Ethical Stewardship: Taking Serious Games Seriously

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Abstract. In this chapter, we derive a framework for discussing various ethical considerations in serious game design, based on a Zagal's categorization of ethical areas in game design, and regarding the different contexts of their design and use. Focusing on the context of design and the context of use, we propose five suggestions to support ethical stewardship in serious game design. We conclude by discussing a number of specific areas in which ethics tie into serious game design, such as when working with games in a military context, when considering privacy issues, or when pinning down particular game design choices.

Keywords: serious game design, information ethics, ethical stewardship, cross-cultural design, values in design, privacy.

1 Introduction

Games themselves are complex cultural artifacts and designed systems—they are designed objects [1]. So, too, is the study of digital games ethics--- it is as complex and nuanced as games are. Often ethics and digital games are associated with the violence in games and subsequent aggressive behavior in players [2]–[4]. This association solely focuses on how the players are implicated by the artifact, that is, by the game—not on the ethics of the development process, the industry, nor on the developers.

adfa, p. 1, 2011.

As an information system, the game experience is in part defined by the design and in part by the player's interaction with the design of the game [1]. A comprehensive description is illustrated by Zagal [5] who makes a strong case for the consideration of certain variables: (a) The cultural artifact itself – is the game good or bad?; (b) business ethics – what does it mean to create the game ethically: (c) ethical play – what does it mean to play fair/ethically?; and (d) frameworks – what actions do games define for the player? Each of these variables reflect aspects of digital games, including serious games. For example, in Danish Studio's Serious Game Interactive, *Playing History 2 - Slave Trade* (H2ST) a learning history game-the player is a slave who is tasked to enslave others by their owner.

Each of Zagal's variables can be considered in the following manner in H2ST: As a cultural artifact--an object created by humans which informs about the object's culture and use--is H2ST a good or bad game? After all, it is a game designed to question moral choices in the player-such as grabbing slaves and loading them into a ship. The player is a slave herself and is being forced to place others in a similar position. Is a game which elicits such a conduct good or bad?

The business ethics can also be evaluated. What where the business motivations to create such a game? What are the moral implications of selling a game that portrays a sensitive aspect of human history? Does this perception influenced by the location of the company? Serious Game Interactive garnered media attention with a questionable play mechanic in which the slaves needed to be stored in the ship Tetris-style (see Fig. 1). While it is historically accurate that part of our history has the treatment of slaves as cargo, is it ethical of a company to address the topic in such a manner?

Fig. 1. Playing History 2 - Tetris Gameplay (2013)

Ethical play can showcase players' relationships to one another and the moral boundaries they are willing to cross or not. A player might choose to play the role of the slave with an intention to do as little as demanded of them to escape later and free others, for example. Frameworks are defined by the design of the game itself. The player might decide to play ethically (be an ethical player), but if the game parameters are such that unethical behavior is rewarded and ethical behavior is not, then the player is limited in her ethical play. In H2ST, the player starts as a slave. In order to play the game, the player must assist in the enslavement of others.

Entertainment games are designed for engagement and achievement, sometimes with the end goal of increasing profit margins. By contrast, serious games aim to provoke thinking, elicit self-awareness, support healing or engage players in learning. The vision of serious game designer is intentional and goal oriented. Such a focus, while well meaning, can at times be misguided (as in the case of H2ST), thus this chapter proposes a process to support an understanding of the need for ethical intelligence in serious games which I term ethical stewardship.

2 An Ethical Framework

This chapter expands on Zagal's [5] ethical descriptions by first including game designer herself as as a variable. Discussing the ethics of digital games can include the concept that morality in games may be informed by a game designer's ethical perspective. In addition, except for business ethics, Zagal's [5] variables address aspects of post-production (after the game is created). Information systems literature offers serious games a bridge that supports the inclusion of the designer as an ethical variable. The information system field places the emphasis of ethics on pre-production (design) and extends a consideration of morality to values and beliefs in design [6], [7]. If digital games reflect ethical perspectives of those who design them, then digital game ethics would do well to expand on current definitions to include game designer's ethical perspectives inform ethical play, actions of the player and the game itself. For example, it might be challenging to fully address how race informs ethical play in H2ST, if the ethical evaluation of the game does not also include an exploration of the designer's and their values. For this reason, scholars in digital games ethics now address how a game designer's values inform design [8], [9].

