



USER PROFILING IN GAME DEVELOPMENT

A comparison of theory and practice

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Abstract

This study aims to answer the research question: *How does the academic accounts of user profiling compare to how practitioners of game development use user profiling?*

Knowing one's users is a key part of designing a product, so that you know which features to prioritise. This is of course also true for video games. One way to achieve this is to categorise the users based on key characteristics, such as their age or their motivations. This is also known as *user profiling* and is commonly discussed in academic literature. However, it is not known how user profiling is used within the industry of game development; if even at all. To research this, two UX/UI designers at a Swedish game development studio have been observed and interviewed, which has resulted in a list of differences in how the academic literature says about user profiling and how practitioners use user profiling. This can be used to bridge the gap between the two, which could aid in designing and researching for a better user experience in video games.

Keywords: User profiles, User Experience, User Research, UX, GUX, GUR, Player Types, Video Games

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1. Introduction

For development of all types of software applications – be it for tutoring systems, e-commerce, or video games – knowing one’s users is vital. It is after all the users that will use the system, and knowing who those users are will greatly aid in designing for their desired experience. The theory of describing a user with the most relevant facts and information about them is called user profiling. In the context of games, this might mean which other games the player likes or what the player’s different goals are, such as challenging their skills or expressing their creativity. Profiling your different users is therefore crucial in terms of designing for a personalised experience of different users.

Despite this, there is a big gap in the research on how user profiles are actually being used within the actual industry of game development, if even at all. It is not known if the theory of user profiling is only being praised by academics but ignored by the practitioners. This study therefore aims to contrast and compare what the current theory says about user profiling with how game developers actually work in practice. In order to answer this, an ethnography inspired observation has been conducted with UX/UI designers at Coffee Stain Studios, a Swedish game development studio, to investigate how they actually work in practice. Additionally, the observed designers have been interviewed in a semi-constructed interview to complement the data from the observations. The observation and interview have resulted in a list of differences between what the literature says about user profiling in video games and how practitioners of video game development use user profiling.

2. Background

2.1 UX/GUX

User experience, or *UX*, is a term used for describing the experience of users of various products and systems. The research of UX is constantly evolving, and there are therefore tons of different definitions and impressions of the term, but Hassenzahl and Tractinsky (2006) defines it as the consequence of a user's internal state, the characteristics of the system they are using, as well as the context in which the interaction takes place.

In general, a user's experience can be either pragmatic, such as how a user can complete a task as efficiently as possible, or hedonic, such as which feelings and emotions the user experiences (Barnum, 2010). Both pragmatic and hedonic experiences are relevant to design for, but naturally, they might differ depending on the area one is designing for. For example, researching user experience in the context of video games can be very different from "traditional UX", such as websites, as the desired experiences in playing games are often primarily hedonic. What this means is that usually in user research, measuring if the design is efficient can be done by asking simple questions like "could the user complete the task in a short amount of time"; a single button that finishes the entire task for a work application would most likely be seen as incredibly efficient. However, if a player can press a single button to defeat the boss in a video game the game would most likely be perceived as boring rather than efficient. Therefore, the term *games user experience*, or *GUX*, has developed as a way to define the research of user experience in video games. Due to the many differences in UX for games and other areas of IT, this paper will define any UX design that is not related to video games as *Traditional UX*.

One of the foundations of UX design/research – be it for tutoring systems, e-commerce, or video games – is that knowing one's users is vital. It is after all the users that will use the system, and knowing who those users are will greatly aid in designing for their desired experience. One way to take advantage of this is by using *user profiles*.

2.2 User profiles

The theory of describing a user with the most relevant facts and information about them is called user profiling. What information is the most relevant can vary a lot from field to field, but some examples of what it may include is age, occupation, hobbies, other products/services they like to use, how often they use your product/service or what motivates the user to use a system (Schiaffino & Amandi, 2009). In the context of games, this might mean which other games the player likes or what the player's different goals are, such as challenging their skills or expressing their creativity.

One of the most important data attributes is perhaps the experience of the user and how often they use the system. This is because an inexperienced user and an experienced user will oftentimes have very different needs: An inexperienced user would more often than not need more instructions, and perhaps even a more streamlined experience, while an experienced user would often want more flexibility and control (Preece, Rogers & Sharp, 2016). An example of this could be in *Mario Kart 8 Deluxe* (2017), the kart-racing game with characters and racetracks primarily from the Mario franchise. The game comes with a ton of different racing options; one of them being a smart steering function that is automatically selected for new players. This smart steering function doesn't disable steering entirely for the player, cutting into corners and racing well is still up to the player, but what it does is guiding a struggling player to stay on the track if they are on the way off. This might be beneficial for a newer player who struggles to keep up with the high intensity of racing in Mario Kart, and having such assistance could make their overall experience of higher quality. A more experienced player, however, might prefer the feature disabled to allow more freedom and flexibility to take risks

around the edge of the track, or they might just simply prefer having full control of the kart without any automatic interference.



