collection. The face-to-face interview data was collected in 30 - 90 minute-interviews that were digitally recorded and transcribed verbatim. One interview was carried out during lunch time, another one was conducted on a weekend and two were carried out after participants' work. The answers to the email survey were collected and analyzed in the same manner as the data from the face-to-face interviews. The nature of collected data was largely similar to the data collected from the interviews; hence it could be analyzed similarly. The main difference was that the answers were more concise and many times given in half-sentences. Because the aim of the interviews was to assess notions and preferences, both the face-to-face interviews and the email surveys were judged to give similar and valid data. The email data had less space for beyond-the-answer analysis due to its concise nature. More data was collected in follow-up questions to clarify certain aspects of the original data or to gather additional information.

Data Analysis. The face-to-face interviews and the email interviews were analyzed in four steps.

1. The first step was to read through the written material several times in search for different aspects of the physical work environment and to label the interviewees' thoughts and feelings towards their work environment. I have used digital markers with four colors to mark in the text: preferences (violet), likes (yellow), dislikes (blue) and inspiration (green). I have also used labels to mark the passages in text and comment on what I thought they might mean.

Here is an example where the respondent is answering to the question about what he would like to have in the new office he mentioned previously if he was allowed to do it his way:

I think, there are couple of things that I really like at places where I have worked at. Here they do it a little bit, where you have sort of an **open bay, an open room**, where you have everybody you need there. From a working standpoint it is really cool. So for me it is about having everybody at the same place, it is easier to see, they are there and

you can always contact them. Things like color I think are important. Um, not so much like this (pointing on white walls around). This room in particular is very sterile . I would love a place, you know, that would let me like.. like organic green... When I had my office, I used to, when I worked at publishing house, I used to do art direction too and I worked with a lot of artist and I used to buy original art from them and that would be the first thing I put up.

In the same passage of the text I would put label to “you have everybody you need there” and put a comment: Perceives environment as a help. Openness of space is the first thing that is mentioned. I have also marked “from a working standpoint” and commented it by: His personal way of working – environment supports him personally. The third part that was marked in this passage was “the first thing I put up” and comment was: Art that is not related to work = inspiration = well-being. Inspiration is important?

2. After going through each interview several times in this manner, I would attain a good coverage of what is been said and would have a preliminary analysis written in the comments. The next step was to go through the interviews and my comments in a more systematic way to pull the information into common thematic categories. The categories were not designed beforehand, but were searched for across all the transcriptions and written interviews. The three common themes of the interviews were pulled into three major categories. The first theme is the importance of the functional comfort, the second theme is the importance of psychological comfort and the third theme is the importance of the inspiring environment. For example this passage:

I like it to be a very modern location, or place where you have big windows, you have white wood, you have different heights. You can maybe look down upon floors beneath you and you have big windows looking out potentially. I would also like there to be a lot of art. (...)So big computer screens that are correctly calibrated, painting boards, preferably Cintiq, easy access to inspiring things, like books, maybe a bookshelf. Movies... ways of actually playing them, I can actually play a blueray on my computer and I don't like DVDs I want to have blue-rays. A nice chair is very important. That is a very high priority, the chair must be really good. And where you are actually sitting the ergonomics must be really good, so you are not hurting your back, that is very important. I want to feel that they care for me by taking care of these things.

In this part the respondent talks about items that all are important to him, from both functional (correctly calibrated screens, painting boards, ergonomics), inspirational standpoint (inspiring books, lots of art) and psychological comfort (wants to feel that they care).

3. The third step was to dive deeper into each of the three themes and refine them further with introducing sub-categories. When talking about both functional and psychological comfort the respondents differentiated between their personal comfort and the

comfort of the group. Hence it was possible to introduce the individual level and the group level subcategories. An example for functional comfort on individual level (personal space): “Well I want a big desk for all my stuff. So that there is enough space for my keyboard and my Wacom and some notepad to write on and all my monitors. “

An example for functional comfort on a group level (shared space):

A layout designed should promote communication (don't shut people away). Design a layout to promote accidental cross-fertilization of ideas (so people can see what you're working on or hear conversations that may not be directly relevant to their own line of work).

An example for psychological comfort on individual level (privacy):

And a little bit more space around, it is quite important actually, that you feel your privacy, and you can work... you don't really realize it until you are located in an environment like this.

And an example for psychological comfort on a group level (team-feeling):

The open spaces promote a team-feeling, you want to feel like a part of the team, you do not want to be segregated in your little corner. The feeling of doing it together is important for the group morale.

The importance of the creative and inspiring environment was a large theme which encompassed both functional and psychological comfort on both individual and group levels. It was possible to introduce two sub-categories to this theme – inspiring spaces and inspiring fillers. An example of the first is the saying like:

I need an environment which facilitates creative processes by feeling creative itself - I could never work productively or be happy in an overly corporate environment where people were expected to behave like robots.

And the example for inspiring fillers is:

Other things that could be cool is having actual statues from the games, so like something that looks really cool, which is well-made, like a big statue of a hero, which is something I have requested in a place I worked.

4. The fourth step was to search the texts once again to match the occurred comfort categories to the Vischer (2007) comfort model of the environment. The functional and the psychological comfort matched, however I have omitted the physical comfort in the analysis. The reason for it was that although present in some of the interviews, it was a relatively small category that wasn't recognized until deliberately searched for. I have decided to include this category in the report however, partly because it is present in the interviews and partly because it completes the theoretical model of previous research.

Results

The results are presented in four main categories that address the roles a physical work environment is perceived to play in supporting digital artists. The physical work environment was perceived to support the respondents on a physical level, functional level and psychological level. These levels can be described in terms of comfort as suggested by Vischer (2005). The fourth category combines the notions of importance of creative and inspiring environment as yet another dimension of the perceived support.

Physical Comfort

The respondents to the study viewed their physical work environment in terms of how it can support them physically, so they would be able to perform their work. The respondents mentioned that it was important for them to have physical comfort in order to be able to do their job and be creative. It was mentioned that if physical functionality of the environment is not proper it would cause irritation, frustration and physical pains which will disperse their attention and limit the “creative flow”. An interviewee mentioned that when he was working with artistically challenging tasks and was pressured to solve problems, he felt that every little discomfort became ten times stronger. Another respondent said that a poor physical work environment caused him pains and medical issues. One artist said: “It is definitely harder to be creative when your head hurts. Well, I mean, you can still do your work, but the question here perhaps is not if you can at all...” The respondents have reported headaches and discomfort caused by lack of fresh air. Another problem that was mentioned was that in some work places expansion had been performed so fast that there were not enough toilets available.