If we take the basic premise of the MDA model [*Hunicke, R., LeBlanc, M., & Zubek, R. (2004). MDA: A Formal Approach to Game Design and Game Research. Workshop on Challenges in Game AI, 1–4. http://doi.org/10.1.1.79.4561*] of a designer designing a game and a player playing it, in addition to those two roles we

can identify two important contexts. Within the context of design, the designer makes the design choices that define the game. Within the context of use, the player interacts with the game. Zagal's variables easily adapt to this model as well. In this chapter, we integrate the expanded version of Zagal's variables [5] which includes the designer into the development process (Figure 2). The integration of the designer [10], [11] into Zagal's [5] variables, creates a fuller picture of the ethical ecosystem navigated in games. The *Ethical Ecosystem of Serious Game Design (figure 2)*, serves as an organizing framework for this chapter. This chapter is divided into five sections as follows: the two contexts of design and use, and the negotiations that occur between the designer, the serious game and the player.

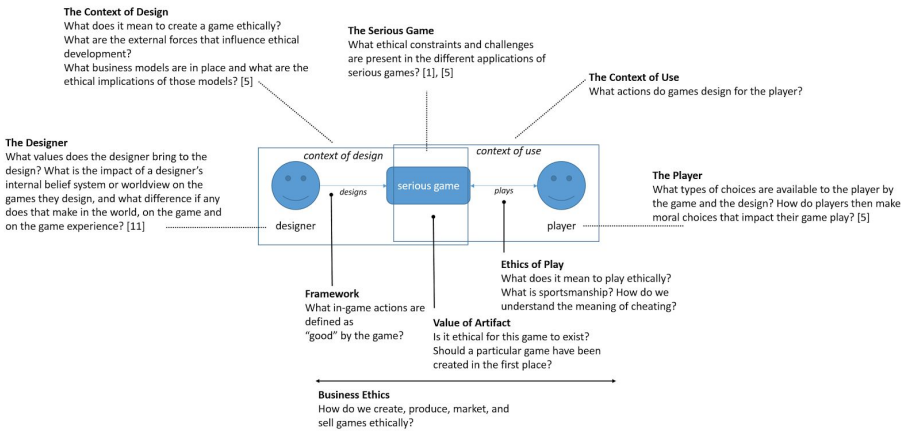

Figure 2. Ethical Ecosystem of Serious Game Design.

Much literature is already devoted to the ethics in the game themselves, game play and the ethical considerations by players (please see references below). However, very little is found on design contexts and the designers themselves. There are few literatures focused on the game creation process [12], and even fewer in serious games. Such a focus is recent and has to do with the accessibility to game developer studios (including serious game studios) as many have secrecy clauses and IP that would be detrimental to be published in the research study [13]. This section will focus on the less known areas: context of design, context of use and the designers.

3 The Designer

As designed software systems, games are shaped by Information and Communication Technologies (ICTs) and their historical focus on human values. The domain of computer information ethics has incorporated human values into product design since its inception [6]. To this end, there has been an emphasis to develop frameworks that ensure that moral and ethical values become integrated in the design and development of information and communication technologies (ICTs), such as digital games. These frameworks include Value Sensitive Design (VSD) [14], Worth Centered Design (WCD) [15] and Values at Play (VAP) [8], [16]. Each of these frameworks attempts to influence the design of technologies by bringing moral ethical intelligence to the creation of technologies and other cultural artifacts [17]. Scholars of IE also claim that technologies designed by people from a particular culture reflect the values and communication principles of the people who created them [8], [18], [19].

This is particular important for serious games as game designers are tasked with an agenda and end goal. If biases are embedded in the design, then designers could promote what Battiste [20] names a subtle cognitive imperialism. Through digital game development, designers validate their own knowledge base, and cognitively disclaim other knowledge bases and values -- thus maintaining the primacy of the one language, one culture and one cultural frame [20]. This knowledge base may also be validated by those who hold the vision of the game. In the example of H2ST, illustrates this type of imperialism. While the scenario appeared historically accurate by the Western developers, some of the representations in the game appeared insensitive. Having never experienced slavery nor having had a history of cultural slavery, the Danish Team, developed the Tetris mechanic. It is probably fair to assume that if a group of designers that were descendants of slaves were designing H2ST, the Tetris style mechanic would likely would not have been proposed or built at all.