Figure 1 A player using the smart steering function in *Mario Kart 8 Deluxe* (2017).

Furthermore, where the data about the users come from can also vary a lot. There are, however, two main approaches to this. The first one is called **static-** or **explicit profiling** and involves receiving the data from the users themselves, in one way or another, such as survey forms or users filling in information about themselves (e.g., their age) on their account profile (Poo, Chng & Goh, 2003; Schiaffino & Amandi, 2009). This data is therefore static by nature since it won't change until the user manually changes it again. Some of the core advantages of this is that you can immediately get an idea of what the user likes as soon as they enter the data, and that the users themselves have a say in what preferences they have (Poo et al., 2003). This gives the user more control over what data the developers have about them and can therefore not only give their own representation of what they like, but also gives the user control over what information they *share* with the developers. These advantages do however come with their own potential flaws. When the users themselves enter the information about themselves, there is always a risk that the data is misleading. Either because they don't want to tell the truth, e.g., their age or how many hours a day they play video games, as that can be an uncomfortable truth, (Schiaffino & Amandi, 2009) or because the data is entirely based on the user's subjectivity, and can therefore unintentionally fail to reflect the objective view (Poo et al., 2003). Furthermore, since the data is static – it will not change until it is manually updated – the data will eventually lose its validity. The more time that passes since the entry of the data, the less relevant the data will become. If the user says they are interested in racing or that they are playing video games for more than five hours a day, this will remain the same in the user profile until the data is manually updated, even if their habits have changed since the last data entry. A clear example of static profiling is how the Advisor from *Sid Meier's Civilization VI* (2016) is customised for different players depending on their input. When the player starts the game for the first time they are asked about their experience, with answers such as “I have played this game before”, “I have played games of this type, but not this one specifically” or “I'm new to games of this type”. What the player answers doesn't impact the game itself, but it will determine how much advice the game's Advisor gives to the player throughout the game. The idea is that the players who never played the game before might be overwhelmed if tasked to play such an advanced game without help, whereas an experienced player will be irritated if there are too much handholding and pop-ups.

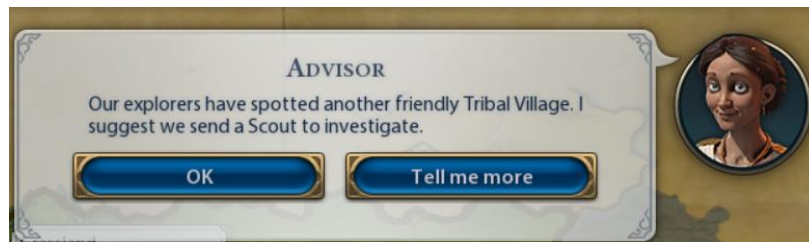


Figure 2 The Advisor gives different amounts of advice depending on the user profile.

The other approach is called dynamic- or implicit profiling. In dynamic profiling you try to analyse the activities and actions of the users in order to figure out what the user would like (Poo et al., 2003). It can therefore also be referred to as behavioural profiling since you are analysing the behaviour of the users. This can be a good way to collect and analyse information about the user's different needs as soon as they interact with the system but comes with the big flaw that you cannot trace other relevant information about the user (Poo et al., 2003). This means that the only way to get information about the user such as their age is with static profiling, since that information cannot be guaranteed by solely analysing their behaviour. The two approaches to data gathering in user profiling therefore come with clear flaws and advantages that directly complement each other. It is therefore highly recommended not to strictly rely on only one of the methods, but to have a holistic approach to user profiling (Poo et al., 2003). An example where dynamic profiling can become useful is dynamic difficulty, where the difficulty of the game is adjusted depending on the performance of the player. This has been implemented in various games over the years, but one of the most known examples is *Crash Bandicoot 2: Cortex Strikes Back* (1997). The game would register if the player died a lot to a specific obstacle (like a rolling boulder) and would then make that specific obstacle a little easier to overcome every time you died to it. According to Jason Rubin, one of the developers of the Crash Bandicoot games, said that their reason for this was to make the game more accessible to novice players without changing the game for the experienced players (Gavin, 2011).

