

UNIVERSIDADE FEDERAL DO PARANÁ

JOÃO VICTOR DA SILVA CARDOSO

INVESTIGATING THE RELATION BETWEEN DIGITAL GAMES AND HUMAN VALUES

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INVESTIGATING THE RELATION BETWEEN DIGITAL GAMES AND HUMAN VALUES

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*Dedico esta dissertação aos Jogos
e a todos que por eles se interessam.
A dedico também aos Pensamentos
daqueles que o Saber sempre desejam.
Aos jogadores de qualquer idade
Que se dedicam à Curiosidade.*

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RESUMO

Décadas de preocupação com o possível impacto de jogos violentos no comportamento de jogadores, ou os mais recentes debates sobre representações misóginas de personagens femininas em jogos, são apenas alguns exemplos evidenciando a importância dessa relação entre valores e jogos. Valores exercem um papel fundamental em nossas vidas, uma vez que é por meio deles que decidimos como nos comportar, quais ações ou objetivos são moralmente preferíveis ou até se concordamos ou não com as ideias expressas por um jogo. Ao se observar os valores que jogos ou comunidades de jogadores são capazes de expressar, a relação entre jogos e valores humanos se torna evidente. O principal objetivo desta pesquisa é, portanto, investigar como a relação entre jogos digitais e valores humanos pode ser entendida. Para se alcançar este objetivo, um mapeamento sistemático da literatura foi conduzido para que diferentes as perspectivas existentes fossem identificadas. A partir dos dados extraídos de uma coleção de 58 artigos selecionados, esta pesquisa apresenta uma caracterização das diferentes perspectivas existentes na literatura sobre a relação entre valores e jogos. Com uma visão abrangente da relação entre valores e jogos resultante do mapeamento sistemático, podemos não apenas identificar as limitações dessas perspectivas, mas também desenvolver um entendimento geral sobre a relação entre valores e jogos. Baseada nas múltiplas perspectivas identificadas pelo mapeamento sistemático da literatura, e inspirada em uma abordagem semiótica para o estudo de jogos, esta pesquisa conclui apresentando uma maneira de se entender a relação entre valores e jogos como um processo comunicativo, no qual jogos, por meio de seus elementos constitutivos, podem comunicar a um *stakeholder* os valores de um autor implícito. Esta descrição da relação entre valores e jogos como um processo comunicativo ainda pode ser complementada por novas pesquisas. Mas ao reconhecer a influência tanto das estruturas dos jogos quanto das diferentes formas pelas quais *stakeholders* percebem e interpretam os jogos com os quais interagem, a perspectiva aqui defendida nos permite descrever a relação entre valores e jogos de forma a destacar a natureza interativa desta relação e pode trazer consigo implicações diretas para o design e análise de jogos digitais.

Palavras-chave: Interação Humano-Jogo. Jogos Digitais. Valores Humanos.

ABSTRACT

Decades of concern with the impact violent games might have on player behaviour, or more recent debates on misogynistic representation of women in games are but a few examples evidencing the how games relate to values. Values are a fundamental part of our lives, as it is through our values that we decide how to behave, what actions or objectives are morally preferable or even whether or not we agree with the ideas expressed by a game. When we observe the values that games or community of players can express, the link between games and values becomes evident. The main objective of this work is, therefore, to investigate how the relation between digital games and human values can be understood. In order to achieve this objective, a systematic literature mapping was conducted, so that the different existing perspectives could be identified. With the data gathered from a collection of 58 related papers, this research presents a characterisation of the different perspectives on the relation between games and values available in the literature. With such an overview of the relation between games and values resulting from the systematic mapping, we can not only to identify the limits of said perspectives but also to work towards a general understanding of the relation between games and values. Based on the multiple perspectives identified in the systematic mapping, and inspired by a semiotic approach for the investigation of games, this research concludes by presenting a way of understanding the relation between games and values as a communicative process in which games, by means of their constituent elements, may communicate to a stakeholder the values of an implied author. This description of the relation between games and values as a communicative process can be complemented by further research. But by recognising the influence of both the structures of games themselves and of the ways different stakeholders perceive and interpret the games they interact with, the perspective here defended allows us to describe the relation between games and values in a way that highlights the interactive nature of this phenomenon and can have direct implications for the design and analysis of digital games.

Keywords: Human-Player Interaction. Digital Games. Human Values.

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LIST OF ACRONYMS

HCI	Human-Computer Interaction
VSD	Value Sensitive Design
RQ	Research Question
RPG	Role-Playing game
EC	Exclusion Criterion
IN	Inclusion Criterion
PD	Participatory Design
VAP	Values-at-Play
SID	Stakeholder Identification Diagram
MUD	Multi-User Dungeon
VCIA	Value-oriented and Culturally Informed Approach
SIM	Semiotic Inspection Method
CEM	Communicability Evaluation Method

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1 INTRODUCTION

Since their growth in popularity in the '80s, digital games have left their mark in popular culture and gave rise to a multitude of incredibly popular titles and franchises loved by millions of people around the globe. PCs, home and portable consoles became a platform where players could experience a new form of interactive entertainment in which they could not only passively watch, but actively impact the events unfolding in their screens. This level of interactivity afforded by these new technologies, the themes represented in these games, as well as the behaviours allowed by their gameplay mechanics sparked complex discussions about the role digital games can, or should (not), play in our society.

Decades of concern that violent games might instigate violent behaviour (Kleinman, 2015) as well as recent debates about biases such as misogynistic representation and treatment of women in games (Sarkeesian and Petit, 2019), are but a few examples evidencing how societal values are related to games, suggesting then the need for a consolidated value-centred approach for the study, design and evaluation of digital games.

But if the relevance of the relation between games and values seems evident, the task of formally determining what human values are presents a challenge. Different authors, from different scientific domains, when studying values, approached this problems from a variety of perspectives. From trans-situational guiding principles (Schwartz et al., 2012), to fundamental beliefs about preferred end-states and modes of conduct (Rokeach, 1973), there are multiple ways the term values can be defined. But, as we investigate how games relate to human values, more important than finding an ultimate definition for the term, is for us to find a useful definition capable of elucidating aspects of this complex phenomenon.

One such definition is that of Pereira et al. (2018), who draw from semiotic theory and the concept of affordance to define values as "*something that denotes importance to somebody for something in some respect or capacity*" (Pereira et al., 2018, p. 6). By proposing this definition, Pereira et al. present a way of understanding values as coming, not from an artefact, but from the relation between a said artefact and the person who interacts with it.

This is not to say that technological artefacts are value-neutral. Design problems leave room for multiple solutions, and the decision to implement one solution over another is value-mediated process (Szczepanik, 2020) that can influence the actions and experiences available to users of said technological solution (Verbeek, 2011). The function of a technology is also not determined exclusively by the values involved in its creation. Users can assign different values to a technological artefact, potentially giving rise to unexpected forms of use and mediation (Verbeek, 2011). If we are to consider the moral repercussions of how technologies mediate human actions and experiences of the world, it becomes evident how important it is for designers to take into account these value considerations when developing or evaluating a new technological artefact.

The Human-Computer Interaction (HCI) community has long recognised the importance of this relation between values and the design of technological artefacts. Value-Sensitive Design (VSD), for instance, is a theoretically grounded approach for bringing human values into consideration during technology design (Friedman et al., 2008). VSD has been under development since the mid-1990s and to this day numerous value-sensitive design methods and techniques have already been proposed (Friedman et al., 2017, 2021). This ever-growing literature on VSD and its many design methods may form a robust methodological foundation for value-centred design and evaluation of digital technologies. There are, however, key differences

between digital games and other types of software that need to be considered if we are to develop a comprehensive understanding of how human values relate to games (Barr et al., 2007).

Many of the concerns pertaining to the relation between human values and technology also apply to the relation between human values and games. As with other technological artefacts, games too can mediate our actions and experiences. When creating a representation of the world, game designers choose what and how aspects of reality will be portrayed in a game, mediating, then, how we perceive and interact with the game world (Sicart, 2005; Bogost, 2008). But digital games, more than technological artefacts, establish a kind of technologically mediated form of play and thus, alongside other traditional forms of games, can be seen as cultural artefacts (Huizinga, 2014; Hall, 1973). Games are not tools designed to fulfil specific functions, they are an expressive medium (Barr et al., 2007) and, as such, they can be used to express ideas and make claims about the world (Bogost, 2008). By making use of narrative and dramatic techniques paired with their interactive mechanics, games can tell stories and present players with a type of experience unlike those afforded by traditional software. Games, however, not only have a long history as a cultural tradition (Huizinga, 2014; Hall, 1973), but digital games, specifically, if we consider their interactive nature as well as historical design trends and the evolving practice of game development (Williams, 2017), have a unique history that separates them from other forms of media. While game's narratives can be influenced by literature and cinema, it is still not enough to simply borrow theories taken from other domains like drama or literary studies in order to understand this expressive nature of games (Flanagan and Nissenbaum, 2014).

Games are not value-neutral, and understanding how games relate to values is an essential step towards a critical game analysis and responsible game design. Due to this interactive, expressive and immersive character of games, the development of a value-centred player-computer interaction requires a unique approach. Instead of simply borrowing theories from neighbouring scientific domains, an adequate investigation of how games, game design or game playing relate to human values needs to take into consideration the specificities of games that separates them from other software or media.

For more than a decade, game scholars have considered the problem of understanding games from a value-centred perspective. With each author comes a different perspective on how the relation between games and values could be understood. But while there are multiple authors investigating the topic, there is still distinctive lack of secondary studies presenting an overview of the works investigating this relation between games and values.