How then can serious game designers balance project and design demands, with ethical stewardship? The next section facilitates an understanding of ethics in design.

3.1 Ethical Stewardship in Design

It has become clear that ethical considerations are an important aspect of designing serious games. As all designers do, game designers have the responsibility to anticipate the effects brought forward by the artefacts they create and be held accountable for them. However, there are a number of barriers that stand in the way of adopting this stance as regular practice. First, there is tension between ethical

considerations for the design and the project constraints such as time, budget, and otherwise. Anticipating possible effects beyond the intended goals of the serious game intervention is often not the number one priority in an already complex process. Second, the existing ways of working, process models for serious game design and other frameworks, do not explicitly address how designers and developers can reason about these effects and include accountability into their processes. For a nascent serious game developer, there is little material to support their decision-making process from an ethical perspective. Third, and last, the game industry at large, whether focused on serious games or entertainment games, is a relatively young field and considering the intended and unintended effects of the games produced is only starting to become regular practice.

That said there are some ways in which the designer can attempt to bring moral and ethical intelligence through design, in the following manner:

1. *Developing requisite attitudes*. Requisite attitudes of respect, openness and curiosity comprise basic units of the model by [21]. One strategy involves partnering game designers with stakeholders or team of people that have experienced the topic. For example in the development of a math game for schools, it is important to also include teachers and parents as part of the design team. In this way, game designers have the opportunity to develop openness to and respect for others different than themselves [22].

This approach fits in well with the user-centered design process. As the design process should inherently assess and address the end user, several methods supporting user advocacy have been developed and widely adopted into use. These approaches range from evaluating game prototypes with focus groups representing the target audience (passive participation), to actively including end users in the design team (participatory design or co-creation). These already existing steps provide ample basis for addressing ethical perspectives, as will be discussed in the subsequent points.

2. *Ethical stewardship requires bricolage*. Ethical understanding requires intellectual bricolage [23] – what Claude Levi-Strauss calls "making do with what is at hand" [24]. A bricoleur may gather materials, knowledge and tools for future use without knowing when these will be used. In cultural anthropology the concept of bricolage occurs when new ideologies emerge from current myths and social realities. Bricolage thinking involves being resourceful and adaptable within a given context. In an ethical bricoleur does not simply engage users but participates in the process along with users to better understand the personal, emotional and socio-cultural factors of that user [25].

Ethical bricoleurs: 1) are flexible and responsive--they employ a variety of research methods to gain deeper understanding of users; 2) remain intellectually informed--stay abreast of interpretive paradigms; and 3) are multi-skilled and

technically competent by enlisting different tools for gathering user information (interviews, focus groups, etc.) Additionally, a bricoleur should understand and know about the variety of methods available to gather user data. While traditional methods like market research, focus groups and questionnaires may work for some groups, other groups might need adapted methods such as observational research, experiential sampling and cultural inventories. Others may require more innovative tools of collaborative design such as design workshops, collage, cognitive mapping, and visual diaries [26].

3. *Stakeholders as a co-creators of games from the beginning*. Game designers should partner with players to co-create the designs, rather than perceive players in subject position, participating solely as "inputters," not partners. Furthermore, the type of player that contributes to the design of game should be selected for their skill and their creative capacity [27]. Ethical stewardship requires must be much more than an implementer of design strategies, and instead become a facilitator of the relational process [28]. Intellectual facilitation is based upon the notion that well-understood design practices might not be appropriate for a given audience, and instead requires a mutual learning process between designer and user [25], [28]. Through this sort of facilitation, game designers understand the conditions needed for a successful ethical design and allow space for each design to arise out of specific situations.