2.2.1 User models

A common use of user profiles is user models. A suggested way of using user models by Unger and Chandler (2012) is to use a simple quadrant diagram with two axes, representing two different attributes of one's users. They suggest that this method is useful when working together with different stakeholders within the company, as it can facilitate discussion on how goals and motivations can be different for different users. The way they recommend using this method is to discuss within the company what different types of customers you might interact with, to then list some common attributes that they might have; be it goals with the product/service, the demographics, their experience and so on. Once the list is long enough, they recommend prioritising which attributes might be most relevant to the behaviour of the users, such as why and how they use the product/service. In their example, they use a fictive online stock trading company that wants to engage non-professionals in trading more types of products. For that purpose, they use the attributes *frequency of direct trading* and *number of product types traded* in their user model (see Figure 3). In game development, another example of attributes could be *frequency of PVP-content played* and *time spent playing the game* if the developers for an MMO-game wants to make PVP more engaging for newer players.



Figure 3 Unger and Chandler’s User Model (Unger & Chandler, 2012).

Categorising customers by attributes in this way can aid the team in discussing their different types of users and help them prioritise their work, as it gives a visual idea of how different groups might differ or overlap (Unger & Chandler, 2012). Unger and Chandler do however emphasise that the main purpose of this method is to *discuss* their user groups and shouldn’t be considered a final model; especially since some users can be part of different types of groups at the same time. They also state that user models like this should not replace researching your users, and the risk of profiling your users without basing it on real user data can lead to false assumptions. A good approach could therefore be to use this user model to get a better idea of which user groups you want to focus your testing on when recruiting participants.

2.2.2 Personas

Personas are a common way to turn your user data into something more tangible, by giving them *life*. A persona is a detailed description of exemplary users turned into a fictional person, typically created in the early stages of development so that the designers get an idea of what different people they are designing the product for (Cooper et al., 2014). While a persona is represented as one single user, the characteristics and needs of the persona represents the data from multiple people. These characteristics are typically represented as skills, goals, environment, attitudes, or such, and are typically presented in detail (Cooper et al., 2014). For example, instead of writing that the persona “is a logical thinker” one would write something along the lines of “works full-time as a software engineer and spends a lot of their spare time solving sudokus”. This sets a more vivid and graphic representation of the persona’s behaviour and motivations (Preece, Rogers & Sharp, 2016).

Finally, and perhaps most importantly, all of the personas have a name and preferably a photograph, in order to fully make them feel alive. The purpose of this is, according to user experience researchers, to help the designers see the personas as real people who will use your system in order to further aid them in realising and remembering who they are actually designing for and what needs they might have (Preece, Rogers & Sharp, 2016; Unger & Chandler, 2012). Additionally, a common way to use a persona is to create a fictional *scenario*

describing examples of how the personas can use the product in order to further emphasise their needs and goals (Cooper et al., 2014; Preece, Rogers & Sharp, 2016).

2.2.3 Player Types

In an attempt to investigate and define how different video game players are categorised in game research, Hamari and Tuunanen (2014) conducted a literature study on how researchers had divided players in a total of 12 different papers. 11 out of the 12 papers had either behavioural research, psychographic research, or both, whereas the last paper focused on the players' demographics inside the games, such as their *character's* class or race. A behavioural segmentation is, as described prior (see 2.1 User Profiles), when the researchers are focusing on the actions (behaviour) of people to categorise them. In a psychographic segmentation, however, the researchers try to categorise people based on their interests, values, lifestyles, etc. (Hamari & Tuunanen, 2014). Based on the findings from their literature review, they summarised it to a total of 5 different key dimensions to profile their players as player types: *Achievement, Exploration, Sociability, Domination, and Immersion*.

Furthermore, Nick Yee and Nicolas Ducheneaut (2018) have together with Quantic Foundry developed the Gamer Motivation Model (see Figure 4), which defines and categorises different motivations for video game players. These categories were created based on data from over 250,000 survey entries from gamers, and the data answers questions about what motivates the players while playing games as well as their favourite games and games they have played recently. The overlying categories in this model are Action, Social, Mastery, Achievement, Immersion and Creativity. These categories all have two sub-categories within them, as seen in Figure 4. Yee and Ducheneaut mean that these profiles can be used by video game developers to know which features to prioritise, by looking at what motivates their target audience. They also mean it can help developers understand how their game relates to other games on the market, by comparing how their games would fit into the subcategories in the model.



Figure 4 Quantic Foundry's Gamer Motivation Model (Yee & Ducheneaut, 2018).