Functional Comfort

Individual Level. The respondents differentiated between individual and group functional comfort of the physical work environment. Appropriate light along with giving physical comfort was viewed as one of the most important factors of the environment that enabled performance of work. Several artists mentioned that having good light was critical for drawing or planning their work. Depending on what the artists were working with they were in different need of lighting, but appropriate light, consistent and controllable, was mentioned as an important thing. Availability of daylight for many was mentioned as a big factor for them to perform their work functions. A respondent said: “For work that doesn't require

scrutinizing images, windows are always a big moral booster. Any daylight coming into the room makes a huge difference.”

Among the most important aspects for the functional comfort of the environment the digital artists mentioned ergonomic furniture and proper tools. Because they work with computers in a sitting position for many hours it was considered important to have good chairs and tables that could be adjusted to standing position, ergonomic keyboards and properly adjusted equipment.

Struggling with the functional environment was also reported to occur when the environment constrains one’s ability to work focused. Although open environments and open planning were generally preferred by the artists, working in environments with many people was also reported to create too much noise, something which negatively affected their ability to work concentrated. The majority of the respondents mentioned that it was very important for them to be able to work focused and undisturbed when needed, which demands an environment and tools that can support those needs. An interviewee told:

At the moment whenever I have a problem that I need to solve I need to go to somewhere quiet where I can think, which is usually the toilet at the moment. But I would prefer sitting in a quiet area where there are less environmental distractions, like below a tree or a plant to relax and really think about a solution.

Other respondents mentioned other ways of getting peace and quiet, such as, having good headphones to block out the sound and also some sort of partitioning of the work area, so the sound would not spread too much. Several artists mentioned a need for the companies to pay closer attention to the ways of how sound level in the open working space can be brought down. A respondent said that it takes him from a few minutes to half an hour to get mentally back to his work. Another respondent said that he can’t concentrate if someone in the room discusses something too loudly, something which happens often since the work often requires collaboration between people, groups and teams. One respondent, as a stand-out from majority, said that he loves noise and that he never cares about how loud it is around him.

Regarding personal space the respondents mentioned the need for enough space to hold all their things, in many cases including personal reference literature and reference material in general, space for analogue drawing and space for comfortable distance between

people. One respondent also mentioned the importance of enough space in his personal area where his colleagues could sit when visiting.

Group Level. Digital artists who work in the entertainment business are usually working in close cooperation with their group; collaborate between groups and form new groups depending on their immediate tasks. Hence they evaluate their functional work environment in terms of how good it supports the group-related activities.

The respondents expressed their appreciation of open planning type of environments, because it enables people to see each other and to feel like a coherent group. In general open spaces were viewed as greatly beneficial for the purposes of group-work. A respondent commented: “Having an open bay is really nice, because everyone you need is there (...). Small offices and closed doors separate you, and if you are like someone in charge, it can separate you from your team.” The importance to be viewed as a part of team was mentioned by several participants and indirectly expressed by nearly all. An interviewee told me that a physical layout of the environment, namely an open landscape, enables people to be more creative because they see what everyone is doing and get inspired by each other.

To address the need for forming new groups, some participants mentioned having flexible spaces. Flexible spaces mean spaces that can easily be re-arranged depending on what people need to work together and on what task. A quote illustrates the concept: “In one place they had that all the chairs they had wheels on them and also tables, so you could quickly rearrange and move closer to people you need to work with. That is very useful.” To address the same issue, some participants mentioned that it is important to have designated areas for particularly group work, like a brain-storming room, separated, non-formal spaces for a group to sit outside the desks and in general having a more “flexible” and “dynamic” layout within the office. The physical environment is being utilized for group purposes and the physical side of group creation - being in the same place, while the socio-organizational side of this activity - doing the actual project, is also being supported by the physical environment.

Psychological Comfort

Individual Level. In an open and busy environment lack of privacy was considered by several participants as an issue. Few respondents expressed a need for the environmental design that will enable one to be visible as a part of the group, but also give a sense of having a private space. Breaking up the space with glass, low partitioning walls, architectural elements, indoor furniture and artifacts arrangement was viewed as a possible solution to not only enable more focused and peaceful environment but also beneficial for overall feeling of creativity in it. A participant said: “It is quite important actually, that you feel your privacy

and you can work...” Very few participants reported either liking or being undisturbed by constantly having people around.

Windows in general were mentioned to have a big positive effect for the well-being at work. The respondents said that it created openness and it made them happier to be able to look at the outside world or to take a break to get out of the head-space, readjust the eyes and enjoy the view. The majority preferred nature-view because it was relaxing and to some inspiring, and people preferred any view next to not having a view at all. However, one respondent said that it is better to not have a nice view and see a sunny day, because it would make him feel bad for missing the experience.

Some artists mentioned that it is very important to them to be able to customize their space in accordance to their tasks and their personality because they had to spend a lot of time there and that made the whole environment more pleasant to be in. Some respondents said that personalization of their space is a necessity along with good light and ergonomics. In general the ability to customize the personal working space was viewed as motivation-, creativity- and well-being enhancer. An artist said: “I have to make it mine, I just have to. There is no reason for why I shouldn’t change it. I think it is very important for every creative type.” Some mentioned that it was important for them to be able to express their creativity also in their personal space. That was viewed as a “big moral booster”.

Another aspect of the personalization of space was the importance of perceived freedom. One interviewee said that “The only way I see to allow work space be great is to allow the people in that space to do anything they want to it.” Several respondents talked about either their own experience or some they had heard of, where a company had allowed the creative employees to draw on the walls, that was regarded as “really awesome”.

Stress management was reported by the respondents to be a general issue. The participants talked about “crunches” where they have to work overtime, sometimes more than 100 hours/week for a period that can last from few weeks up to several months. Regardless of their current job position the majority of the respondents mentioned that they often work under pressure of both complex tasks and deadlines and expressed their need to “get out of the head-space” or to manage their stress one way or another. The respondents talked about different means of managing stress and some of them included using the physical work environment. The leisure and game corners were reported to be beneficial for physical and mental relaxation. As a participant said: “Having some sort of 'chill out' area is also a great thing to have as it gives employees an area to relax and have some down-time in an otherwise hectic and busy environment.” Matters of the personal stress-management at work appeared to

be highly personal. Some respondents had a different opinion about the importance of the game corners and relaxation areas. The general worry was reported for people misusing them, although it was agreed by nearly all that it was nice to have environment not only for work.