The main objective of this research was to investigate the relation between games and values. To accomplish this objective, the following specific objectives were defined:

- (i) Identify the varying perspectives of different game scholars on the relation between games and values;
- (ii) Characterise and categorise the perspectives identified in games literature;
- (iii) Elaborate an understanding of the relation between games and values that takes into consideration the perspectives identified in games literature.

These specific objectives require a broad and deep analysis of existing literature on the relation between games and values. A further examination of the concept of human-values, as well as a brief discussion of how game scholar have already tackled the subject, was presented in Chapter 2. Furthermore, the research method proposed for attaining objective (i) was a systematic literature mapping whose protocol is described in detail on Chapter 3. By conducting a qualitative analysis of the data extracted from this systematic mapping, a series of categorisation

schemes was developed allowing for the characterisation of the identified papers according to how each of them understood the relation between games and values, thus accomplishing objective (ii). The results obtained from this systematic mapping were further discussed in Chapter 4. By conducting a broad systematic mapping of the literature on the topic this research not only gathers a diverse collection of perspectives that serve as the starting point from which further discussions were developed, but also highlights the limits of existing approaches. Finally, in line with objective (iii), in Chapter 5 we work towards a general understanding of how games relate to human values by conceptually exploring the implications of the definition of values proposed by Pereira et al. (2018) combined with a semiotic understanding of games inspired by the work of Frasca (2001) and by semiotic engineering (De Souza, 2005).

Based on the multiple perspectives identified in the systematic mapping, and inspired by a semiotic approach for the investigation of games, this research concludes by presenting a way of understanding the relation between games and values as a communicative process in which games, by means of their constituent elements, may communicate specific values to a stakeholder during interaction. Chapter 5 will further discuss how the values of game designers may impact design decisions and the games they create, the factors that may impact the values adopted by players during gameplay as well as the processes by which different stakeholders may arrive at different interpretations of the values communicated by a game. By recognising the influence of both the structures of games themselves and of the ways different stakeholders perceive and interpret the games they interact with, the perspective here presented has the advantage of describing the relation between games and values in a way that highlights the interactive nature of this phenomenon and opens the way for further research investigating how stakeholder's perception of games are influenced by the way they interact with said games and how different game elements work together for aiding or hindering the value communication process in a game.

2 RELATED WORKS

The central objective of this research is to investigate the relation between digital games and human values. Before we begin investigating games and how they relate to values, however, it is useful for us to understand what human values are and what kinds of discussions stem from formally investigating values.

2.1 UNDERSTANDING HUMAN VALUES

Values play an important role in our daily lives. We are constantly assigning value to actions, situations, ideas or objects as we make decisions on how to behave, assess what actions or outcomes are morally justifiable or desirable or as we judge what kinds of behaviours should be praised and which ones should be condemned. We can even find values by looking at our relation with games, as it is through our values that we examine whether or not we agree with the ideas communicated by a game or with the actions allowed within it. But if the notion of value seems to have an intuitive sense, more rigorous investigations on the topic highlight the complexity of understanding what values are and what implications such an understanding might have.

From a philosophical perspective, problems related to the notion of values are investigated within the domain of axiology, or value theory. In axiology we can find discussions about what kinds of things can be considered good or bad, what it means for something to be good or bad (Hirose and Olson, 2015), and how notions of *goodness* and *badness* relate to normative concepts of *rightness* and *wrongness* (Zimmerman, 2015). Philosophers also draw distinctions between intrinsic and extrinsic values, discussing whether things that are good in themselves or good as a means for something else (Rønnow-Rasmussen, 2015). There are, within axiology, discussions about how to measure and compare different values, investigating, for instance, if values of different kinds can be meaningfully compared (Hirose and Olson, 2015). There are also discussions about subject-relative value judgements, investigating whether values can be relative to a specific person (Cullity, 2015), and even discussions investigating the relation between our desires and values, investigating whether our values determine what we desire or if our desires determine our values (Oddie, 2015). These and other discussions pertaining to value theory not only highlight the complexity of the topic, but also have implications for other domains, from philosophical investigations of ethics and aesthetics to scientific research on psychology.

But beyond an instinctive understanding of human values and before tackling the complex questions posed by axiology, when we investigate values from a scientific perspective, there comes the need for a formal definition of what exactly is a value. The complexity of understanding values, however, complicates the task of finding such a definition. Numerous authors from many different disciplines have already tackled the problem of defining human values, many of them arriving at different, albeit related, definitions (Pereira et al., 2018). Within psychology, for example, Rokeach (1973) defined values as “*an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence*” (Rokeach, 1973, p. 5). Schwartz et al. (2012), however, understand values as “*trans-situational goals, varying in importance, that serve as guiding principles in the life of a person or group.*” (Schwartz et al., 2012, p. 2).

Value-related research problems also appear in HCI, as researchers investigate how the design and use of digital technologies relate to the values of designers, users and other stakeholders. Friedman et al. (2008), for instance, when proposing a framework for value-sensitive

design of technology, say that a “*value refers to what a person or group of people consider important in life*” (Friedman et al., 2008, p. 57). Alternatively, Pereira et al. (2018), inspired by the definition from Friedman et al., and drawing from semiotics (Pierce and Buchler, 1955), define values as “*something that denotes importance to somebody for something in some respect or capacity*.” (Pereira et al., 2018, p. 6). They recognise that values are not objective properties of an object nor do they come exclusively from the mind of a subject, but are rather an aspect of the relation between a subject and an object in given social context.

The few different definitions for values here presented, though not necessarily contradictory, highlight how each of these authors discuss human values from a different perspective. Each of these definitions may have different implications or limitations that make them more suited to some discussions and less suited for others. When it comes to investigating the relation between digital games and human values, therefore, more important than finding an ultimate definition for the term, is for us to find a useful definition capable of elucidating aspects of this complex phenomenon that are relevant for the problem or phenomenon being investigated.

Recognising the plurality of perspectives that can serve as starting points for understanding the nature of human values, a specific definition for human values was not chosen a priori in this research. This way, as we explored how the relation between games and values has been studied by game scholars, we could identify from the literature what game scholars understand as values without being limited by the adoption of a predefined definition. In Chapter 4, however, the different definitions for values identified in the literature are discussed, and, in Chapter 5, we further discuss different perspectives on human values, focusing on identifying a definition that helps us understand the relation between digital games and human values.

2.2 HUMAN VALUES AND DIGITAL GAMES

After recognising the importance of understanding the relation between digital games and human values, we must then understand how to investigate this relation. As has been discussed in Chapter 1, as cultural artefacts, digital games are at the same time examples of software and a form of expressive media all the while having specific characteristics that separate them from either. This unique and multifaceted nature of games requires us to recognise the specificities of games while still considering the multiple perspectives from which we may describe the relation between games and values. Discussions surrounding the relation between games and values, however, are nothing new, with authors publishing research on the topic at least since the early 2000’s.

In the 5th chapter of his thesis, for instance, Frasca (2001) delves into the ways games can convey ideologies. For him, there are three levels of representation for which a game designer is ideologically responsible. The first level is related to the descriptions and settings of a game. The second level is linked to game rules, specifically the ones related to how the game behaves and what kind of actions are allowed within the game world. The third level relates to the goals of a game, i.e., to what is defined as a winning or desirable condition.

While one may argue that this section of Frasca’s work focuses on ideology and not on values per se, it can also be argued that ideology involves values. If we adopt, for example, Rokeach’s definition for human values, i.e., that value is “*an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence*” (Rokeach, 1973, p. 5), then Frasca’s representation levels are related to values, as they refer to the kinds of states or conditions that are framed as desirable within a game (3rd level), the rules that govern and support such actions (2nd level), and the way they are presented and managed in a game (1st level).

Sicart is another author that wrote about the relation between games and ideologies. In one of his papers (Sicart, 2003), he explains ideology as “*a structure that is a part of our subconscious and that is modelled by the power institutions*” or, in other words, “*a subconscious structure that is filled up with values and contents by a certain power apparatus in a certain moment of time*”. He argues that games can be one of such power apparatuses capable of modelling our ideology. According to Sicart, a game’s ideology lies not in its plot but comes from its rules and gameplay. For him, we can find the ideology of a game by looking at its structure and analysing what actions are allowed and why.

Sicart would further develop these ideas in a paper when arguing for an analysis of computer games as moral objects (Sicart, 2005). Here, Sicart states that games can have values imprinted or embedded into them during game design. Once again he points at game rules and structures, which he calls code and architecture, as the elements through which values are embedded into games and experienced by players. Sicart points out that the act of designing involves a kind of power and he draws attention to the moral responsibility involved in creating games, concluding that the game design is crucial for conveying values and leisure.

Here it is worth noting that the power of design is not held exclusively by the hands of designers. While designers do have some power over the artefacts they create, the design decisions that shape the values of such artefacts can be influenced by external economic, political or institutional forces (Feng and Feenberg, 2008). The design decisions that shape the values of a game, for instance, may not reflect the interests of game designers but the interests of publishing companies that have the power to constrain or influence design decisions made by game designers. Sicart is not wrong to highlight the implications of game design for the values a game conveys, but we must not forget that game design involves complex power relations that go beyond game designers.

Bogost is yet another author whose work is tied to the idea of values. When investigating the rhetoric of video games (Bogost, 2008), Bogost states that video games can make claims about the world that are then interpreted by players. He proposes the concept of procedural rhetoric to describe a type of rhetorical practice unique to games, a kind of expression or persuasion whose arguments are not made with words or images but with processes, i.e., the rules of a game and the possibility spaces they create for gameplay. He understands games as cultural artefacts capable of expressing a particular perspective, representing cultural values and making arguments about social, cultural or political structures. He argues that by exploring the possibility spaces of games, i.e., by exploring the gestures, experiences, and interactions allowed by game rules, we, as players, can learn to critically read and interpret the ideas games can communicate. We then can either accept, challenge or even reject the arguments these games present.