2.3 Playtesting

Another common way to use user profiles is when deciding what types of players to recruit for playtesting. When discussing traditional UX design, Barnum (2010) writes that the screening of recruits is perhaps the most important part of the process of user testing and should be given the most time accordingly. He recommends that you discuss within the company on different characteristics of users that could divide the groups of users into separate user profiles. For example, the company would decide on different characteristics of users, such as technical skills and familiarity with the type of product. Then, they would decide upon the ranges of the characteristics and where to draw the lines between experts, intermediates, and novices. With these user profiles the company can get more relevant testing as they can test what they desire on the right users. For example, if a company wants to test the first impressions of their game, they can decide if they want to get data from players who are new to games in general, players who have played games in the same genre for hundreds of hours, or both.

3. Problem

The literature study has shown that there exists research on several ways to categorise one's users in both traditional UX design and in game development, be it with user profiles, user models and/or player types (see chapter 2). As stated in chapter 2, categorising the users into profiles can let the developers tailor the design to a specific user's needs and goals, in order to enhance their user experience. However, there is a big gap in the research on how user profiles are actually being used within the actual industry of game development, if even at all. It is not known if the theory of user profiling is only being praised by academics but ignored by the practitioners. Researching how user profiling is being used by game developers in practice is important for two major reasons. First, it can show if game developers are working suboptimally by not using a method said to improve player's experience by customising the game based on relevant data to fit the respective player's goals and needs. Secondly, if the practitioners of game development aren't using user profiling, it might bring answers as to *why* they are ignoring the method praised by researchers. For both aforementioned reasons, this study could increase the understanding of user profiling as a method and would therefore contribute to a bigger understanding of GUX as a whole.

This study thus aims to contrast and compare what the current theory says about user profiling with how game developers actually work in practice. The research question therefore becomes: **How does the academic accounts of user profiling compare to how practitioners of game development use user profiling?** For the purpose of this study, user profiling will be researched from a broad perspective. This means that the interpretation of what user profiling means will be broad, and similar methods to user profiles will also be investigated. The purpose of this is to research how game developers view their players and design around them instead of limiting the study more than necessary.

3.1 Method

In order to answer the research question, a Swedish game development studio has been studied for two weeks with an observation inspired by an ethnographic approach. Ethnography is a very broad research method, and there are various definitions of what should and should not be defined as ethnography (Eriksson & Kovalainen, 2016). For that reason, when referring to the method used in this paper, ethnography will refer to Eriksson and Kovalainen's (2016) as well as Preece, Rogers and Sharp's (2016) definitions of the method based on the context of interaction design and observing a workplace. This means that the approach used in this study goes away from the anthropological roots that ethnographic studies are often based on, where the observer tries to blend in and study the culture of the place they observe with the least amount of influence possible. Instead, the method used in this study is a much more participating approach of ethnography where the observer is actively participating as an insider of the company. This makes it possible to ask the developers questions about their actions and could give a better understanding of their behaviour without the need to observe the company for a much longer amount of time. Conducting an ethnographic study at the workplace makes it possible to dig deep into how the game developers work and use user profiling in a way that no other methods of data gathering can achieve by actively observing their behaviour in real scenarios (Preece et al., 2016). Examples of data collected in an ethnographic study could be notes of meetings, what developers said/did, or reactions to different scenarios, but it can also include contextual data such as pictures or descriptions of room layouts (Preece et al., 2016).

To complement the data from the observations, a semi-structured interview has been conducted with the equivalent of a UX-designer at the observed game development studio. The idea is that having a semi-structured interview makes the respondent more free to fully describe their work methods and practices in detail, in a way that a structured interview or questionnaire might not be able to capture. This is because a semi-structured interview allows

for relevant follow-up questions and different amounts of time and focus to be spent on the questions that become more important for the respondent, as well as the option for the respondent to ask questions back to the interviewer (Barnum, 2010). This becomes even more appropriate after spending time at the company so that both questions and answers can reference what has been observed for the two weeks prior. However, since the goal of the data gathering is to compare the data from the practitioners to the findings of the literature study, some structure is of course necessary. This makes a semi-structured interview a good middle ground.

Based on what was found in the literature study (see Chapter 2), a set of 7 base questions have been created:

1.	How many UX-designer/researchers are you in your team?
2.	How does your team discuss different player types?
3.	How does different user groups affect the game design?
4.	From your perspective, what is a user profile?
5.	Do you use user profiles in your work?
6.	What is your recruitment process like for playtesting?
7.	How do you access new information about GUX?