Some talked about the importance of rooms or couches where one could take a nap. An interviewee mentioned his wish for a balcony or an indoor garden for getting fresh air. A few respondents talked about having big windows with a relaxing view. Several participants mentioned that they best managed stress by physical exercise and those who were provided with facilities for physical exercise at the company's location expressed their liking of that opportunity.

Some respondents mentioned that it was important for them, or at least a big well-being factor that the company showed that they cared by making the company environment feel homely, welcoming and supporting. By making the physical work environment suitable for the needs of the employees and showing constant improvement, the company would show that they cared and that would result in a stronger dedication from the employees' side. The respondents also mentioned that when they were asked about what improvements they wanted that made them feel cared for. The participants showed greater affection and expressed feeling of greater well-being in the companies that allowed and encouraged the use of their facilities and equipment for activities like movie-watching, celebration, chill-out, comfortable stay over-night et cetera. The employees felt like home and wanted to stay longer in the company building, contrary to finding the environment not welcoming and wanting to leave as soon as the workday was over. Some respondents mentioned that their company had provided them with all physical commodities they asked for and that they felt really cared for when the company made the campus interesting, exciting and to some parts luxurious. One respondent recalled:

It made you feel that they cared for you. That I think is important. They are not just doing it just because they want to get rich out of your hard work, they appreciate you and they will give you benefits, they will try to make you happy.

Some respondents regarded the fact that the company cared and showed it through concern of the physical environment as one of the more important factors for their job satisfaction, well-being and hence creative productivity.

Group Level. An open layout of the room was reported to facilitate communication and idea-spreading among the artists. The majority reported that an open plan office facilitates

creativity by “cross-fertilization of ideas” and inspiration-spreading. Having an open environment in itself was reported to have a psychological influence where people would feel more open, communicative and sharing. An interviewee puts it this way:

Benefits with working in an open environment is that people will see you, they will ask you questions, they will think of you when they walk by and say: oh by the way, I did this; and that increases information flow, both to you, but it will also increase from you, because you will stop people around you. You will also get inspired when you look at people working around you and you will see what they are doing: aha, that is interesting! Or I don't really like that, maybe you can try this. That's valuable.

Also other parts of the environments, like already mentioned game rooms and corners, were expressed to have a positive social function that could aid bonding between the employees. One respondent mentioned that in the game room he talks to people he would otherwise never talk to, or who would otherwise never talk to him. He said that it was very beneficial to not only bond as colleagues, but also as people. A respondent mentioned that many important discussions usually happen outside the office, informally, in the games room or in the office.

Unfortunately physical environment can also be used to form a more negative social context. One respondent mentioned that people in his company were treated in accordance to what physical location they had:

They arrange people into spaces which imply their status in the company. So if you've been here a long time, you get a window office. If you've been here a short time, you get a half sized cubicle. This causes a lot of frustration and grumbling, especially when the rules are bent for certain people.

The respondent further specified that people will also treat one another depending on the physical location and not on the previous experience or actual status. So in that place status is explicitly defined by the physical location. Other respondents who shared the floor with their managers in an open one-big-room plan, reported their satisfaction with the feeling of equality a better work-flow and more pleasant atmosphere. The latter is closely related to the feeling of creativity itself, as expressed by the respondents. The data also demonstrated that the physical

environment can facilitate creative processes and act as inspiration-carrier on both individual and group levels in both physical and socio-organizational contexts.

Inspiring Environments – Professional and Personal Comfort

A very prominent theme that runs through the responses is the need of the digital artists to be inspired by the environment. A respondent said: “I need an environment which facilitates creative processes by feeling creative itself.”

On a personal level some respondents have said that a creative environment is a must for them and that they would not be productive without it. Many have expressed their appreciation of an inspiring physical environment as a great mediator for their personal creativity. One artist deviated from the others by mentioning that the environment meant little for his artistic inspiration since his “inspiration lived inside the computer”. However although there were a few respondents who argued that a really inspiring environment would probably not influence the creative quality of their work, the majority of them still admitted that working in a “really cool place” would be much preferred for the sake of their well-being and motivation.

On the group level an inspiring environment was reported to be able to sparkle inter-personal creativity and help the group to reach their goals. Availability of inspiring artifacts in the physical environment was reported to have positive effects on brainstorming. A respondent described meeting rooms in one company in a following way:

They are almost like playrooms, actually. It was kind of different, but it was working when we were in a meeting, we were walking around. We were actually interacting with the stuff that was lying around. I have realized then, you are very physical as a person. So when talking, when thinking, you start do things with your body and that was very interesting to see how that actually helped you to be creative.

According to one participant of the study, an inspiring environment can not only help personal and inter-personal creativity, but also the organizational image as a whole. He expressed his views saying that a creative environment in an organization can help it to reach its goals, by attracting “the right people” in terms of creative work-force and making the organization to appear appealing for employees, potential employees and investors by its inspiring nature.

The respondents view a creative environment largely as an environment that is inspiring to them personally but also beneficial for the creative problem solving within the

team. The participants also evaluated the creative physical environment as a whole visual and functional appearance that made them excited and inspired to stay in the environment and create there.

Inspiring Spaces. Architectural planning, as has been accounted for previously is viewed as a facilitator for team and group work. Nevertheless it is not the only context this aspect of the physical work environment was mentioned in. The respondents expressed their preferences for creative and inspiring planning of their work places. Flexibility and dynamism of the space were proposed to have a stimulating function, whereas uniform, fixed and repetitive patterns in the environment were reported to have an inhibiting influence. The respondents expressed their rather strong dislike of cubicles and “corporate-like” environments and maintained that it was very bad for creativity. Some respondents used strong vocabulary to express their dislikes, like “makes me cringe”, “could never ever be happy” and “makes me depressed”.

The respondents connected cubicles and “corporate” environments with lack of inspiration, lack of expression, negative influence on the creativity and work-satisfaction. They said that having a more “dynamic” space with level changes, having bigger and smaller spaces cut-off with walls or glass or anything else, having some parts exposed and some hidden could be inspiring. Dynamic spaces, designed and less strict were mentioned to have a positive influence on feelings of creativity, inspiration and stimulation.

As has been mentioned previously, the respondents viewed room planning as an important factor that facilitates their work from a socio-organizational standpoint. The majority expressed their wish for having good planning combined with inspirational items that were brought into the working area: reference materials, art, toys or simply “something interesting”. The respondents agreed though that there should be balance, so that the environment would not go from inspirational and creative to being distracting. The concept of proper balance seems to be very individual. Nevertheless, despite the personal view on balance, the respondents found the presence of artifacts in their physical work environment inspirational.