When specifically investigating the design of games from a value-centred perspective we can also cite Flanagan et al. (2005b,a) who, drawing from VSD, Participatory Design (PD) and reflective practice, present the Values-at-Play (VAP) methodology. VAP is a tripartite methodology that includes the processes of value discovery, translation and verification, where designers respectively identify values relevant for the project at hand, come up with ways of translating those values into game elements and, finally, verify whether values have been successfully implemented. VAP considers that artefacts, such as games, can incorporate values, and the choices made in their design process can influence the kinds of values that end up embedded in them (Flanagan and Nissenbaum, 2014).

By looking at what these authors say about ideologies in games and procedural rhetoric, we can start to form an understanding of how games relate to values. Frasca (2001), Sicart (2003, 2005) and Bogost (2008) all highlight ways in which a game’s mechanics and goals can express or communicate values. Both Sicart and Bogost consider the role of the player experience in

identifying and interpreting the values communicated through gameplay. All authors cited in this section acknowledge, in different ways and to a different extent, designers' responsibility in embedding or expressing values in games.

All the works presented in this section develop relevant discussions that have influenced research and development on the topic. They each highlight some aspect of the relation between games and values and can serve as a starting point from which to develop our understanding of the relation between games and values. But if we seek to investigate this relation as it has been studied in games' literature, understanding its scope and limitations, it is essential that we gather as many perspectives on the topic as possible. A wider investigation on how the subject of human values has been addressed by game scholars requires a more systematic approach. And yet, there is a distinctively small number of secondary studies on the topic and few systematic literature reviews, which are either limited in scope, only focusing, for instance, on the impact serious games may have on moral development (Jin et al., 2017), or only tangentially related to human values, investigating, for example, the concept of fun in digital games (Normal et al., 2014).

In order to fill that gap, presenting an overview on the theme while still taking into account a more diverse set of perspectives on the relations between games and values, a systematic literature mapping (Petersen et al., 2015; Kitchenham, 2004) is required. The following chapter presents a detailed description of the method while Chapter 4 reports the results obtained from a collection of 58 papers investigating the relation between games and values identified through the systematic mapping.

3 METHODOLOGY

Systematic literature mapping (Petersen et al., 2015; Kitchenham, 2004) is a type of secondary study that seeks an overview of a given research area. The rigour and reproducibility of a systematic mapping come from a detailed research protocol that describes the search process, study selection as well as data extraction and analysis. In order to investigate how the relation between games and human values has been addressed within games literature, this research presents a systematic review to identify a broad range of perspectives on the topic.

3.1 RESEARCH PROTOCOL

As shown in Figure 3.1, the conduction of this systematic review began with a planning stage, in which the objectives, research questions, search strategies, inclusion and exclusion criteria, and extraction template were defined.

Aligned with the main objective of this research, the central question of this systematic mapping is *how the relation between games and values has been understood by game scholars*. To answer this question, 10 research questions (RQ), shown in Table 3.1, were proposed.

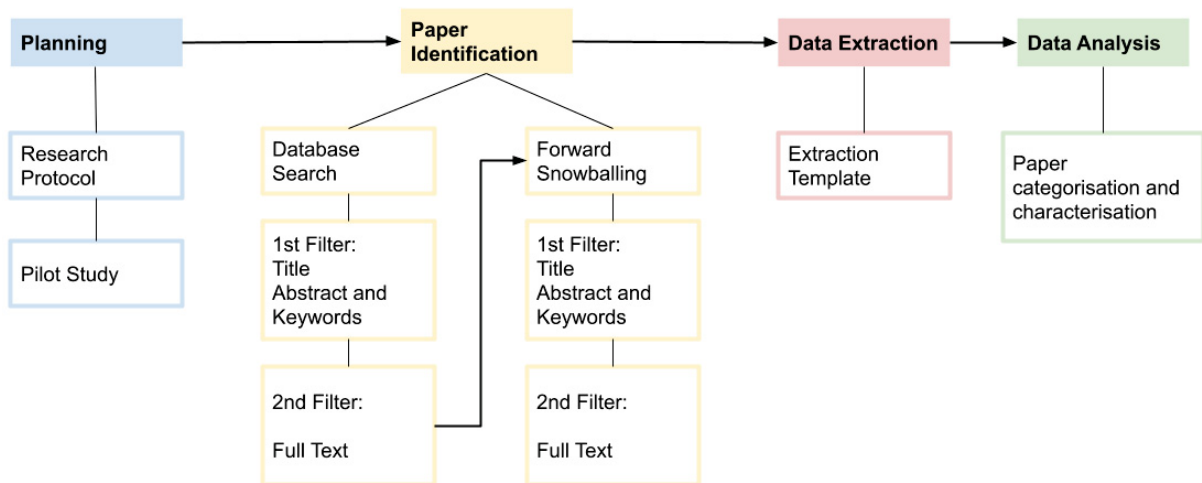


Figure 3.1: Overview of the steps executed for conducting the systematic review

3.1.1 Paper Identification

As shown in Figure 3.1, to identify relevant papers for this systematic mapping, two main search strategies were chosen: first, an initial list of papers was selected through a database search. This database search was conducted on 3 previously selected databases with a search string defined in the research protocol. Then, in order to complement the results obtained from the database search, a forward snowballing approach was adopted to identify other relevant works that cite the original list of selected papers. For the database search, 3 databases were selected: Scopus Digital Library, selected due to its multidisciplinary nature that includes papers on games; IEEE Xplore and ACM Digital Library, selected due to their catalogue of HCI research.

For the search string used in the database search a series of keywords were identified. While this research is primarily concerned with the relation between *digital games* and human

Table 3.1: Research Questions

Research Questions	
RQ1: What kind of research problems have been addressed by the papers?	The different types of research problems investigated in the literature, by using Oulasvirta and Hornbæk (2016) work to categorise the research problems as either conceptual, empirical or constructive problem.
RQ2: What methods were adopted in each paper?	What different methods authors use to evaluate their contributions or answer their research problem.
RQ3: Are the papers grounded on a specific theory or methodology?	Theories and methodologies that ground the contributions of each paper.
RQ4: What definitions for values have been adopted in scientific literature?	What different authors understand as a human value, and how it can help us understand their assumptions about what is (not) considered in their research
RQ5: How authors frame the relation between games and human values?	How authors recognise (if they do) a relation between games and human values. This question investigates, for example, whether authors understand values as incorporated in game systems, or as emerging from players' behaviours, or as being a message communicated by the game or something else entirely.
RQ6: What elements play a role in the relation between values and games?	How the relation between games and values manifests according to each author. What aspects of games, game design or game playing contribute to the manifestation of human values in games.
RQ7: What values are explicitly addressed in each paper?	What values (if any) are explicitly cited and discussed by each authors, and whether some kinds of values appear more frequently than others.
RQ8: Whose values were considered in identified papers?	What different stakeholders are considered by each author when discussing human values in games
RQ9: Do values emerge from context?	Whether the authors recognise values as emerging from a context or if they work with a predefined set of values.
RQ10: Have value conflicts been considered?	Whether authors consider value conflicts in games and what kinds of value conflicts were identified in the literature.
RQ10.1: How have such conflicts been handled?	What strategies authors suggest for dealing with value conflicts.

values, the shared characteristics of digital and non digital games complicates the determination of what kinds of games should be included in this systematic mapping. Papers investigating, for instance, the relation between tabletop Role Playing Games (RPG) and human values could still provide important insights into the way digital RPGs relate to human values. For this reason, the single word *game* rather than digital, electronic or video game was chosen, aiming at including papers investigating all kinds of games, even non-digital ones. Adopting, however, a single term keyword for describing human values proved to be impractical, as using the word *values* alone massively increased the number of non-relevant papers. In an attempt to include as many kinds of relevant values as possible, while avoiding an unmanageable number of non-relevant researches,

the final search string included the keywords *human value*, *ethical value*, *moral value*, *social value*, *cultural value*, *subjective value*, *personal value* and *game value*. The search included all papers indexed by the already mentioned databases by the beginning of October 2020. The final search string used was:

(*“game” OR “games”*) AND (*“human value” OR “human values” OR “ethical value” OR “ethical values” OR “moral value” OR “moral values” OR “social value” OR “social values” OR “cultural value” OR “cultural values” OR “subjective value” OR “subjective values” OR “personal value” OR “personal values” OR “game value” OR “game values”*)

The papers retrieved from the database search went through a two-stage filtering process, in which they were selected according to a series of inclusion and exclusion criteria presented in Table 3.2. In the first stage, the papers were selected based on their title, abstract and keywords only. Relevant papers, or papers whose titles, abstracts and keywords left any doubt as to whether they were relevant or not, would proceed to the next stage for further reading. As shown in Table 3.3, after the two-stage filtering process, from the 2621 papers returned by the database search, a total of 29 were selected.

In order to increase the number of identified papers and to reach papers not indexed by the selected digital databases, the search was extended by applying a forward snowballing approach. A forward snowballing search technique starts with a base set of papers and identifies all other papers citing the ones in the base set (Wohlin, 2014).

In this systematic mapping, after conducting the database search and selecting 29 relevant papers, the forward snowballing technique was conducted in order to find what other papers cited the original 29 publications identified with the database search. The Google Scholar search engine offers a feature that allows a user to identify, for any indexed paper, all other indexed paper that cite it. Google Scholar was thus used to identify other published works citing the original 29 papers identified with the first search strategy, thus increasing the completeness and robustness of this literature mapping by including publications that were not found by the database search.