4. *Including broader perspectives and innovative methods*. Ethical facilitation extends beyond attitudes, bricolage and co-creation to include broader perspectives. There is a Dutch saying, "vremde ogen dwingen" roughly translated to mean "strange eyes have stronger voices than eyes that look through familiar glasses". Such a saying illustrates the importance of keeping an open mind to include perspectives outside of our own. For example, ethical designers can include non-Western perspectives as a part of including broader perspectives. While the dichotomy of Western and non-Western is a Western construct itself [29], non-Western refers to systems of thoughts outside of European traditions including: African, African American, Asian, Latin American, and indigenous populations [30]. For example, Hamminga [31] illustrates this point by speaking about argumentation as a Western strategy. In non-Western cultures "truth" is not argued but "felt" (p. 61). Other design fields, like architecture, have been successful at introducing diversity in design by including examples of non-Western designers in their work and learning from the contributions of "invisible designers" [30], [32]. Western game design process could benefit from the inclusion of collaborative methods during design, including sourcing design strategies directly from cognitive skilled players in a given culture. Additionally, if game designers were to develop a game based on a historical event, all those involved in the project would learn about the geography, people and history of the event from multiple perspectives [33]. For example, when recreating a game based on the U.S. Gold Rush, designers would incorporate learning about the history from the

perspective of indigenous nations, and not solely as accounted historically in western texts [34].

5. *Ethical stewardship requires critical reflection on values*. One of those knowledge components by Deardoff [21] can be applied towards understanding the influence of game designer's own historical context on their values. To gain critical reflection, a game designer would employ a variety of interaction design tools usually used with users for self-understanding, including cultural analysis, collages and cognitive mapping [26]. By doing so she would understand better how her history's culture informs present reality. This includes extending the same understanding to users in the context being designed for. For example, a game designer might create a collage of the history of transportation in the city. The player might be asked to do the same. In doing so, not only does the game designer place herself in the global context, but allows for self-reflection and understanding of the differences and commonalities between her values and those of the localized user.

3.2 **Further Research**

- What kind of responsibility does the game designer have to the content presented?
- What is the natural role of ethical considerations within the design process -- where and how this should be integrated is an open question
- What tools can be used to develop alternative perspectives and critical reflection?
- What methods can be used to develop requisite attitudes in serious game designers?
- Should all games require an ethical certification or course?

4 The Contexts

In the previous section we discussed the ethical considerations for the design and development of serious games from the perspective of the designer: which questions to ask and what steps to take. In the end, the design choices that a designer makes define the serious game that results from the design process. Two particularly noticeable areas of design choices include the selection and presentation of the game content, and the interactions and choices that the game offers or doesn't offer to its users. This design choices need to be in line with the overarching purpose of the game, and designers need to consider whether that content is presented accurately in that respect (we emphasise the difference from presenting it realistically). For example, in America's Army, the presented view is politically motivated and one-sided: besides being a training tool, it is also a recruitment device and a propaganda tool [37], [65]. Moreover, it is not possible to play as the enemy – a

specific and deliberate design choice that allows particular content, while limiting access to other views.

While similar design choices are being in made in other media, such as film and writing, the interactive aspect of games, complicates this matter. In addition to which content to present and in what way to present it, a designer also need to attend to player choice. For example, design dilemmas exist in which roles a player is allowed to take on and which actions are available to the player. An example can be found in the popular series *Assassin's Creed*: the series does not contain playable female characters – even when history provides ample opportunities to include them [66], [67]. These examples demonstrate that, even at the level of what a particular serious game presents and allows the player to do, ethics are at play.

Some of these design choices and ethical dilemmas are similar regardless of the application context. These dilemmas extend beyond the entertainment game industry to serious games as questions surrounding funding sources and the influence of stakeholders on the vision of the project are similar across serious gaming projects, However, particular contexts of use present their own ethical discussions, stemming from the nature of that context. The next sections explores serious games in education, serious games in the military and privacy aspects of serious games, as examples of context of use.

4.1 Serious Games and Education

In education, serious games support learning, through a variety of methods which may include providing practice-with-feedback scenario's in a motivating environment, integrated learning environments with instruction, adaptation to the learner's individual needs, and integrated assessments. A number of ethical issues in serious games for learning are becoming apparent but are left largely unaddressed. if individualized learning, self-regulated learning and affective adaptive virtual coaches are the goal, are we seeking to completely replace the traditional teacher with technology? When game analytics and learning analytics are used to monitor learning progression of primary school children, who owns the data collected? And when the data is used to adapt the content and difficulty of the game for an individual learner, is this adaptation the best offering to the learner in terms of their education? Moreover, the level of integration in a curriculum needs to be explored as an extension of ethical stewardship. How much of the curriculum should bee gamified?