Inspiring Fillers. The respondents talked about using the physical environment as a “canvas” for the inspirational images. They would put images up on the available walls, on the desks and some even mentioned their wish of having inspirational artifacts coming out from the ceiling. They expressed that they wanted to have concept art, inspirational art, “interesting findings” in their environment. Managers in particular expressed that they liked to

use walls primarily for putting up work-related things like plans both for themselves and for the employees to see.

The respondents in general did not like “sterile environments”, meaning overall with no color, much art or interesting shapes; something they referred to as uniform office environment - one room, white walls, tables, computers and nothing to break it up with. Some mentioned having screens with inspirational videos and images showing, whereas others thought that it would be distracting. Some liked stronger colors in the environment, while the majority preferred pastel and neutral or white. One respondent said though that all his inspiration is in the screen and he did not need to have it outside. However, he also expressed that it is not a must, but is always nice with posters and “cool stuff”.

Sometimes the respondents did not differentiate between what they found inspirational and what they thought was necessary. It ties together with that working with creativity requires having inspiration to greater or lesser degree. Reference material was reported to serve as both general inspiration and useful information. An interviewee expressed: “It is very important to inspire everyone. We are making something cool. In one place we put a whole wall full of pictures that was really good. We used it for reference.”

To illustrate the individual variation on what was considered to inspire the respondents a collection of personal suggestions will be shared. The respondents discussed things like brainstorming rooms, playrooms, creatively designed areas around the workplace, walls one can draw on and built-in whiteboards, use of different materials and colors, but not in an obtrusive way. Some of the respondents mentioned the two latter as being important for the visual stimulation. A respondent said that by having an environment that will constantly challenge his imagination, he will feel mentally stimulated and that will translate into his work.

Another inspiring part of the creative work environment was plants. The respondents talked about plants being important to have in an office and some mentioned bringing plants with them to their work place together with grow lights to keep them alive in an otherwise dark environment. The presence of plants was viewed as important from several standpoints. From the environmental design standpoint, the plants were viewed to break-up the environment in a functional way and to bring pleasant color. Others were viewing plants as important factor for well-being because it would bring nature into “workplace dominated by greyness”. Some respondents expressed their appreciation of plants from an aesthetic standpoint. A respondent said that plants were sometimes an inspiration in terms of colors and shapes and one artist would sometimes create illustrations based on the plants around him.

Discussion

This study showed results concerning the notions and thought of the creative human resources who produce artistic artifacts in an organizational context. It was found that these professionals had specific views on the role of the physical work environment for them on both a personal level and on a group level; they also had thoughts about the role of an inspiring environment in supporting them and their work and had specific preferences regarding the design of their physical work environment to fit and support them.

What Roles does the Physical Work Environment play in Support of the Digital Artists?

The first result demonstrated that the respondents were largely aware of that their physical work environment had to support them and their work. The word “support” was not expressed directly but the answers of the respondents were analyzed and the common theme of environmental support emerged. The results show that the artists viewed their physical work environment from the standpoint of how it aids physical, functional and psychological support to them personally and their group in terms of comfort.

Physical Comfort. The physical support in terms of physical comfort was addressed briefly by some of the participants. The lack of focus on the physical comfort of the environment can be explained by that the physical work environments in the countries the participants came from (Northern Europe, United Kingdom and the US) are adjusted for physical comfort. The physical comfort in those companies in terms of good air, light, temperature, hygiene is viewed as a basic requirement for the company to be able to use the building for housing human resources. In Sweden, for example, Arbetsmiljöverket has specific guidelines that address the physical comfort of work environments. The employers have to follow the guidelines by law and the failure to follow those guidelines will result in penalties. However the results indicated that there were still a few problems with the physical comfort, especially air could cause headaches. If the companies could address these few physical problems the ‘good fit’ of the work environment will increase and encourage occupants to apply their energy and attention to performing work, as discussed by Vischer (2007).

Functional Comfort. The respondent viewed the functional comfort of the physical environment as something that plays a basic role in enabling performance for both individuals and groups. It can also play, and was viewed as important, a role in enhancing the experience of well-being at work. All participants mentioned the importance of functional comfort, but most had different views on what was most important to secure the proper functional comfort for them. It is possible to say that every person had a rather unique approach to his or her

physical environment. The unique approaches confirm the notion of Harrington (1999) that because of difference in personalities there is no single environment that can be best suited to all creative people. The results also support Dul et al. (2011) that personality seems to contribute more to the total creativity performance in a company. However the results show strong and prominent common themes and tendencies in the answers of the respondents. It indicates that certain preferences for functionality of the physical work environment seem to be independent of personality, and dependent on some other factors. These factors can be related to the nature of work that is being carried out in the environment. Vischer (2007) discussed that the physical environment has to support tasks that are being performed in it. For the digital artists the functional comfort on an individual level would support their professional work with computer in terms of ergonomics of furniture and workspace and appropriate equipment. The environment was viewed to be comfortable functionally in terms of ambient factors such as appropriate light and non-disturbing sound. It can be discussed that functional comfort of the physical work environment enhances artists' good mood due to well-being. Good mood is argued to be one of the factors contributing to creativity expression of the individual (e.g. Davis, 2005). The results confirmed Stokols et al. (2002) that distractions, in terms of poorly designed and fitted environment, ambient factors such as inappropriate light and distracting sound were indeed perceived by the respondents of the study as lowering well-being and hence can be discussed also inhibiting their creativity.

Functional comfort of the physical work environment was also viewed in a group context. Working in groups and teams was mentioned to be a part of a total-creative process and the respondents expressed their need for the physical work environment that provides comfortable means of working together. The results suggest that the participants viewed dynamism of the physical work environment as important for group work. It can be argued as to which extent "dynamism" expressed by the participants assessed the same dimension discussed by Ekvall et al. (1983) and found by Vithayathawornwong et al. (2003) to contribute to the creative potential of the physical work environment. The work of the digital artists was also reported to often consist of shifts between concentrated individual work and highly social group work. Because of that fact it is possible to suggest that the physical work environment for the interviewees has to support them both individually and as a group, but also supports the differentiation between the two. A physical work environment that enables multiple activities to run simultaneously without interfere with each other in a disturbing way can be viewed as supportive for the work of digital artists in a company (Taher, 2008).