The list of papers returned by the snowballing process went through the same two-stage filtering process being judged according to the same exclusion criteria. The papers considered in the snowballing are limited to the ones indexed by Google Scholar in the searches made on the 29th of April 2021. As shown in Table 3.3, the snowballing process returned a total of 1278 results, that, after the filtering process, resulted in the selection of 29 other papers.

Table 3.2: Inclusion and exclusion criteria

Inclusion Criteria	
IC1: The paper addresses the subject of human values and games.	
Exclusion Criteria	
EC1: The relation between human values and games is not the focus of the research	EC4: It is not in English
EC2: It does not addresses the ways in which game, game design or game playing are related to human values	EC5: Duplicated paper
EC3: It is not freely available	EC6: It is grey literature, a workshop proposal, an editorial, a systematic review, survey, book or book chapter

Table 3.3: Number of papers retrieved from each search strategy as well as the number of papers excluded by each exclusion criterion, and the total number of selected papers

	Scopus	ACM	IEEE Xplore	Snowballing	Total
Retrieved Papers	1017	1511	93	1278	3899
Rejected by EC1	734	895	45	645	2319
Rejected by EC2	156	24	6	29	215
Rejected by EC3	29	0	1	45	75
Rejected by EC4	4	0	0	106	110
Rejected by EC5	42	547	40	91	720
Rejected by EC6	35	33	1	333	402
Selected Papers	17	12	0	29	58

After conducting both search strategies (database search and forward snowballing), a total of 58 relevant papers were selected, all of which are listed in Table 3.4.

Table 3.4: Papers identified by each search method

Database Search				
id	Title	Authors	Year	Venue
01	Human Value Based Game Design	Kheirandish and Rauterberg	2018	International Digital Games Research Conference
02	Sensitivity to Parental Play Beliefs and Mediation in Young Children's Hybrid Play Activities	Bleumers et al.	2015	International Conference on Interaction Design and Children
03	Public concerns about violent video games are moral concerns-How moral threat can make pacifists susceptible to scientific and political claims against violent video games	Rothmund et al.	2015	European Journal of Social Psychology
04	Plain to see an example of popular theology in decision-making gaming (L.A. Noire)	Colăcel	2015	European Journal of Science and Theology
05	Digital educational game value hierarchy from a learners' perspective	Lin and Lin	2014	Computers in Human Behavior
06	Video games as moral educators?	Khoo	2012	Asia Pacific Journal of Education
07	Look to the future: Enhancing online gamer loyalty from the perspective of the theory of consumption values	Teng	2018	Decision Support Systems
08	Self-portrayal in a simulated life: Projecting personality and values in the sims 2	Griebel	2006	The International Journal of Computer Game Research
09	The ethics of computer game design	Sicart	2005	Conference: Changing Views - Worlds in Play (DiGRA 2005)
10	Problems in simulating social reality: Observations on a MUD construction	Lin and Sun	2003	SIMULATION GAMING
11	How Does Gameplaying Support Values and Psychological Well-Being among Cancer Survivors?	Francis et al.	2016	GAMES FOR HEALTH JOURNAL: Research, Development, and Clinical Applications
12	Game Design Values	Kultima and Sandovar	2016	International Academic Mindtrek Conference

13	Virtual Decisions: Video Game Ethics, Just Consequentialism, and Ethics on the Fly	Gotterbarn and Moor	2009	SIGCAS Computers and Society
14	Pedagogical dramas and transformational play: Narratively rich games for learning	Barab et al.	2010	Mind, Culture, and Activity
15	Beyond choices: A typology of ethical computer game designs	Sicart	2009	International Journal of Gaming and Computer-Mediated Simulations (IJGMS)
16	Oppositional Play: Gathering Negative Evidence for Computer Game Values	Barr et al.	2005	Australian Conference on Interactive Entertainment
17	Wicked Games: On the Design of Ethical Gameplay	Sicart	2010	DESIRE Network Conference on Creativity and Innovation in Design
18	Casual Game Design Values	Kultima	2009	International Academic Mindtrek Conference
19	The Caixa de Pandora Game: Changing Behaviors and Attitudes toward Violence against Women	Almeida et al.	2018	Computers in Entertainment
20	To Save or To Sacrifice? Understanding Meaningful Choices in Games	Iten et al.	2017	The Annual Symposium on Computer-Human Interaction in Play (CHI PLAY'17)
21	Emergent Dialogue: Eliciting Values during Children's Collaboration with a Tabletop Game for Change	Antle et al.	2014	Conference on Interaction Design and Children
22	Designing Ethical Systems for Videogames	Christiansen	2017	International Conference on the Foundations of Digital Games (FDG 2017)
23	From Pushing Buttons to Play and Progress: Value and Interaction in <i>Fable</i>	Barr et al.	2006	Australasian User Interface Conference (AUIC2006)
24	A Game Design Methodology to Incorporate Social Activist Themes	Flanagan and Nissenbaum	2007	Conference on Human Factors in Computing Systems (CHI 2007)
25	New design methods for activist gaming	Flanagan et al.	2005	Conference: Changing Views - Worlds in Play (DiGRA 2005)
26	Values at play: Tradeoffs in socially-oriented game design	Flanagan et al.	2005	The SIGCHI Conference on Human Factors in Computing Systems (CHI 2005)
27	Video game values: Human-computer interaction and games	Barr et al.	2007	Interacting with Computers
28	Development of a gesture-based game applying participatory design to reflect values of manual wheelchair users	Szykman et al.	2018	International Journal of Computer Games Technology
29	Human Factors and Cybersecurity in Online Game Addiction: An Analysis of the Relationship Between High School Students' Online Game Addiction and the State of Providing Personal Cybersecurity and Representing Cyber Human Values in Online Games	Yildiz Durak	2019	Social Science Quarterly

Forward Snowballing Search				
30	Violent video games and morality: A meta-ethical approach	Young	2015	Ethics and Information Technology
31	Moral Engagement in Interactive Narrative Games An exploratory study on ethical agency in The Walking Dead and Life is Strange	Dechering and Bakkes	2018	International Conference on the Foundations of Digital Games (FDG'18)
32	An explorative study of virtual trading games: a means-end chain approach	Yu-ling	2015	Business Education Accreditation
33	Factors Affecting Expectancy for Character Growth in Online Games and Their Effect on Gamers' Loyalty	Alghifari and Halim	2020	Journal of Economics, Business, and Accountancy Ventura
34	Worlds of affect: virtual geographies of video games	Shaw and Warf	2009	Environment and Planning A avance online publication
35	The Relationship between Player's Value Systems and Their In-Game Behavior in a Massively Multiplayer Online Role-Playing Game	Wang and Yu	2017	Hindawi International Journal of Computer Games Technology
36	Assessing the educational values of digital games	Hong et al.	2009	Journal of Computer Assisted Learning
37	Do You Feel Like a Hero Yet? Externalized Morality in Video Games	Heron and Belford	2014	Journal of Games Criticism
38	Ethical harm in virtual communities	Vanacker and Heider	2011	Convergence: The International Journal of Research into New Media Technologies
39	Meaning without Consequence: Virtue Ethics and Inconsequential Choices in Games	Nay and Zagal	2017	International Conference on the Foundations of Digital Games (FDG'17)
40	Player choices, game endings and the design of moral dilemmas in games	Tancred et al.	2018	The Annual Symposium on Computer-Human Interaction in Play (CHI PLAY'18)
41	Values of cancer survivors and the supportive role of recreational video games	Comello et al.	2019	Journal of Health Psychology
42	A case of values conflict in the video game design field. A critique of Schön's appreciative system.	Chiapello	2017	The Design Journal An International Journal for All Aspects of Design
43	Who Made Your Phone? Compassion and the Voice of the Oppressed in Phone Story and Burn the Boards	Navarro-Remesal and Zapata	2018	Postcolonial Perspectives in Game Studies
44	Designing games for moral learning and knowledge building	Schrier	2017	Games and Culture
45	Self-reflection and morality in critical games. Who is to be blamed for war?	Toma et al.	2015	JOURNAL OF COMPARATIVE RESEARCH IN ANTHROPOLOGY AND SOCIOLOGY
46	Games telling stories of and for social innovation	Mariani	2016	The Pearl Diver the designer as storyteller

47	Activism and Games. Exploring Boundaries	Mariani et al.	2017	Sociotechnical Environments: Proceedings of the 6th STS ITALIA CONFERENCE
48	One of the baddies all along Moments that Challenge a Player's Perspective	Whitby et al.	2019	The Annual Symposium on Computer-Human Interaction in Play (CHI PLAY '19)
49	The Impact of Meaningful Game Narratives on Attitudes towards Racial Outgroups	Shaza et al.	2021	Proceedings of the 54th Hawaii International Conference on System Sciences
50	A Method For Discovering Values in Digital Games.	Flanagan et al.	2007	Proceedings of DiGRA 2007 Conference
51	In migrants' shoes. A game to raise awareness and support long-lasting learning	Antonacci et al.	2017	Italian Journal of Educational Technology
52	IsITethical? Board Game	Escalante et al.	2019	Proceedings of the IX Latin American Conference on Human Computer Interaction (CLIHIC '19)
53	Playing below the poverty line: Investigating an online game as a way to reduce prejudice toward the poor	Roussos and Dovidio	2016	Cyberpsychology: Journal of Psychosocial Research on Cyberspace
54	Who's watching your kids? Safety and surveillance in virtual worlds for children	Meyers et al.	2010	Journal of Virtual Worlds Research
55	Playing for the planet: designing toys that foster sustainable values	Barreto et al.	2013	European Conference on Cognitive Ergonomics
56	Ethical stewardship: Designing serious games seriously	Sandovar et al.	2016	Entertainment computing and serious games
57	Creating meaningful games through values-driven design principles	Jerrett et al.	2020	Proceedings of DiGRA 2020
58	Enabled Players: The Value of Accessible Digital Games	Cairns et al.	2019	Games and Culture

3.1.2 Data Extraction and Analysis

After passing through the second filtering stage, the 58 selected papers proceeded to the data extraction process. Each selected paper was read in its entirety and the information relevant for answering the research questions was extracted with help of the extraction template ¹ described in Table 3.5.