One of the areas in which Serious games for learning are particularly popular is in medical training. erious games and simulations can provide the much needed environments to practice extensively, without real-world consequences. Particularly when in this context of use the cost and impact of a mistake is high. However, this further raises the considerations that need to be made regarding representation of the real world and the responsibility for wanted and unwanted effects resulting from

using the game. For example, if we develop a game-based training for medical triage or hand-eye coordination in surgery, does the game developer also take on responsibility and liability for the correctness of the training? If virtual reality games are introduced as an alternative to light anesthetics, who is accountable for the cases where it does not work and or a patient experiences great discomfort?

4.1 Serious Games and Military

"A military convoy is traveling on a rough desert road in Iraq. Suddenly there is a deafening noise: a Humvee explodes ahead, black smoke rises. Rebels attack the vehicles from all sides - shots, screams everywhere. The smell of burning rubber impregnates the air." [35]

This story illustrates the typical manner in which military serious games present their narratives. In contrast to games for entertainment, those narratives are not just fiction but reflect real events. Military games simulate actions which have ramifications in real life. Therefore serious games for the military raise ethical issues.

This section reviews the ethical issues of digital serious games for military applications. Specifically we present a historical summary of military serious games followed by a look at the application context and the linked cultural aspects; we examine the difference between simulations and games; further we discuss how these computer programs can be seen in the military decision making process.

In the field of ethics and morale military serious games reflect multiple variables from our ethical framework (cf. section 2). In particular we focus on three variables: (a) cultural aspects, (b) business ethics and (c) ethical play. The term military ethics encompasses them. Military ethics is typically understood as applied professional ethics and concerns questions regarding the application of force by military armed forces [36].

There is a long connected history between serious games and the military [45] as the first serious games were games for military training. These games were designed, developed and used by the military, like the U.S. Army, during the the cold war [46]. One of the most famous examples is the arcade game *Army Battlezone* and its specialized version *The Bradley Trainer* by Atari in 1980 which has been used by the U.S. Army as a targeting training simulator for a specific tank type. In the game the user views a plane with hostile enemy tanks and mountainous horizon from a first-person perspective. The goal is to target and destroy moving enemy tanks and collect reward points. The game displays the objects with wireframe vector graphics on a black and white screen. Battlezone is also an example for the cultural and moral differences between military and game developers: several of Atari's employees were clearly against it and refused to make further games for the military [46]. The original designer of Battlezone, Ed Rotberg, stated: "We didn't want anything to do with the

military. I was doing games. I didn't want to train people to kill." [46]. Serious games for the military have since become a huge industry. America's Army, Virtual Battlespace, Steel Beasts or Combat Flight Simulator are recent games with large budgets made for the U.S. military [47].

The narratives and scenarios of games for the military are clear: war or war-like conflicts and their serious ramifications. Hence, those games are not just for entertainment with fictional narratives, but rather have serious application contexts and events. However, serious games for military train people to ultimately support martial actions. The usage of realistic and violent first-person shooters (FPS) to train how to kill people raises ethical issues, for example, the effect of persistently altering people's personality structures when playing shooter games [2]. That is, in the short term violent games affect aggression by priming aggressive thoughts, and in the long-run the repeated exposure to computer game violence can lead to increases in aggressive affect, which can negatively influence the everyday social interactions [2]. Obviously this is of high relevance when such games are directly linked with real war-like application scenarios, like the training of combat situations which include killing actions. Of course, in the military such trainings are inherently part of the profession itself. However, the ultimate intended outcome of such trainings is not only for defensive actions but could also lead - directly or indirectly - to offensive attack actions. At this point questions arise whether it is ethical to design and develop games for the military since they can negatively influence people's lives.