The previous research focused on connections between work environment and creativity and how a physical work environment could enhance creativity of general employees (e.g. McCoy & Evans, 2002, Cardoso, 2009, Dul & Ceylan, 2011) and managers (Ceylan et al. 2008). The mentioned researches were conducted in the field of ergonomics assessing specific aspects of the physical work environment and their connection to creativity of employees. Stokols et al (2002) presented results showing that physical work environment with fewer distractions had a greater perceived support for creativity at work. The current study assessed the type of support the physical work environment was perceived to give to the creative employees. The results confirmed that distractions, in terms of poorly designed and fitted environment, ambient factors such as inappropriate light and distracting sound and psychological factors like lack of privacy were indeed perceived by the respondents of the study as inhibiting creativity.

Psychological Comfort. The results showed that the respondents were highly aware of their psychological comfort and its influence on their total well-being. As has been mentioned previously, well-being and good mood of a creative professional can be related to creative performance (Davis, 2005). The participants emphasized that psychological comfort was important for them in terms of privacy and customization; this can be related to Vithayathawornwong et al. (2003) which discussed that perceived freedom of the physical environment relates to enhanced creativity.

As Dul and Ceylan (2011) suggest, a creative employee who is put in a traditional organizational environment, with for example standardized work spaces, may not be able to show the desired creative behavior. The results of this study confirm that creative human resources were viewing the traditional organizational environment as stripped of creativity and even depressing. When it comes to specific items of the physical work environment this study focused on *how* these aspects can support or inhibit digital artists rather than their connection to creativity enhancement of non-creative employees. It can be argued based on Stokols et al (2002) and Dul and Ceylan (2011) that an environment that supports creative human resources is also an environment that in general supports creativity. The results of this study confirm and enrich the previous researches on the matter of how specific items of the physical work environment can influence creativity. The result of the study confirm McCoy and Evans (2002) rather than Ceylan et al (2008) that artists prefer visually complex environments, which they referred to as visually stimulating and filled with inspirational and artistic artifacts. The results also show that artists didn't have specific preferences for either cooler or warmer colors since the matter of color was rather individual. The results confirm

both studies that creative people like having natural elements in the environment, natural views and windows. The preferences for lighting conditions were not confirmed for either since the work of the assessed professional group required different types of light, and they preferred the type of light that aided their work rather than the type of light that they preferred personally.

The current study enriches the understanding of what role the physical work environment plays for the support of creative human resources and hence creativity. The subject of creativity and physical work environment hereby was studied from a different angle than what had been done before.

The Importance of Inspiring Environments for Digital Artists' Creativity

The results showed that nearly all digital artists think that the physical work environment influenced their creativity to a large extent. Further the result suggests that the participants viewed creative and inspiring environment as an important factor for their overall well-being at work. According to the results it is possible to discuss that digital artists view their physical work environment as a carrier for the inspiration that is needed in their everyday work. This notion confirms the previous researches that suggest that creative and inspirational environment is important for creative employees (e.g. Dul & Ceylan, 2011). In this context inspiration for creativity can be metaphorically viewed as fuel for a car. The artists seem to need inspiration around them to be in the creative flow. The inspiration in the physical work environment was reported to be directly beneficial for easily coming up with new ideas, to feeling less stuck and more mentally stimulated. It can be speculated that creative human resources in general need an inspiring and creative environment due to the nature of their work and that they could benefit more from it than non-creative human resources, just as Dul et al. (2011) have suggested. The reason for this thinking is that inspiration was mentioned as essential for creativity. A physical work environment, as can be concluded from the results of the study, can be and is a very useful carrier of inspiration. Artists reported that they need inspiration (usually reference material and artistic artifacts) for their creative flow to be available at almost all time, hence it can be concluded that an inspirational physical environment is almost essential for the artists. On the contrary non-creative human resources do not need inspiration for their work. It can also be speculated, based on the results of the study that creative human resources personally find creative environments more exciting, not thinking about benefits it has for their creativity. The respondents reported liking environments that in general looked designed and less strict, with interesting features and with dynamic and flexible solutions. It can be argued that certain

environments attract certain types of people (Taher, 2008). This means that creative human resources are likely to be more attracted to creative environments and are likely to feel more “fitted” there. Harrington (1999) defines person-environment fit as the degree of good “fit” between people and their working environment. He further specifies that a good fit of environment for creative people can enhance their creativity. It can be concluded, based on the discussion that creative human resources in general are attracted to creative and inspiring environments and find creative environments more fitted to both their tasks and their personality.

Creative Work Environments for the Digital Artists and Creative Human Resources - Suggestions for Practical Implementations

The study has yielded results suggesting some practical implications of how to attain supportive, creative and inspirational environment for digital artists. These guidelines can be also used in designing physical work environment for creative human resources in general and possibly for non-creative human resources in the organizations that strive to enhance employees’ creativity. Dul et al. (2011) have suggested that HRM can play a significant role in enhancing organizational creativity and innovation, also through playing a role in designing of the physical work environment. These suggestions were expressed by the participants and the discussion is based on the previous research done in the respective fields.

Indoor planning. Consider having an open environment. Open landscape planning was reported to support team work, communication, idea-flow and cross-fertilization of ideas. Break-up the open environment with architectural elements, low walls, glass dividers, plants and other natural elements. This division of space will still support communication, but give a sense of privacy and allow personal space (Kristensen, 2004). The division of space will also dampen excessive sound that has been reported to be a problem in an open office environment. A dynamic architecture with indoor-planning that is visually stimulating is also reported to be inspirational and creativity-enhancing. Variation in the indoor layout in terms of arrangement, use of different shapes and textures is perceived to be more stimulating than a repetitive structure. Several of the participants expressed that together with making an environment stimulating it should still not be perceived as dominating. There must be a balance.

Flexibility. In the companies where team-work is essential make the environment flexible. Flexibility is a key in designing creative spaces (Taher, 2008). It can be suggested to have different workspaces for different activities and a main work area that supports all those activities (Martens, 2008). The participants have suggested a layout that can be easily changed

when new teams are built or there is a need for team collaboration, alternatively having spaces where teams can comfortably collaborate. It can be either assigned areas or rooms. Make those spaces comfortable and functional by having writing surfaces and projection areas available. Enhance the environment with inspirational, physically and visually stimulating items; this will stimulate creative thinking (Moultrie et al., 2007).

Peace. In the companies with an open landscape planning - Have options where employees can go away for a while and work in peace or rest. Creative workers need hassle-free time for thinking and processing that aids creativity and imagination (Martens, 2008). The participants of the study reported the need for those areas to be comfortable physically and functionally by having appropriate furniture and tools and psychologically by being welcoming. It was suggested to have a culture that supports use of these areas or rooms so it's socially acceptable to use them while at work.