¹The Full Extraction Template and all Data Extracted from each of the 58 selected papers can be found in the following link: https://gitlab.c3sl.ufpr.br/jvscardoso/games-and-values/-/raw/main/Extraction_Template_and_Collected_Data.ods

Table 3.5: Data Extraction Template

Data	Value	Research Question
Title	Paper's Title	
Publication year	Year in which the paper was published	
Authors	List of the authors' names	
Authors' Institutions	List of the institutions where the authors work	
Publication Venue	Name of the journal or conference in which the paper was published	
What kind of research problem was addressed?	Whether the paper considers an empirical, conceptual or constructive research problem according to the categories proposed by Oulasvirta and Hornbæk (2016)	RQ1
What method was used by each paper to evaluate its contributions?	The methods used by each paper	RQ2
Does the paper ground its contribution in a pre-existing theory or method?	Whether the author's proposal is based on a pre-existing theory or method (Yes/No)	RQ3
What foundational theories or methodologies ground the contributions of the paper?	List of theories or methods that serve as a theoretical foundation for the authors' proposal. This list should contain a brief description of the theory or method and their authors	RQ3
Does the paper present a formal definition of human values?	Whether the paper explicitly defines that which the authors understand as human values (Yes/No)	RQ4
Which definitions for human values are cited?	List of excerpts from the paper containing the cited definition(s) for human values	RQ4
From which authors do these definitions come?	The name of the authors that created each of the definitions cited in the paper	RQ4
Which definition was adopted	Excerpt containing the definition of human values adopted by the paper	RQ4
How is the relation between values and games understood?	Small description of how the authors frame the relation between games and values. Whether values are embodied, communicated, evoked or something else	RQ5
Evidences	Excerpts of the text of the paper, that justify the data extracted in the previous field	RQ5
What elements play a role in the manifestations of values in games?	Excerpts that indicate what elements of games, gameplay or game design play a role in manifesting the relation between games and values	RQ6
Which values are considered?	List of pre-defined or elicited, relevant or suggested values by the authors	RQ7
From whom are the values considered in the paper?	A list of interested parties, whose values, according to the authors, should be considered	RQ8
Is a predefined set of values used?	Whether a predefined set of values is used (Yes: uses a set; No: the values emerge from the context; Extends: uses a starting set of values and expands it)	RQ9
Are value conflicts considered?	Whether the authors discuss the possibility of conflicts between the values of different interested parties (Yes/No)	RQ10
How are value conflicts handled?	Evidence in the paper that indicate how the authors suggest that value conflicts be handled or resolved	RQ10.1

After filling in the fields of the extraction template with data gathered from each of the 58 selected papers, the data analysis process took place. In order to answer the different research questions, different methods were used for analysing the data. In the case of most research questions, the categories used to analyse the papers emerged from the data itself. There were, however, cases in which papers were organised according to an already existing artefact or categorisation scheme.

To answer RQ4, the values explicitly investigated in each paper were listed and then categorised according to the value framework proposed by Kheirandish et al. (2020). In RQ5, to identify the stakeholders whose values were considered in each paper, the stakeholder identification diagram from Organisational Semiotics was used. In RQ8, the three types of research problems discussed by Oulasvirta and Hornbæk (2016) were used to characterise the research problems investigated in each paper. These artefacts and categorisation schemes, as well as the specific methods used to answer other research question, will be further discussed in Chapter 4, as we discuss the results obtained from this systematic mapping.

3.2 PROTOCOL VALIDATION AND PILOT STUDY

To ensure the rigour of this systematic mapping, once a first iteration of the research protocol was devised, two different researchers helped revise it. These researchers reviewed the research questions, search strategies, inclusion and exclusion criteria, as well as the data extraction template, and their observations and suggestions were used to refine the research protocol.

After begin revised, we further validated the research protocol by conducting a pilot study that allowed us to verify the reliability of the search strategies, the extraction template, and of the methods used for analysing the data. The search strategy of this pilot study returned a total of 230 papers that, after a two stage selection process following the preliminary research protocol, resulted in the identification of 15 papers deemed relevant for the objectives of this research. These 15 papers also underwent a process of data extraction and analysis and the insights gathered from the conduction of this pilot study would later inform the final version of the research protocol.

With the help of the pilot study, for instance, we could note that the search string, that originally included only the keywords *game*, *human value*, and their respective plural forms, could not reach many relevant papers. In order to address this issue, the search string was complemented with the other keywords presented in Section 3.1.1. As a result, the final iteration of the search strategies could not only reach all the 15 papers identified in the pilot study but also allowed us to identify almost 4 times as many relevant papers (with a final total of 58 papers being identified).

The pilot study also served to validate the study selection process. The studies returned by the search strategy of pilot study underwent a selection process where three researchers used the inclusion and exclusion criteria to identify relevant papers. This allowed us validate the selection criteria by examining how often the three researchers agreed on the inclusion and exclusion of papers. To measure the reliability of agreement between researchers during paper selection, we calculated the Fleiss' kappa index and obtained a value of 0.786, which, according to Landis and Koch (1977), denotes a substantial agreement.

Finally, the 15 papers identified in the pilot study, also underwent the process of data extraction and analysis. Relevant information was extracted from each paper with help of the extraction template and the methods for answering the research questions were applied to the gathered data resulting in a preliminary analysis of the results. The data extracted from each paper identified in the pilot study, as well as the preliminary results obtained from said data, were then validated by another researcher and served as a basis for the results that will be further discussed in the next chapter.

3.3 STUDY LIMITATIONS AND THREATS TO VALIDITY

A few points must be acknowledged regarding the method for paper identification and data extraction adopted in this systematic mapping. Firstly, as this is a literature mapping, our objective is to identify as many relevant papers as possible, but we must still recognise the always present risk that relevant papers will not be reached by the applied search strategies. To minimise this risk, three different databases were searched (Scopus, ACM and IEEE). Scopus Digital library was specifically chosen for having the advantage of being a multidisciplinary database that indexes a diverse set of works, including research on digital games. The database search combined with a forward snowballing search strategy minimises the risk of missing relevant papers even further. The risk persists, however, and the specific choice of databases may also skew the results towards publication venues indexed by those databases. Even if the forward snowballing search strategy allowed for the identification of papers not indexed by the 3 chosen databases, the results were still limited to papers either directly indexed by Scopus, ACM and IEEE or papers index by Google Scholar who cited the papers indexed by Scopus, ACM and IEEE.

Furthermore, the choices made during the development of the research protocol imposed restrictions on the papers that could be included. The decision to focus specifically on papers written in English, for example, inevitably excludes a collection of relevant papers written in other languages. These papers, had they been considered, would have contributed to our analysis of the relation between games and values, and their exclusion must be acknowledged as a limitation to this study.

It is even possible to find direct evidence of these missing papers. The Brazilian Symposium on Computer Games and Digital Entertainment is an example of a Brazilian conference centred around games with publications mostly written in Portuguese and not indexed by the searched databases. Between 2010 and 2021 there were at least 6 publication discussing topics surrounding the relation between games and values (DOMÍNGUEZ and HERNÁNDEZ, 2010; Joselli, 2014; Pereira and Pereira, 2019; Janssen et al., 2019, 2020, 2021). The perspectives and approaches discussed in these papers were not considered in the results and discussion from Chapters 4 and 5, but their contributions should not be ignored and must be included in future expansions of this systematic mapping.

Still concerning paper identification, researcher bias also presents a risk for the paper selection process, as the specific way the selection criteria are applied may change from researcher to researcher. To deal with this issue, the selection criteria were validated in a pilot study by examining how often the three different researchers agreed on the inclusion and exclusion of papers. The calculated Fleiss' kappa index suggests a substantial agreement between researchers in the pilot study. It should be noted, however, that there is still a risk that important papers were missed during paper selection.

By looking at the search results, we can also note that, as will be further discussed in the next chapter, there are among the selected papers, some groups of publications written by the same group of authors (Flanagan et al., 2005a,b; Flanagan and Nissenbaum, 2007; Flanagan et al., 2007; Barr et al., 2005, 2006, 2007; Sicart, 2005, 2009, 2010; Kultima, 2009; Kultima and Sandoval, 2016; Mariani, 2016; Mariani et al., 2017). The presence of these papers are still useful for our purpose, as each one of them might highlight some different aspect of the relation between games and values. The repeated appearance of some authors may also indicate their prolificness and the relevance of their work for the study of games and values, but we should, nonetheless, be wary of conclusion based on the voices of a single group of authors as they can still skew our analysis of the results by making some specific perspectives appear more prevalent than they really are.

There is also the issue of whether the data gathered from the selected papers was accurately and objectively described. To ensure the validity of observations, the extraction template was designed so that, whenever a field relied on researcher's interpretation of a paper's content, excerpts justifying said interpretations were also extracted. This allowed us to validate the extraction template and the results obtained from its use, as the data extracted during the pilot study was reviewed by another researcher.

Lastly, there is the issue of interpretative validity. When characterising and categorising the identified papers, the grouping of papers in a specific category relied on the researcher's interpretation of each paper. While a preliminary analysis was validated during the pilot study, different researchers analysing the same papers might still arrive at different ways of categorising the data and, therefore, end up with different conclusions. Despite these limitations, however, the results obtained from the 58 selected papers can nonetheless offer insights regarding the relation between games and values, while also serving as evidence of how some authors have chosen to address the topic.