An example for a military first-person shooter game is the often-cited recruiting game *America's Army*, developed and published by the United States Army, which is subject of ongoing criticism and controversy [37], [38]. America's Army is the name of a technology platform used to create free realistic army games which let (young) Americans virtually explore typical combat situations with other players in multiplayer scenarios. As a strategic communication device, the game is designed to collect usage data which is used by the U.S. Army for recruitment purposes. In the same manner, China's People's Liberation Army (PLA) has released the similar first-person shooter game *Glorious Mission* with the dual purpose of recruiting soldiers and training personnel in combat skills and technological awareness. In some societies such games are generally more or less accepted, whereas in others the topic is highly controversial. In Germany, for example, 3D shooters which have human-like characters being harmed or killed induced major discussions and are often discredited as "Killerspiele" ("killer games") [39]. Of course, there are also military serious games with more positive contexts, i.e. which not only concern the application of force but train social skills like inter-cultural communication [40], [41] or games for psychiatric rehabilitation targeting post-traumatic stress disorder (PTSD) [35].

In the military the term *simulation* is more often used than *serious game* for not to downplay the game-like character of serious simulations and to raise the political

acceptance level. From a technical perspective, there exists distinct differences between military computer simulations and entertainment games. In military computer simulations the focus is not on the explicit display of violence or of harmed bodies, neither the killing action nor the display of use of force from a first person perspective. Military simulations focus primarily on high realism of equipment or processes - and not on the most realistic use of force. Whereas entertainment games have their realism focus on the realistic display of violence (blood detail, weapon details etc.), military simulations focus mostly on correct (realistic) physics or validity of processes. These simulations capture the physics and aerodynamics present in the use of equipment such as weapons, vehicles, tanks or aircrafts. Understanding and learning how these function is essential for the training of soldiers to safely operate real, complex equipment.

Often brought forward is the analogy to the application of weapons: a gun itself is not dangerous, but the human using it could be. Hence, it is the responsibility of people to bring tools to their proper use. This is often applied to software as well: the military computer simulation for training itself is at first not directly linked to any killing. But, of course, it could be used to facilitate the process of harming others. Because with that very computer simulation soldiers could have been trained to steer weaponized military drones, be they manually steered or semi-autonomous [42], [43]. Those kinds of weapons enable soldiers to participate in wars and conflicts, but from a very remote location and not in direct, life-threatening contact. It is important that soldiers are also trained to never forget their responsibility for their remotely executed actions. They are always part of the military kill-chain [44]. But localizing a military computer program in the military decision making process, like the military kill-chain model, is difficult and depends on the nature of the software, i.e. whether if it is an educational serious game or a tactical simulator. When speaking about training and education, an educational serious game (or a computer simulation for training) could be seen at the very beginning of a military decision process. The educational serious game is right at the front disconnected from any killing action and only used in a formal education context, not linked to any ongoing combat situation, e.g. training at the military academy. In contrast, the link in the kill-chain is much stronger for a military tactical simulator in an operational setting which is used right before the soldier continues the just practiced processes with the real weaponized drone. In this case this computer simulator is actually part of the military kill-chain and the ethical issues apply.

The application of military games are multiple and broad, and can include infantry, flight simulators, tanks, submarines, tactics, strategy, trauma management and others [45]–[47]. Such applications of military games therefore merit an exploration of the ethical issues of their use. As long as there are conflicts the military and its industrial partners will continue to produce military serious games for recruitment, training, and

education. Those games will always be subject to the beforehand mentioned ethical issues. As researchers and designers of serious games it is important to critically question their proper and ethical use since military serious games continue to be part of society.

4.2 **Serious Games and Data Privacy**

With the number of users and ways of sharing and storing data about them increasing, data privacy becomes an important issue in serious games design. However, there is no common definition of the term *data privacy.* In general, it refers to the efforts to control any access of user-related data by any third party. Video games can be considered rich origins of data: they are interactive software systems by design . Games receive input data via various channels, such as interactive interfaces and controllers, which potentially can be collected and stored digitally by the game software. The following example demonstrates, how much data is produced by games. Eggert et al. [48] exploit replay files of a real time strategy game to classify player types, using behavioral low-level data during game play. Even if replay files may not be stored by default, it demonstrates the ability of the game software to log each small game (inter)action, which is sufficient to reproduce a complex game play. Another kind of data available for use are *player stats* - data that defines the current status of the player in the game. The massively multiplayer online game (MMOG) EVE Online [49] serves as an example. EVE Online contains a comprehensive data model - a great amount of game related (player status) data has to be managed. For example in the market a player has submitted offers and bids. Player skills have to be developed in order to gain certificates, therefore optimized schedules of (time-based) skill training have to be developed. There is even a data interface, which has led to the emergence of a number of third party tools with the purpose of user-friendly administration of game-related data [50]. Thus, video games collect, aggregate and store large amounts of player's data.