Figure 5 List of base questions for the interview with the game development studio

The intention of these questions is to cover all that is said in Chapter 2. For example, question number 6 is specifically asked to explore if the developers involve user profiles (or any related terms) while recruiting playtesters, as this is something Barnum (2010) writes is one of the most important aspects of user testing. All of the questions are also asked in an open and non-leading way, with the intention of impacting the answers of the respondent as little as possible. For example, asking “do you use user profiles to recruit playtesters” could make the respondent focus too strictly on user profiling, whereas the current question is designed to make the respondent interpret the question how they feel most fit to their work methods. Specifically asking about user profiles could then be asked as a follow-up question. The intent is that this would give more accurate answers as to how they actually work. There are of course some exceptions to this, such as question 5. The intention here is that if the respondent answers yes, a follow-up question would be *how?* and then further build onto what their answer is. If they answer no, however, the follow-up question would be *are you categorising your players in any other way?* The intent here is again to let the respondent answer freely and base the follow-up questions on their answers, in order to get qualitative data. The audio of the interview was recorded and then transcribed, and the audio was then deleted once the transcription was written. This was done in order to store as little data as possible about the respondents, and their names have always been anonymised to “respondent 1” and “respondent 2”, in accordance with the Swedish Research Council’s research ethics (2017).

These questions were originally asked in a pilot study to investigate the quality of the questions and the data gathering method as a whole. Due to the participant requirements being quite high for this study, however, it is quite difficult to find participants that fit the exact criterias (the equivalent of a UX designer at a game development studio). Therefore, in order to still test the method before conducting the full interview, the questions were tested with a software developer for a company that develops a service for online gambling and casino games, such as Poker. The respondent did, however, have UX designers in their team, and answered the

questions to the best of their ability. This meant that some questions were difficult for the respondent to answer, as it is not their direct field of work. However, as the purpose of the pilot study was to investigate the *method*, rather than the data from the respondent's answers, the participant still proved useful despite not meeting all the requirements. A lot of insight was given on the questions, not least the order they are asked, as well as how well the method works for answering the research question. For example, "*From your perspective, what is a user profile?*" was originally the first question of the interview. The impression was that the respondent could give a short answer of their idea of the term and that the rest of the interview would be based around that definition of user profiles. However, the question turned out to be a lot more complicated to answer than anticipated. Even though the respondent felt like they knew what user profiles are, they still struggled to explain it in just a sentence or two and had to use examples to describe what they meant. This is not ideal as the first question of an interview, as the respondent can be nervous or uncomfortable at the start of an interview; especially if they are not used to being interviewed (Barnum, 2010). It is therefore much more appropriate to start off with more simple questions that can be answered in short answers, such as yes/no or a simple number. The question about defining user profiles was therefore changed to be asked later on in the interview, and the first question would instead be "How many UX-designer/researchers are you in your team?". The idea is that this question should be easy to answer with a simple number, which would be followed up with further questions that has the respondent talk more about themselves and their roles in the team, which should be a better way to get comfortable with the interview.

3.1.1 Coffee Stain Studios

It is worth noting that the methods of game developers might be very diverse around the globe. Intertwining data from all over the world could therefore give very misleading data without conducting a thorough analysis. Due to the limitations in time and resources of the study, the scope of the research will therefore be focused on *Swedish* game developers.

Several game development studios in Skövde were contacted with email in order to find a studio willing to take part in the study. The email included an explanation of the purpose of the study as well as all the data gathering methods that would take place, in accordance with the Swedish Research Council's research ethics (2017). The decision to email studios in Skövde was partly made due to distance, but also due to the city having plenty of studios with varying sizes. This gave a lot of flexibility in which studios to contact since the study doesn't require a specific game development studio to answer the research question.

After a bit of e-mail communication, the study was set to be done at the office of *Coffee Stain Studios*. Coffee Stain Studios was founded in 2010 and is a game development studio based in Skövde. They are best known for developing *Goat Simulator* (2014) and *Satisfactory* (2019), which was released for early access in 2019 and is the game they were working on during this study. Satisfactory is a factory simulation game set in an open 3D first-person world that encourages building, exploration, and a bit of combat. It can be played alone or together with other people. In 2017, Coffee Stain also founded Coffee Stain Publishing, a publishing subsidiary for all the games within the Coffee Stain group. Some additional games published under Coffee Stain are *Deep Rock Galactic* (2020) and *Valheim* (2021). With the developers of Valheim, Iron Gate Studio, also being located in Skövde, it was not uncommon to encounter developers of Valheim at the office of Coffee Stain Studios during the observation. They were, however, not observed or interviewed unless they were interacting with the developers from Coffee Stain Studios directly. The developers that were observed were two people who defined their roles in the studio as UI/UX designers, or UX designers within UI. This means that they were responsible for all kinds of interfaces within the game, be it in menus or game worlds. They did, however, not work on the user experience in terms of game design or game balance,

etc. There was no official difference in hierarchy between them and they were sharing a room in the office where they would cooperate on a lot of their tasks. Both the CEO and UX/UI designers were asked if they wanted the studio to be anonymous for the study.