The next chapter will present a structured discussion on the different perspectives and approaches identified in the literature. The answers provided for each of the 10 main research questions serve as a first step towards the development of a comprehensive understanding of the relation between human values and games, paving the way for further studies.

4 MAPPING RESULTS

After conducting the selection process, the described systematic mapping resulted in a total of 58 papers dealing with the relation between human values and games. A value-oriented approach for studying games is nothing new, as papers on the subject are being published at least since 2003. There has been little variation in the number of papers published each year but it is still possible to note an increase in the number of publication on the topic in the period between 2015 and 2020. Overall, the number of paper published each year varied from 0 to 8 papers yearly for the past 20 years (Figure 4.1).

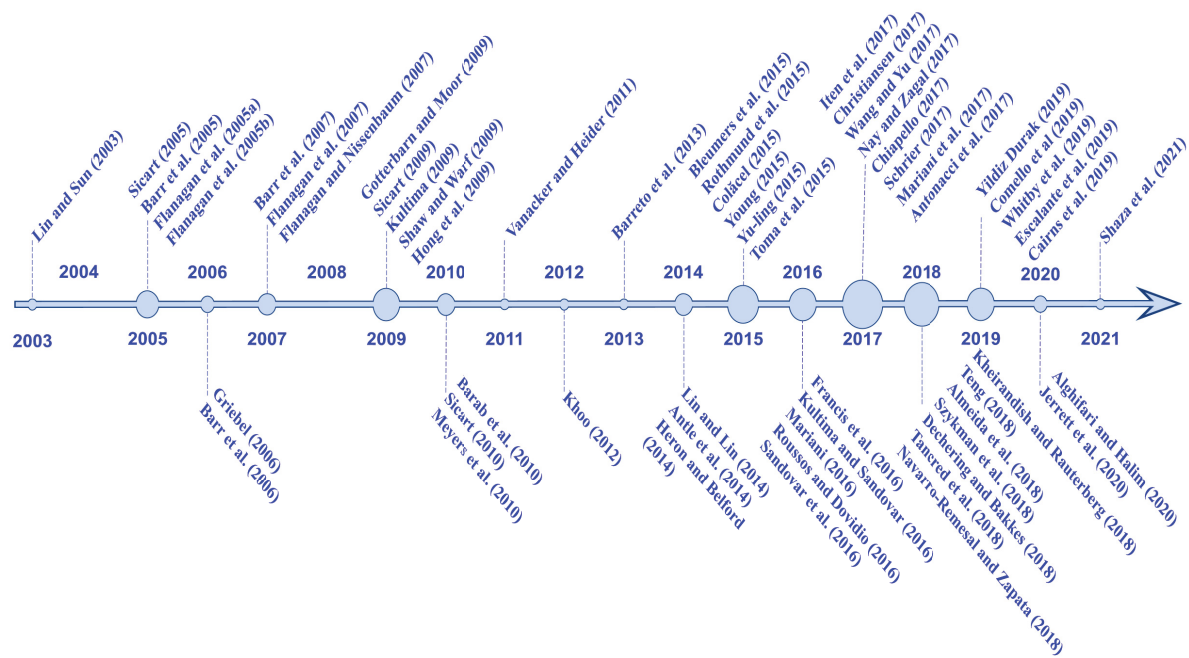


Figure 4.1: Identified papers published each year

Most authors wrote no more than 1 of the 58 papers, with only a few notable exceptions to this rule. Sandovar appeared as coauthor of two different papers, one discussing the notion of game design values (Kultima and Sandovar, 2016), and another proposing an ethical framework for serious game design (Sandovar et al., 2016). Kultima authored 2 papers investigating design values (Kultima, 2009; Kultima and Sandovar, 2016), 3 papers were either authored or co-authored by Mariani (Mariani, 2016; Mariani et al., 2017; Antonacci et al., 2017). Barr, published 3 other papers seeking to understand values communicated in games (Barr et al., 2005, 2006, 2007). Sicart also published 3 papers investigating ethical systems and moral dilemmas in games (Sicart, 2005, 2009, 2010). The authors identified in this mapping with the most papers were Mary Flanagan and Helen Nissenbaum who, together, co-authored 4 papers discussing the already mentioned VAP methodology (Flanagan et al., 2005b,a; Flanagan and Nissenbaum, 2007; Flanagan et al., 2007).

Published in 2013, Lin and Sun (2003) is the oldest paper identified in this mapping. Discussing a game design experience, their paper did not originally intended to investigate the relation between games and values, but the authors' highlighted how the values of designers can influence game the design process. In 2005, the relation between games and values started receiving more attention. Flanagan and Nissenbaum, along with Barr et al. (2005) and Sicart

(2005), are among the first authors to investigate games from a value-centred perspective, and also have continually worked on the topic, having later published a book on the VAP methodology (Flanagan and Nissenbaum, 2014).

When we look at the how the authors of identified papers are distributed around the globe (Figure 4.2), we can also note that the identified papers come from a variety of different countries from across Europe, America, Asia and Oceania. The country with the most published papers is the United States of America (with 15 papers), followed by the United Kingdom (6 papers), Taiwan (5 papers) and Italy (4 papers). In the case of all other countries, the number of identified papers ranges from 0 to 3. It is possible that papers from English speaking countries are over-represented, as this systematic mapping considered only papers written in English. More papers from other countries may have been published in local journals and conferences in their respective languages and consequently were not included in this systematic mapping. We can still note, however, that the number of papers on the relation between games and values in the United States is still significantly higher than on any other English speaking country.

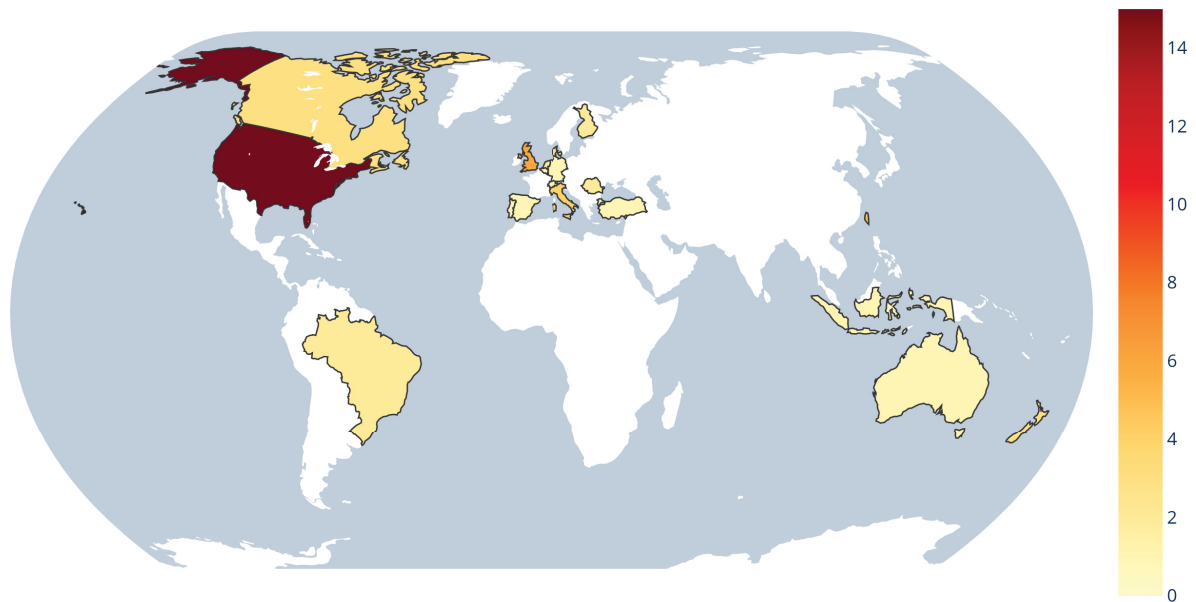


Figure 4.2: Heat map of countries that published papers on the relation between games and values.

If we look at the the conferences and journals in which identified papers were published, we can note that of all 47 different identified venues, 15 of them are also conferences and journals centred around games research. Rarely, a single venue published more than one of the identified papers. Among the most prominent venues we identify a few scientific conferences on games: The DiGRA conference published 4 of the identified papers, while the CHI Play and FDG conference published 3 more papers each. Venues focused on game research were the most common. however, we also identified papers published in venues of other scientific domains, such as Human-Computer Interaction, Psychology and Education, highlighting that the relation between games and values is a complex and multifaceted phenomenon that can be explored from multiple perspectives.