Relaxation and Stress Management. Having well-equipped leisure and game corners was considered important. These areas can be used by employees for stress management and needed breaks. They've also been said to serve team and inter-personal bonding which is beneficial for general work. Have a space where employees can eat, have a cup of coffee or tea away from the main production. This will enhance the feeling of privacy (Vischer, 2007) and help relaxation which in turn is needed to be able to work with creative problem-solving (Rock, 2008).

Ergonomic. Provide employees with ergonomic furniture and tools, such as keyboards and mice. Make the immediate workspace ergonomic by providing enough space for all the things the employee needs to have close at hand, like drawing boards, space for analog drawing, space for reference material et cetera. Ergonomic furniture can increase productivity (Miles, 2000) and the respondents to the study indicated its importance for their overall physical and functional comfort and hence psychological well-being.

Light. The lightening should be designed with care in accordance to the tasks that are being performed in the environment (Cardoso, 2009). Default lighting in the environment was reported to not always be optimal for the artists, as well as being exposed to lighting conditions they have no control over. There should be customizable options that each employee individually can adjust to his or her preference. This will increase well-being due to both increased control over the environment (McCoy & Evans, 2005) and increased efficiency of tools, which is light in this case. If possible and suitable there should be available non-direct daylight. The participants reported increased well-being with daylight and proximity of

windows. Daylight research also confirms that people experience greater comfort and productivity with availability of daylight (e.g. Hedge, 2000).

Customization. Give freedom for customization of the immediate workspace. This is an important factor for the psychological comfort of employees. Freedom of expression has been linked to creativity and greater satisfaction with work (Ekvall et al., 1983).

Inspiration. Fill the environment with inspiring artifacts like art and concept art, figures, models. Consider moving art to places where they are not distracting. Inspiration is important in creative jobs and it was reported that it should be available. Joyful and playful design of environment can help creativity (Taher, 2008). Inspirational artifacts and artifacts that an employee can interact with support employee's playfulness which in turn is beneficial for creativity (Chang, 2011). Inspirational artifacts can also have a symbolic significance that affect people emotionally (Vischer, 2007). Bringing artifacts into the environment, that employees have positive connections to, may increase the emotional well-being and hence creative productivity. The respondents have mentioned artifacts that are connected to sci-fi, fantasy and adventure movies, comics and games as having emotional significance. Make the environment comfortable for idea-spreading by providing whiteboards or multiple write-on-surfaces and also giving space on the walls or in the environment where employees and teams can show off what they are doing and what they have achieved.

Color. Bring good color design into the environment; this will increase the mood and well-being of the employees (Küller et al., 2008). The digital artists reported liking of appropriate color design that is predominantly neutral, but is broken with stronger colors. Avoid having an overly sterile environment since this was found to be "boring" or "depressing"

Other. Make the physical work environment welcoming, even homely. The feelings of being welcomed and feeling at home were reported as important for well-being at a workplace. By making the environment feel more homely some respondents reported that they felt more loyal and would have less issue with working harder and longer.

Method Critique

Participants. The participants of this study were chosen based on their experience with creating art in digital media and that they possessed a current position as a digital artists working in a full-time employment. The participants came from different backgrounds, countries and companies and it made the data more diverse than if participants supposedly came from the same country or/and company. For the understanding of the topic of the study

it was viewed beneficial to have data from such a heterogeneous sample. On the other hand it made it harder to find common themes in the interviews and hence to reach a generalized conclusion. Although being qualitative, the study could have benefited from more participants. As the results show, every participant had a personal approach to the physical work environment and by having more participants more approaches could have been studied and understood. Some of the email participants did not seem to have enough time or/and commitment to answer the questions in-depth. This could have been addressed by actually conducting face-to-face interviews with them.

Instruments. In order to be able to professionally carry out an interview an interviewer has to be educated in interviewing techniques, a skill that also comes with practice (Patton, 1990). It was a problem that I didn't have any previous experiences with interviewing or experience with qualitative research. The lack of experience in formulating interview questions and how to conduct the interviews has to some degree limited the research. Although my skill as an interviewer improved with every interview, I still felt limited by my lack of experience. A different set of skills are needed to conduct an email survey/interview and I lacked a deeper understanding about the optimal ways of carrying out the surveys. There is always a risk that the ways the questions were constructed have affected the data more than they should have had.

Procedures. As Patton (1990) says, his students are always taken aback by the sheer amount of work and time a qualitative research takes. My own experience was that the time I had for carrying out the research was short. Analyzing and categorizing the data could have benefited from more time and also involvement from a third party. Carrying out a study alone has also showed to be less beneficial for the results of the project due to time constraints.

Validity and Reliability. According to methodological literature on qualitative research there is a number of ways of securing validity and reliability of qualitative research. To secure validity one can assess convergence with other sources of data (Ratcliff, 2009). One of the ways of checking for convergence is triangulation. Triangulation is typically a strategy of improving validity and reliability of research, or evaluation of findings, by using different kinds of methods and data to assess the same topic of study and hence strengthen it (Patton, 1990). Triangulation in this study has been partially done by combining two different ways of collecting data: face-to-face interviews and open-ended email surveys. The items that both data collection techniques assessed were the same and the results could be evaluated similarly. On the other hand differences in data collection procedures could also have had a

negative effect on data consistency since the way data was communicated by participants was different. It can be speculated that there is a difference in how people reply to certain questions depending on how the questions are presented (e.g. live interview, email, interview over Skype et cetera).

Triangulation can also be used in data analysis, which this study lacks. By giving data for analysis to a third, knowledgeable party and then comparing the analysis with my own I could have attained greater reliability of the analysis. The third party could have also checked for interviewer mistakes such as leading questions that could have biased the data.

Convergence can also be checked by comparing with findings in already existing literature, which has been done as part of this study.

The context in which the data was collected can also influence the quality of it (Ratcliff, 2009). For example one of the interviews was carried out on a weekend, two in the evening after work and one during lunch hour. Although I haven't noticed any substantial differences in the delivered data that could have been attributed to the day-hour, the after-work interviews were slightly shorter and the participants showed stronger intention with their body language to end the interview after half an hour. With the email interviews the interviewer didn't have any control over the external settings in which the participants answered to the questions. Here it can be also speculated that the data could have been influenced by the fact that some participants answered the questions from their work and some from their home. This could influence the participants' immediate feelings towards some of the assessed aspects.