4. Analysis

The research question was, as defined in Chapter 3, “*How does the academic accounts of user profiling compare to how practitioners of game development use user profiling?*”. To answer that, a thorough comparison has been made between the findings from the literature study (see Chapter 2) and the findings from both the observations and interviews at Coffee Stain Studios. This was done by taking notes of everything that stood out or seemed relevant to the research question during the observations and the one-on-one interview was also recorded and transcribed, which the participant gave their consent to. The notes and transcription were then colour coded to categorise similarities in the data. The categories were initially created with a top-down organisation based on the subchapters in Chapter 2, such as *Playtesting* and *Player types*, meaning that the categories were already defined before the analysis started (Barnum, 2010). However, further categories were also created during the analysis of the data, such as *Communication* and *Design cycle*. These categories were created when the notes showed something significant that couldn't be assigned to any of the already existing categories, or when something would repeatedly be found throughout the observations and interviews. This means that a combination of top-down and bottom-up organisation was used for the analysis. The full list of the categories created were *The industry*, *Communication*, *Design cycle*, *Experience*, *Player types*, *User profiles* and *Playtesting*. Once the notes and transcription had been colour coded, a comparison was made between the subchapters in Chapter 2 and the highlighted notes from their respective category.

4.1 User Profiles

The first category to be compared was user profiles, as that's the main focus of the study. Perhaps the most outstanding quote from the observation was that “user profiles are mostly used to make suits happy”. In this case, suits refer to board members or other higher-ups in the company who don't necessarily take part in the development of the game. It is not clear if this sentiment is shared across the whole development team, but it was obvious from the start that the UX/UI designers at the studio did not share the same excitement for user profiles as the academy does. This quote was said during the first day of observations, and when asked about it again during the interview, they added that they feel like user profiles are mostly used as a marketing tool to sell a product to investors. They thought game development is too complicated to categorise people due to the many “exceptions” that exist; there are so many players that you do not consider. They therefore thought that the best approach to designing games is to do something that you yourself enjoy, “ship it”, see what people's opinions are and then iterate it accordingly. This approach is possible for them since their game is a so-called early access game, meaning that the game is not fully finished yet but is still available for people to buy and play the current version of the game. Developer 1 did, however, say in the interview that the more theoretical methods like user profiling could be more useful in games that are under heavy non-disclosure agreements (NDA), as it is more difficult to test the game with the players in practice. When they were asked what user profiles are to them, they simply answered “nothing”, and that they have never really used user profiles in their work because they simply preferred trying out a design and then seeing how people react to it. To them, user profiles are something that is primarily theoretical and using user profiles would be an alternative to testing the product with the players. As seen throughout Chapter 2, however, user profiles and testing the game in practice are by no means mutually exclusive to each other, which brings us to the second category to be analysed.

4.2 Playtesting

As Barnum (2010) says, user profiles can in fact aid designers with testing their product as you can clearly define what types of users you wish to test the game with. This was nothing the designers at the studio used user profiles or similar categorising methods for, though. In fact, the interview showed that playtesting with users in general is uncommon for them. When asked if they conduct any sessions for playtesting the game, they answered that they “conduct internal playtests every once in a while, where we sit and play the game together, but to be honest it is mostly used so everyone gets a collected view of the game and to find bugs”. When the UI team is working on a more complicated feature, they could ask the others in the office to try the interface to see how intuitive the design is, but they very rarely conduct playtests with any external players. The reason for this is that “since the game is in early access, we have tons of people testing the game in that way”. They also added that only conducting simple playtests within the office is “not perfect testing, but you can find big things that you haven’t thought of and get it over with”.