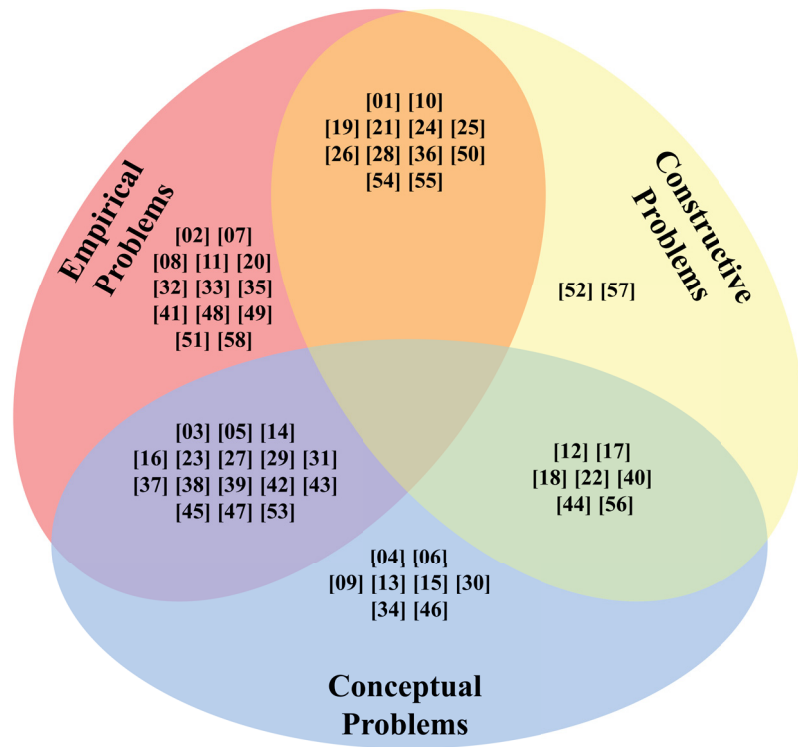


Figure 4.3: Venn diagram categorising showing the distribution of papers dealing with each types of research problems investigated. The numbers indicate the ID of each paper as shown on Table 3.4

4.1 RQ1: WHAT KINDS OF RESEARCH PROBLEMS HAVE BEEN ADDRESSED BY THE PAPERS?

Among the selected papers investigating the relation between games and values we find papers dealing with different types of research problem. In order to characterise the research problem from the selected papers, each research problem was categorised as being *empirical*, *conceptual* or *constructive* problems. *Empirical* research can be defined as the type of research aimed at creating or elaborating descriptions of real-world phenomena; *conceptual* research is focused on explaining previously unconnected phenomena; lastly, *constructive* research is centred around producing understanding about the construction of an artefact (Oulasvirta and Hornbæk, 2016). The *Empirical* and *Conceptual* categories come from Laudan’s work on the philosophy of science. As Laudan had originally focused specifically on the natural and social sciences, his typology was later extended by Oulasvirta and Hornbæk who proposed *Constructive* problems as a way to cover design and engineering problems as well.

Empirical, Conceptual and Constructive problems, each have a different nature. Understanding which kinds of research problems have been investigated in the literature can help us understand what aspects of the relation between games and values have been considered by researchers. It should also be noted that research problems can, and frequently do, belong to more than one category. A primarily constructive paper focusing on the construction of a software prototype, for example, could still have empirical or conceptual aspects, if, along with its constructive contributions, it presented an empirical study of phenomena related to the use of the prototype, or if the development of this prototype served as an exploration of conceptual design principles. Therefore, in order to better categorise the 58 papers, each research problem was assigned to all the categories that best described them. The distribution of papers in the three categories can be seen in Figure 4.3.

As seen in Figure 4.3, among the 58 selected papers, a total of 21 tackled research problems with constructive aspects, 41 papers dealing with problems with empirical aspects, and 31 papers researching problem with some conceptual aspects. Among the 21 dealing with problem of a constructive nature, 2 papers focused on essentially constructive problems discussing the experience of design and game design principles. Other 7 papers tackled problems with both constructive and conceptual aspects, proposing value frameworks to aid game design, or developing conceptual discussions about game design centred on ethical values. Research problems with both constructive and empirical aspects were tackled by 12 papers. These present an empirical evaluation of a game design experience or conduct empirical observations with direct implications for game design. Essentially empirical problems appear in 13 other papers who focus on empirical observation of the values of players as they interact with games. Other 16 papers discuss problems that are both conceptual and empirical: these papers present conceptual discussion about values that are grounded on some empirical data. Finally, 8 papers investigate essentially conceptual problems, focusing on theoretical discussions explaining the relation between games and values, usually discussing moral or ethical values.

By looking at the authors of each paper, specifically noting the few recurring authors, we can notice how papers from the same authors tend to fall in the same category. All 4 papers from Flanagan (Flanagan et al., 2005a,b; Flanagan and Nissenbaum, 2007; Flanagan et al., 2007) deal with problems of a constructive and empirical nature. Papers co-authored by Kultima and Sandoval (Kultima, 2009; Kultima and Sandoval, 2016; Sandoval et al., 2016) work with conceptual-constructive problems. The 3 papers by Sicart (Sicart, 2005, 2009, 2010) as well as 2 papers by Mariani (Mariani, 2016; Mariani et al., 2017), on the other hand, all share conceptual aspects. While 3 papers by Barr (Barr et al., 2005, 2006, 2007) tackle problems with empirical and conceptual aspects. While this systematic mapping identified a small number of papers by each of these authors, this similar categorisation of different papers by the same authors might suggest the complexity of value related problems, as researchers develop and publish multiple studies over the years as they continue their central research on games. Though all deal with the relation between games and values, it seems some authors, such as Sicart, tend to focus on more conceptual discussions, while others, like Flanagan, develop researches more directly linked with game design.

When we look at the overall distribution of papers investigating constructive, empirical and conceptual research problems, we can see how all of the categories proposed by Oulasvirta and Hornbæk (2016) were represented in this systematic mapping. We can note that constructive problems appeared less frequently than other problem types, which could suggest the need for further research on game development from a value-centred perspective. Though some types of problems appeared more frequently than others, the diversity of problem types considered suggest the diversity of perspectives and approaches for investigating the relation between games and values.

4.2 RQ2: WHAT METHODS WERE ADOPTED IN EACH PAPER?

Among the papers identified in our mapping there is a diverse set of problems with very different aims. Contributions ranging from frameworks for value-centred game design, to discussions about ethical values in games and designer's value-systems, each problem in these papers requires an appropriate strategy for gathering data or evaluating a solution. Analysing which methods were adopted by each paper can help our understanding of the problems being studied and of the adequacy of each method for the problems being tackled. Among the methods and methodologies described by the identified papers, as can be seen in Figure 4.4, case studies and surveys are

the most frequently used ones. Different problems, however, required the adoption of different approaches such as controlled experiments, interviews, content and discourse analysis, grounded theory, participant observation and interpretative ethnography as well as mixed methods.

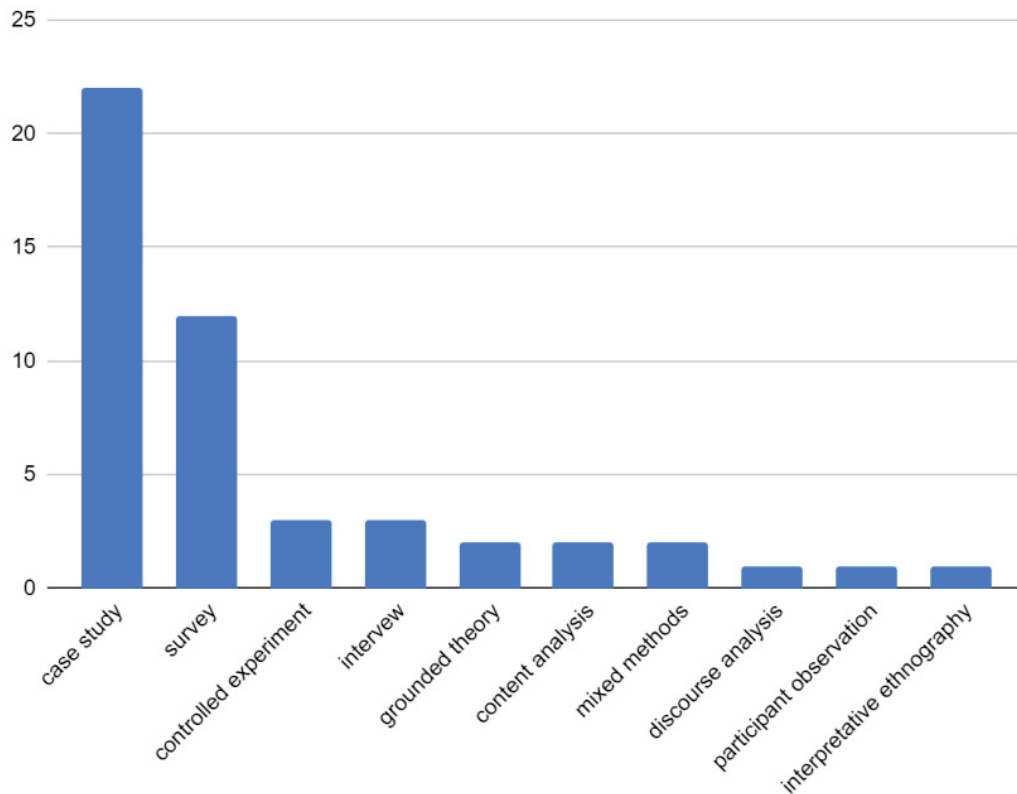
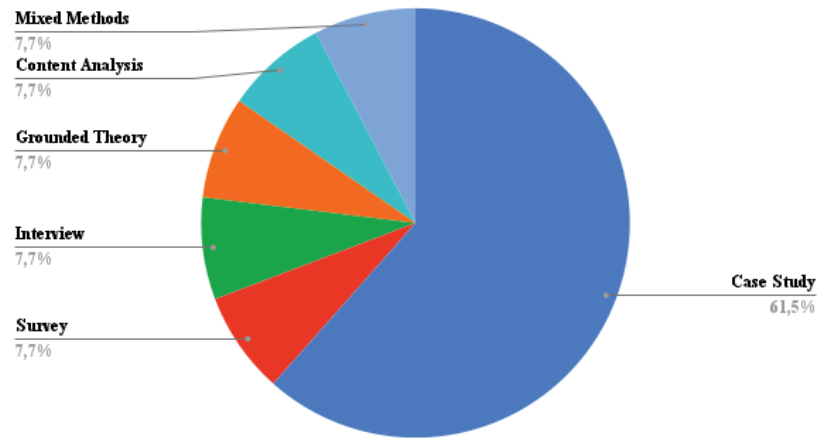