The interviewer has a direct influence on the interviewee (Patton, 1990). During the face-to-face interviews I, as an interviewer, followed the guidelines presented in Patton (1990) on how to conduct an interview keeping the interviewer bias as low as possible. I have monitored my questions for not being leading, avoided using emotionally-charged words towards the topic of the interview as to stay impartial to what the interviewee thought himself. The topic of the interview was not a sensitive one; hence the participants did not feel a need to monitor their thoughts towards it. I have noticed though that as my skill as an interviewer improved with practice, it was easier for both parts to participate in the interview and hence it can be speculated that my interviewer skills influenced the interviewee and also the data. The data collected by email, on the other hand, was not influenced in the same way by my presence.

Suggestions for Further Research

Further research should be made to gain more understanding about how physical work environment can support creative human resources and digital artists in particular. Quantitative studies about the preferences of the artists can enrich the current study with a generalized understanding of how the physical work environment is being perceived to aid work and creativity. Could it be possible to quantify how much the physical environment affects the creative results? What other possible benefits would “play rooms” and relaxation rooms in companies have? How much can the creative flow be improved by changing colors and art on the walls? Are there drawbacks with making the environment more creative? Some of the respondents raised a concern that more places to relax would mean that the employees would produce less content. It would be interesting to investigate the creative gains and the possible loss of efficiency in a more quantitative study. The subject of artists in an office environment can also be studied from different psychological angles that will enrich the understanding of the phenomena. Does digital artist work different from other creative people? Is the environment less important for digital artists since they focus so much on their work “inside” the computer? With the digital industry growing year by year a further understanding of the environment around these creative people will only become more important.

Conclusion

The current study aimed to assess notions of digital artists, working in a full-time employment, about their physical work environment and what role it plays in supporting them. Digital artists were of a particular interest to study because they are a fairly new breed of professionals working with creativity, producing artistic artifacts on demand. Previous studies have focused on the physical environment’s influence on enhancing creativity in general employees. This study has confirmed some of the previous findings about the role of the physical work environment for creativity, like the need for environmental support and non-distractive attributes of the environment. The study has also confirmed the importance of specific elements in the physical environment like light, comfortable furniture and a presence of natural artifacts in the environment. The results of the study have also shed light on what creative human resources find important in the physical environment, namely the role of the physical environment as an inspiration carrier. The results show that nearly all creativity workers consider an inspiring environment to be very important for their creativity. The study also presents a collection of suggestions for how to create a better physical work environment for digital artists with ideas like game rooms, inspiring artifacts, more plants, good air and the

ability to customize their physical work environment. Further research should be conducted to broaden the scope of this study; it could for example be worthwhile to investigate if more creative physical environments could have a negative impact on efficiency or if the findings in this study translate well to general workers.

References

- Abdou, A. O., Khloy El. M. & Abdou, A. A. (2007). Correlation between indoor environmental quality and productivity in buildings, *Journal of architectural engineering*, 3, 1-15.
- Amabile, T.M. (1996). *Creativity in context*. New York: Westview.
- Barron, F. & Harrington, D.M. (1981). Creativity, Intelligence, and Personality, *Annual Review of Psychology*, 32 (1), 439 – 476.
- Brockbank, W. (1999). If HR were really strategically proactive: Present and future directions in HR's contribution to competitive advantage. *Human Resource Management*, 38, 337 – 352.
- Cardoso, N. (2009). *Do work environments have an effect on productivity and creativity?* Research dissertation, LISOF, Johannesburg.
- Ceylan, C; Dul, J; Aytac, S. (2008). Can the Office Environment Stimulate a Manager's Creativity?, *Human Factors and Ergonomics in Manufacturing*, 18(6), 589 – 602.
- Davis, M. A. (2005). Understanding the relationship between mood and creativity: A meta-analysis. *Organizational Behavior and Human Decision Processes*, 108(1), 25 – 38.
- Dul, J. & Ceylan, C. (2011). Work environment for employee creativity, *Ergonomics*, 54 (1), 12 – 20.
- Dul, J., Ceylan, C. & Jaspers, F. (2011). Knowledge workers' creativity and the role of the physical work environment, *Human Resource Management*, 50(6), 715 – 734.
- Edvinsson, L. (1997). Developing intellectual capital at Skandia, *Long Range Planning*, 30, 266 – 373.
- Ekvall, G., Arvonen, J. & Waldenstrom-Lindblad, I. (1983). *Creative organizational climate: Construction and validation of a measuring instrument* (Report 2). Stockholm: The Swedish Council for Management and Organizational Behavior.
- Gardner, H. (1992). *Multiple Intelligences: The theory in practice*. New York: Basic Books.
- Harrington D. M. (1999). Encyclopedia of Creativity. In Runco M. A. & Pritzker, S. R. (Eds.), *Conditions and Settings/Environment* (pp. 323 - 340). San Diego: Academic Press.
- Hedge, A. (2000). Where we are in understanding the effects of where we are? *Ergonomics*, 43(7), 1019 – 1029.
- Hogenes, E., Dul, J. & Haan, G. (2006). Human centered designed work environments at Interpolis. In Proceedings of the 16th world congress on ergonomics. Maastricht, the Netherlands.

- Hunter, S.T., Bedell, K. E. & Mumford, M. D. (2007). Climate for Creativity: A Quantitative Review, *Creativity Research Journal*, 19(1), 69 – 90.
- James, K. & Asmus, C. (2001). Personality, cognitive skills, and creativity in different life domains, *Creativity Research Journal*, 13(2), 149 – 159.
- Koch, C. (2003). Knowledge management in consulting engineering – joining IT and human resources to support the production of knowledge, *Engineering, Construction and Architectural Management*, 10, 391 – 401.
- Kristensen, T. (2004). The Physical Context of Creativity, *Creativity and Innovation Management*, 13(2), 89-96.
- Küller, R., Mikellides, B. & Janssens, J. (2009). Color, arousal, and performance—A comparison of three experiments, *Color Research & Application*, 34(2), 141 – 152.
- Levy, B. & Langer, L. (1999). Encyclopedia of Creativity. In Runco M. A. & Pritzker, S. R. (Eds.), *Conditions and Settings/Environment* (p. 45). San Diego: Academic Press.
- Marcos, A.F. (2007). Digital Art: When Artistic and Cultural Muse Merges with Computer Technology, *Computer Graphics and Applications, IEEE* , 27(5), 98-103.
- Martens, Y. (2008), Unlocking creativity with the personal workspace, Keynote CIB W70 conference, Edinburgh.
- McCoy, J. M. & Evans, G. W. (2002). The Potential Role of the Physical Environment in Fostering Creativity, *Creativity Research Journal*, 14(3-4), 409 – 426.
- Miles, A. K. (2000). *The ergonomics and organizational stress relationship*. PhD thesis, Florida State University School of Business, micro. 9994574.
- Moultrie, J., Nilsson, M., Dissel, M., Haner, U. D., Janssens, S. & Van der Lugt, R. (2007). Innovation spaces: Towards a framework for understanding the role of the physical environment in innovation, *Creativity and Innovation Management*, 16(1), 53-65.
- Mumford M. D. (2000). Managing Creative People: Strategies and Tactics for Innovation, *Human Resource Management Review*, 10(3), 313-351.
- Patton, M. Q. (1990). *Qualitative evaluation and research methods*, 2nd edition. London: Sage.
- Ratcliff, D. (2009). Key resources for qualitative congregational research. *Religious Education*, 104(3), 333-341.
- Rock, D. (2009). *Your Brain at Work: Strategies for Overcoming Distraction, Regaining Focus, and Working Smarter All Day Long*. New York: Harper Business.
- Runco M. A. & Pritzker, S. R. (Eds.). (1999). *Encyclopedia of creativity*, San Diego: Academic Press.