4.3 Player Types

While the UX/UI designers at the studio never categorise the players for either designing interfaces or playtesting the game, they did point out that the game designers have been using three player types. It’s important to note that game design is not the area that the designers that were interviewed and observed work with, so they were clear that some things that they answered about player types might not fully incorporate how the studio actually uses them. That being said, the player types that they use at the studio are *The Builder*, *The Automator* and *The Explorer*. The builder likes to build something that is aesthetic and cool, the automator wants to build an effective factory and the explorer wants to explore the world. This could easily be compared to the player types in Chapter 2.2.3. By comparing it with Quantic Foundry’s Gamer Motivation Model by Yee and Ducheneaut (2018) it’s clear to see that both The Builder and The Explorer would fit under the respective category of Creativity and The Automator fits well under Achievement. However, none of the other player types from Yee and Ducheneaut’s model can be applied to the player types mentioned in the interview. The only argument that could be made is that The Explorer could also be applied to Immersion, but neither fantasy nor story was something that was mentioned as motives in the interview. Yee and Ducheneaut (2018) mean that their Gamer Motivation Model can be used to compare one’s game to other games on the market, to see where their game would fit in, but this was nothing the UX/UI designers recognised that they had done. On the whole, however, Coffee Stain Studios’ use of player types are a bit different to how Yee and Ducheneaut (2018) uses theirs. Coffee Stain Studios uses their player types to know which types of *features* to prioritise in the design of the game. The impression is that the player types are rather a way for the gameplay to include *building*, *exploring*, and *automating*, than a way to cater to a player who likes to express their creativity, for example. Worth noting is also that all of these player types are entirely based on their game *Satisfactory* (2019), and not different player types from the “gaming world” as a whole. So, while there are similarities between what the literature shows about player types in game development and how Coffee Stain Studio uses player types, the perspective and implementation of player types are very different.

4.4 User Models and Personas

The literature study also found two additional methods related to user profiling: user models and personas. Both the observation and interview showed, however, that neither of the methods were used by the studio. While user models and personas were never asked for

specifically, neither of the designers mentioned them when asked about how they categorise their users.

4.5 Informal Discussions

However, as mentioned in the beginning of the chapter, something that kept being noted throughout both the observation and interview was *communication*. A central part of the research question was to research how game developers view their different users, and a core benefit of doing an ethnography inspired observation is that it became possible to observe first-hand how the developers actually work and talk about their players. While communication was not something that was explicitly noted in the literature study, the observation would quickly show that it is needed to analyse the way they communicate with each other, as informal discussions were observed to be a key part to the studio's work methods. The observation and interview showed quite a few different ways the developers could talk about their players. Firstly, they used something called *feature teams*, where different developers were grouped together into a feature team whenever a new feature was about to be worked on. These developers would then, in an informal matter, take turns to describe to the others what they were working on in relation to the specific feature. During the observations, Developer 1 stated that new feature teams are developed in two different ways: either because a feature is common in similar games and they thought their game would benefit from having it as well, or to "fill a hole that the game is currently lacking". The feature team that the UX designers belonged to during the observations was created for "filling the gameplay hole for late game players; players who had played for long needed new features", as Developer 1 put it. In this case, *late game players* could be defined as a categorisation of the players used by the developers. On a less formal note, Developer 1 also stated in the interview that there are two common ways of discussing new ideas: "[in] the coffee room a Friday afternoon halfway to the beer but also that you get an idea and go into someone's office to discuss it". Both of these ways were also noted in the observation. It was very common for other developers to walk into the UX designers' office and discuss ideas with them, and there were a couple of times where Developer 1 would walk downstairs to discuss a design problem with one of the programmers. It was not uncommon for the developers to discuss their players during these interactions. For example, one of the higher-ups in the company would come in and discuss how to best implement a new feature in the main menu. They had a fear that new players wouldn't understand what it meant to press that button, and therefore wanted a warning message before pressing the button. In this case they are thus discussing different players in terms of their experience. After analysing the data, it is therefore clear that while they were not using user profiles per se, they are still from time to time discussing their players as if they have been profiled. As Developer 1 put it in the interview, however, their focus is more on what the game needs and what "itches" would be satisfied, rather than focusing on what the different players need. They don't really look at different players and design features based on them, but rather decide what they want their game to include and then make sure the game includes it.

5. Conclusion

5.1 Summary

The purpose of this study was to research how game developers categorise their players for the purpose of design and compare what the academic accounts of user profiling with how practitioners of game development use user profiling. The result is summarised below:

- User Profiles
 - The UX/UI designers did not use user profiles at all in their work as they thought it's better to simply test the design that you are confident in and then iterate accordingly based on the players' feedback. They saw user profiling as something entirely theoretical and that while it could be useful for games that are under heavy non-disclosure agreements, they would rather use more "practical methods" for their early access game. Perhaps the most notable conclusion from Developer 1 was that "user profiles are mostly used to make suits happy", which captures the clash in opinion between the academy and practitioners of game development.
- Playtesting
 - The literature study shows that user profiles can be a useful method for deciding what to test and who to recruit for the test. However, the interview showed that playtests were uncommon and when they occurred, no user profiles or equivalent methods were used for recruiting participants. The developers did not know about the advantages of doing so.
- Player Types
 - There were a few similarities to what the literature study shows about the use of player types. While the player types at Coffee Stain Studios were created by the developers, so the names did not match completely, all three types (the builder, the explorer and the automator) could be found in the Quantic Foundry's Gamer Motivation Model. Developer 1 did, however, say in the interview that these player types are rather focused on what the gameplay should include, rather than different ways to view their players.
- User Models and Personas
 - Neither user models nor personas were used by the studio.
- Informal Discussions
 - The interview and observation showed that informal discussions between the developers played a central part in how the studio worked on their game and discussed their players, despite not being a part of the literature study. Examples of informal discussions were during their breaks in the coffee room, that someone gets an idea and goes to the respective co-developer's office to discuss it, or feature teams, an informal online meeting for a team of developers created for a specific feature being developed in the game. One way a feature team can be created is to fill a hole the game is lacking for a specific type of player. In the case of the observations, these players were players who had played for a while and reached a point where new things to do were needed.