Whenever data is collected and stored, there is the potential of misuse of this data. In general, data protection laws have been enacted in order to protect data privacy. In the context of video games misuse could be defined as using game data for other purposes than entertainment by this game. Serious games are by definition video games with further purposes besides pure entertainment. These further purposes might require collection and processing of even more user-related data. For example, in adaptive learning games, the current user status has to be stored. In the learning game *Doctor's Cure* [51], students have to take on the role of an reporter investigating the details of a moral dilemma narrative hint by hint. Often data for measuring the learning progress has to be provided as for monitoring of the students' progress in the Teacher Dashboard. In this game the teacher communicates with the students in the

role of the editor. So there may be additional need to generate and store data in order to support the goals of the game.

For a serious game this definition has to be extended: data should be used only for this game's purposes – including and besides entertainment. However, such a definition seems incomplete still, as the following examples should illustrate. *Fliplife* [52] has been a social network game (SNG), which has been used also as a storytelling platform for companies, thus it has been as a so-called *advergames*, a kind of a serious game. In Fliplife aspects of daily life are simulated: Work, education and spare-time. The player chooses a *Career* she wants to pursue and works on it in so-called *Projects*, which are timer-based activities, together with other players, the co-workers. Careers are provided by companies in order to present themselves in the game. Besides presenting, it has been said to be considered as a source for potential employees by a German trust [53]: based on game-collectable data a list of candidates for job interviews could be generated. From a methodological point of view such an attempt can be considered as completely feasible [54]. From an ethical point of view there remain at least doubts if it is acceptable, if players are not aware of this kind of surveillance: the collection of data, which does not support game mechanics, but enables third parties to trace personality traits of players. Using the proposed ethical ecosystem, this kind of data exploitation undergoes the category of *Business Ethics* and can be a part of a business model for the game supplier. Such an observation of players appears unproductive if players are aware of this surveillance and act accordingly. Consequently, this use of data should not be revealed to players. Another example in this context of the ethical ecosystem in the category *Business Ethics* is the smartphone-based augmented reality game *INGRESS* [55]. This game requires gamers to walk around and to visit locations with virtual portals in order to interact with them virtually. During the game play a lot of data could be collected, which would be useful in other contexts [56]. Among the positive imaginable results of players' actions are pictures with attached position data which could augment online map services and WLAN ids. These artifacts may be highly useful for tracking services. Actually, such a use is denied by the game developer [57]. However, it is not explicitly excluded by the *Terms of Service and Privacy Rules* [58]. Therefore there is a high likelihood that a sudden change of data usage is not known by the user and can take place unnoticed.

Although the importanceof data privacy is valueddifferently across countries and cultures, the disclosures of Edward Snowden [59] have brought it to public's attention. The increasing use of online games and mobile apps further establishes the relevance of data privacy in the context of games, too. A relevant study about data privacy in online games has been provided recently by a German institution. They "found several breaches of data protection rules. Most of the privacy policy statements did not meet the required [the strict German] standard of comprehension

and completeness" [60]. Furthermore, they state that data privacy is handled very heterogeneously, mostly depending on the country the servers are based in. On the other hand, the results indicate that "many users are interested in data protection and privacy issues".