- Shibata, S & Suzuki, N. (2002). Effects of the foliage plant on task performance and mood, *Journal of Environmental Psychology*, 22(3), 265 – 272.
- Stokols, D., Clitheroe, C. & Zmuidzinas, M. (2002). Qualities of Work Environments That Promote Perceived Support for Creativity, *Creativity Research Journal*, 14(2), 137 – 147.
- Sutton, R. (2004). Bringing Creativity into an Organization, *Entrepreneurial Thought Leader Speaker Series*, Stanford University, available at: <http://edcorner.stanford.edu/authorMaterialInfo.html?mid=1193>
- Taher, R. (2008), *Organizational creativity through space design*, International center for studies in creativity, Buffalo State College.
- Vischer, J. C. (2005). Space meets status: *Designing workplace performance*. Oxford, UK: Taylor and Francis/Routledge.
- Vischer, J. C. (2007). The effects of the physical environment on job performance: towards a theoretical model of workspace stress, *Stress and Health*, 23(3), 175 – 184.
- Vithayathawornwong, S., Danko, S. & Tolbert, P. (2003). *The Role of the Physical Environment in Supporting Organizational Creativity*, *Journal of Interior Design*, 29(1-2), 1 – 16
- Wands, B. (2007). *Art of the digital age*. London: Thames & Hudson.
- Woodman, R. W., Sawyer, J. E. & Griffin, R. W. (1993). Toward a Theory of Organizational Creativity, *The Academy of Management Review*, 18(2), 293-321.

Appendix 1

Participants

1. Senior Visual Effects Artist - games, previously illustrator and freelance artist, 5 professional places, 10 years of professional experience.
2. Senior Visual Effects Artist - games, fourth place, 10 years of professional experience
3. Art Director - games, second place, previously concept artist and freelance artist, 6+ years of professional experience.
4. Associate Art Director and Lead Visual Effects Artist- games, 7 years of professional experience.
5. Effects Artist and Technical Director - movies and entertainment, 10+ years of professional experience as digital artist, effects animator, effects technical director, modeling and texturing, previzualization artist.
6. Experiences Visual Effects Artist - games, 4,5 years of professional experience in 2 companies, previously junior character artist and junior environment artist.
7. Senior Texture Painter - games and movies, 12 years of professional experience in numerous companies, 5 companies, previously texture painter, cg artist and cg generalist.
8. Experienced Artist - games, 7 years of experiences in 5 companies, previously texture artist and environment artist.
9. Concept Art Lead - games, 14 years of experience in 2 companies, previously project lead artist, marketing art lead, 3D group lead, 3D artist.
10. Technical Director - movies, 9 years of experience, 4 companies, previously Lead Technical Director and Lead of Technical Support
11. Senior Visual Effects Artist – games, 10 years of professional experience in 3 companies, previously lead environment artist, senior vehicle artist, technical artist, visual effects artist, environment artist, character artist, concept artist and 2d animator.
12. Senior Animator – games, 6 years of professional experience in 3 companies, previously experienced animator, animator, 3d modeler.
13. Product Manager – visual effects software company, 12 years of experience, plus freelance, 2 companies, previously demo artist, motion graphics artist, 3d animator, compositor.

Appendix 2

Interview guide for the face-to-face interviews

a. Factual questions

- 1a. What is the nature of your creative tasks?
- 2a. How long have you been working as an artist?
- 3a. How many different companies have you worked for?

b. Evaluation questions

- 1b. How important is your physical working environment for you? Please explain what matters for you and why.
- 2b. Can you please compare different working environments you have experienced? What stands out for you: positive, negative, worth mentioning?
- 3b. I will ask you to imagine your perfect working space. How does it look?

c. Experiences & Preferences

- 1c. What architecture of working places have you experienced? Is there any architecture you find particularly inspiring?
- 2c. What room planning have you experienced and what preferences do you have?
- 3c. What do you think about the presence of windows? Do you find any particular view pleasing/inspiring?
- 4c. I want to ask you about food at work. What have you experienced regarding both physical places where you can eat and the food quality? What is your perfect food arrangement at work?
- 5c. I would like to ask you to describe the colors that surrounded/surround you at your work? Do you like any particular colors?
- 6c. Can you please describe what hangs on the walls? What do you like to have on your walls?
- 7c. If you think about the amount and quality of light you have experienced at your work places, what can you tell? What light do you prefer?
- 8c. I would like to ask you about your preferences for sound when you are working.
- 9c. Please describe leisure and game corners you have experienced. How often do/did you use them?
- 10c. Can you please describe presence of plants where you work/worked? How important is presence of natural things like plants for you at your working environment?

11c. Do you prefer your working space being visually stimulating or simple?

12c. What are your preferences regarding people around you?

Extra! *What is your experience with being creative on demand?*

Interview Questions – Email

General Questions

1. How important is your physical working environment for you? Please explain what matters for you and why.

2. What would the most awesome working space look like?

Specific questions... if there is anything you haven't mentioned already :)

1. What preferences do you have for room planning and general architectural solutions?

2. What do you think about presence of windows? Do you find any particular view pleasing/inspiring?

3. What is your perfect food arrangement at work?

4. Do you like any particular colors or their combination in your working environment?

5. What do you like to have on your walls?

6. What light do you prefer?

7. What are your preferences for sound when you are working?

8. What do you think about games/leisure corners?

9. How important is presence of natural things like plants for you at your working environment?

10. What are your preferences regarding density of people around you?

And last but not least, if you have experienced anything cool in an environment please feel free to mention!