5.2 Discussion

5.2.1 Result Discussion

The research question *How does the academic accounts of user profiling compare to how practitioners of game development use user profiling?* have been answered and has resulted in a list of key differences. The study has shown that there is a gap between what the literature says about user profiling and categorising of players in games, and how the practitioners of game development actually work. This study could therefore be used as a way to bridge that gap, as the study shows a list of models and methods that can be used to better understand their players. The game developers are not always aware of all of the strengths of the methods and are therefore missing out on key advantages. For example, the observations and interviews showed that informal discussions are a common way to discuss the players. By turning those discussions into a concrete method with empirical evidence, the game developers might see a much better understanding of their players' goals and motivations. This can in turn be used to design appropriate features that the players want. On the contrary, since this study has shown that the practitioners of game development are not using the methods from the literature, researchers can use this study to better cater their models and methods to game developing in practice.

From a societal perspective, it is also important to discuss and consider the ethical standpoints of user profiling. Most importantly when it comes to how the users' data is gathered, stored, and used by the game developers. It is important that the user is aware of how their data is collected and that it is only used for the intended purposes. As mentioned in Chapter 2, it might also be uncomfortable for users that data is being collected about their behaviour. It is therefore important that there is consent for data collection for the purpose of user profiling.

5.2.2 Method Discussion

The decision to conduct an ethnography inspired observation at a game development studio was made because it allows one to dive deep into the studio and get nuanced and detailed data that the respondents might not be able to answer in an interview or online survey. This showed to be correct as the observation gave plenty of data that wasn't answered in the interviews, and perhaps more importantly, it is responsible for the additional category that was not part of the literature study: informal discussions. Observing the UX/UI designers in their work showed exactly how the discussions happened, which was not only important data in itself, but allowed for further questions during the interview. Having both an observation and interview – method triangulation – also increases the data's validity since the observation data can *confirm* that the interview answers are correct. Simply relying on interviews might give misleading results as the respondent might not always tell the full story. If what the respondent is saying in the interview is also shown during the observation, however, it is of course more likely to be true. However, while this study has benefited from the observations, the method has meant that there has only been time to study one game development studio. It is therefore difficult to prove that the results from this particular game development studio answers the research question for the game development industry as a whole. Since the study was made with a GUX focus, the decision was to ask the studio to observe the equivalent of UX designer. In this study, the observed designers are UX/UI designers and are therefore responsible for working on the game's UI, but not so much about the game's design outside of that. There could therefore have been a bias in their answers, and they might not have been knowledgeable enough in all other aspects of game development. If there were more time available, for both the study and the studio, it would be greatly beneficial to also observe and/or interview a game designer at the studio as well. However, with the time and resources that were available, the decision to only observe and interview the UX/UI designers allowed for more detailed data as they could be observed for a longer time. In a similar manner, the observation and analysis has only been conducted by one person. Having multiple people analysing the data, also known as investigator triangulation, is another common way to

strengthen the validity of the result as there could potentially have been bias from the observer/analyst. The observation notes and planning were, however, discussed with the study's supervisor.

5.3 Future Work

As mentioned in the previous subchapter, a big potential flaw in the validity of this study is that only one studio has been studied. Therefore, the next natural step would be to further study how players are being categorised within other parts of the game development industry, such as with smaller indie game developers or bigger AAA-studios, but also in other parts of the world. For example, this study showed that informal discussions were common and important within this Swedish studio, but that might not be the case in all parts of the world.

Finally, this study has identified the gap between the academic accounts of user profiling with how practitioners of game development use user profiling, and the study can hopefully be used as a start on how to bridge that gap. However, further research is required on how to actually bridge that gap further, and further answer *why* there is a gap between them. One way to approach this could be to research how user profiling or similar academic methods are being taught. So, instead of only researching how to better cater the method for game developers, it is relevant to consider if the impression and understanding of user profiling is being taught wrong from the start. This means that instead of only researching game developers, it might be just as important to research students of game development.

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