As there are no widely accepted standards, and as it seems that such a standard will not be established in the near future, serious game developers have to address data privacy in a responsible way, i.e. carefully taking ethical considerations into account. As already indicated, in the context of serious games data privacy is on first sight a matter of *Business Ethics* due to variables of the ethical ecosystem As serious games facilitate further purposes than pure entertainment, these purposes guide the development and application of those games. At the same time, these purposes limit the degrees of freedom regarding design and implementation of a serious game. Whereas in pure entertainment games, the goal of enjoyable play has to be achieved, in serious games entertainment just becomes a means to fulfill a non-entertainment purpose. Therefore, within the categories of our proposed Ethical Ecosystem (See Figure 2), *Business Ethics* might be the dominant variable, as the examples of Fliplife and INGRESS illustrate. There might be an inherent drive to the exploitation of generated data, which has to be reviewed in its ethical dimensions carefully and leads to data privacy being an ethical matter. However, the three central elements of the Ethical Ecosystem can be used to categorise the concerns of data privacy. Mainly, *The Serious Game* provides a frame for adhering to an ethical implementation of data privacy concerns. Furthermore, *The Designer* is in charge of negotiating a reasonable balance of data privacy requirements and serious games goals, and *The Player* should be aware of and made aware of the privacy policies implemented in the game

Responsible data privacy at least comprises implementing national data protection laws of those countries the game is rolled out to and to reveal clearly and exactly the actual procedures of collection, storage and use of data in a meaningful data policy. The user should be informed about the current ways to utilize the game's data. Even if the issue of data privacy is raised by quite a few games itself (e.g. *Data Dealer* [61] or *Privacy Pirates* [62]) there is no commonly accepted guideline. This missing regulation may endanger the acceptance of (serious) online games in the long term: if players hesitate to start playing a game because of privacy concerns, this would be an (unneeded) obstacle of the game developers own doing. All the more, game developers are required to adhere to a clear and responsible data privacy guideline.

4.3 **Further research**

- Which usages of player-related data can be considered as ethically appropriate?
- What impact has a clear data privacy term on the usage of a serious game – in comparison to the absence of such terms?

- What are the relevant regulations which have to be considered in serious game development?
- What recent developments in technology require new approaches in data privacy (e.g. health data [63], [64], location based data, route tracking)

5 Conclusions and Outlook

The purpose of this chapter is to put forth a new approach to serious game design, which was termed the ethical ecosystem. The ethical ecosystem includes the work of previous scholars such as Zagal and Flanagan into one system that includes the designer as part of the ethical reflection. The process for game designers to reflect on how to implement moral intelligence in design termed Ethical Stewardship (ES) Ethical stewardship does not negate the business of digital games, the need for institutions, or game studios to be profitable, nor the practices required to expand the serious games to new markets. Rather, ES provides game designers a way to embrace ethical ethno relativism and moral design in serious games. One of the aims of ES is to strengthen relationships between designers, players and stakeholders from the beginning through the development of moral competence in designers. Greater moral competence in design ultimately results in a more integrated player experience for its respective market, improved game content quality and stronger partnerships with stakeholders.

As socially constructed artifacts, digital games influence social, psychological, political and economic contexts [8], [68]. Several design perspectives assume that embracing ethical competence is vital for good design [28], [33]. Some argue that game designers, as creators of art, media and cultural artifacts, have a moral and social obligation to understand the impact their design choices have on society -- that there are consequences to what is designed and therefore consumed by others [19], [69]–[71]. Deardoff [21], [22] and others [72] claim that embracing moral intelligence is an important part of human development and of "good" citizenship. Or it could be suggested that a facilitated self-reflection about differences may be personally enriching, that working towards ethical self-awareness beyond individual game creation contributions can enhance personal growth. This might include understanding how the other experiences life and the capabilities available to them to achieve well-being. Alternatively, it could be said that neglecting "ethics" contributes to the lack of moral intelligence in game creation, and that in itself limits the success of serious design efforts [33].

Instead of pursuing what others may identify as good design, we claim that ethical stewardship ought to be embarked upon because richness of artifact creation--the creation of new forms of serious games--lies in what remains undiscovered.Ethical stewardship is not simply a methodology for moral competence as good action or

self-growth. Rather, ethical stewardship makes a commitment to reflecting moral intelligence as part to continually support human learning and evolution. .

In practice, some of the ethical concerns can be addressed through education and training. The myriad of university curricula addressing the design and development of serious game have the responsibility to actively address ethical design considerations in their projects. At a larger scale, ethical considerations need to become standard practice in game design and development frameworks and a topic of discussion in the respective academic journals and conferences, as well as in the field of practice..

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