Figure 4.4: Number of times a given method was adopted by the identified papers

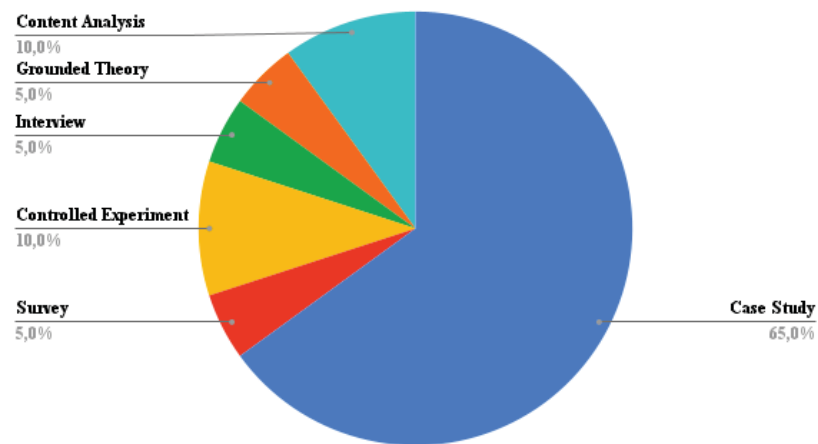
The specific methods used vary according to the kind research problem tackled by each paper. As can be seen in Figure 4.5. On the group of papers with empirical problems, for instance, we find a greater variety of methods for observing a phenomenon or evaluating a solution. Given that empirical research is aimed at creating or elaborating descriptions of real-world phenomena, it is not surprising that papers dealing with this type of research utilise a greater variety of empirical methods. It should be noted, however, that the 17 papers without an empirical aspect also frequently do not present any method for evaluating or grounding their discussions or probabilities, often relying exclusively on previous research.

For papers dealing with empirical problems, surveys were more frequently adopted than in papers dealing with any other kind research problem. Serving as a way to acquire data and test hypothesis, surveys were used in a total of 12 papers (Bleumers et al., 2015; Teng, 2018; Griebel, 2006; Francis et al., 2016; Almeida et al., 2018; Iten et al., 2017; Yildiz Durak, 2019; Alghifari and Halim, 2020; Wang and Yu, 2017; Comello et al., 2019; Whitby et al., 2019; Cairns et al., 2019) this method adopted by these papers has the advantage of allowing for a big number of participants to contribute with the research (Lazar et al., 2017). The high number of participants as well as the nature of the questions making up the survey also allow for a statistical analysis of the results, which, in turn, can help increase the robustness of the authors' conclusions.

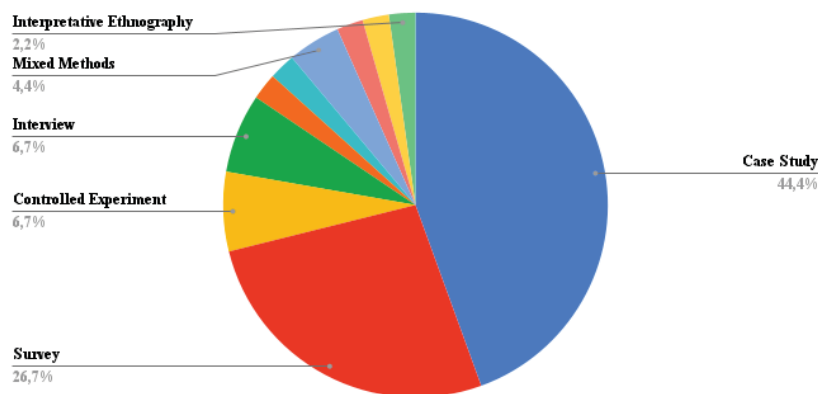
But surveys are not the only viable strategy for dealing with empirical problems. Though not as frequent as the previous method, 3 other papers conducted controlled experiments to



(a) Distribution of methods used by constructive papers



(b) Distribution of methods used by conceptual papers



(c) Distribution of methods used by empirical papers

Figure 4.5: Distribution of methods used by papers dealing with each kind of research problem

Table 4.1: Number of case studies organised by goal and research problem

Goals	All Papers	Empirical Papers	Conceptual Papers	Constructive Papers
Exploratory	4 (18,18%)	4 (20,00%)	3 (23,08%)	1 (12,50%)
Explanatory	6 (27,27%)	5 (25,00%)	5 (38,46%)	0 (00,00%)
Descriptive	5 (22,73%)	4 (20,00%)	3 (23,08%)	2 (25,00%)
Demonstrative	7 (31,82%)	7 (35,00%)	2 (15,38%)	5 (62,50%)
Total	22	20	13	8

investigate their respective research problems. Shaza et al. (2021) as well as Roussos and Dovidio (2016) exposed groups of participants to different games as a way to observe what impacts different games could have on player's values, while Rothmund et al. (2015) exposed different groups of participants to games in order to observe how the values of individuals may influence how they perceive and react to games. This kind of experiment design can be more difficult to implement and often results in a smaller number of participants, but it also leads to a greater control, by the researchers, over the variables influencing the phenomenon they are trying to observe.

Interviews also appeared in 3 identified papers. Lin and Lin (2014) and Yu-ling (2015) use interviews to explore the values important for players within the scope of their research, while Lin and Sun (2003) interviewed designers to gather insights from the experience of game design. When investigating the values of players, or learning from previous design experiences, interviews have the advantage of allowing more flexibility than surveys, as they allow researchers to discuss in depth with interviewees relevant information that emerge during the interview, but the cost and work load associated with the conduction and analysis of multiple interviews also limit the number of participants that can be interviewed.

Case studies appeared more frequently than any other methodology. Focused on the in depth analysis of a given phenomenon in a specific context of observation, case studies do not offer statistically significant results, but can nonetheless offer insights on the complex and context dependent relation between values and games. A total of 22 papers conducted some kind of case study with varying goals, ranged from exploratory and explanatory studies to more descriptive and demonstrative ones (Table 4.1).

According to Lazar et al. (2017), the goals of traditional qualitative case studies generally fall into one of four categories: (i) Exploration, which involves gathering insights into novel problems or situations; (ii) Explanation, involving the development of models that can be used to understand a particular context; (iii) Description, involving documenting a phenomenon, system, or the process being studied; and (iv) Demonstration, that demonstrates the successful use of a new tool or method.

Among the 22 papers that conducted case studies, 4 papers (Barr et al., 2006; Dechering and Bakkes, 2018; Mariani et al., 2017; Meyers et al., 2010) present studies of an exploratory nature in which they conduct qualitative investigations examining a few selected games and how players interact with them. Other 6 papers conduct explanatory studies. Colăcel (2015), Heron and Belford (2014), Nay and Zagal (2017), Navarro-Remesal and Zapata (2018) and Antonacci et al. (2017), all investigate value-related game phenomena by choosing relevant games and discussing how games allow said phenomena. Chiapello (2017), who presents a theoretical discussion about value-conflicts, conducts a case study in order to observe how such conflicts are handled by designers in a game design context. Descriptive studies appear in 5 papers who conduct case studies in order to gain insights into the game design process (Barab et al., 2010; Flanagan et al., 2005a; Szykman et al., 2018) or to better describe phenomena related to the interaction between players and games (Vanacker and Heider, 2011; Mariani, 2016).

The remaining 7 case studies appeared to serve a demonstrative purpose, presenting case studies as demonstration of a particular method for designing or analysing games from a values centred perspective. Kheirandish and Rauterberg (2018) demonstrated their frameworks contribution by presenting a case study in which design students were asked to identify the values of a series of Iranian games. Flanagan et al. (2005b) cite the project RAPUNSEL as a case study from which insights for their VAP methodology were drawn. Hong et al. (2009), after proposing a tool for the assessment of educational values of video games, conduct a case study with educational psychologists and designers in order to evaluate the usability of said tool. Similarly, Barreto et al. (2013) presented a case study illustrating their participatory method for designing toys that instil ecological values in the children. Another demonstrative case study is presented by Flanagan et al. (2007), in which they demonstrate how designers can use value cards as a tool to start an open discussion about human values in digital game. Finally, other case study is reported by Barr et al. (2005) and Barr et al. (2007) who, after presenting a methodology for the analysis of games from a value centred perspective, demonstrate how such an analysis could take place. The results of these case studies can sometimes provide more general insights into how human values relate to games, but they also frequently serve as no more than a demonstration of the strengths of the proposed solution, than as an evaluation of the methodology proposed.

When we look specifically at papers presenting case studies, we can also note a relation between their type of research problem and the goals of their case studies. Almost all of the papers presenting case studies deal with an empirical problem (20 of 22), and, therefore, the distribution of case study goals among empirical papers is mostly the same as the distribution of case study goals in general. Demonstrative case studies do appear more frequently than others in empirical papers, but the goals of case studies in empirical papers remain more evenly distributed than among papers with different types of research problem.

When we compare conceptual and constructive problems, however, we can note some differences. There were no explanatory case studies in constructive papers, and demonstrative case studies are significantly more frequent among them. The opposite trend, however, can be seen among conceptual papers. While case study goals are more evenly distributed among conceptual papers than in constructive ones, of all case studies found in conceptual papers, explanatory studies were the most frequent and descriptive studies the least frequent. Given that conceptual research problems involve explaining previously unconnected phenomena, it seems natural that case studies conducted by papers dealing with this kind of problem would have a higher chance of being explanatory in nature. Similarly, given that many of the identified constructive papers propose a method or artefact for game design or analysis, it is not unreasonable to find case studies that demonstrate a successful use of the proposed methods and artefacts.

Case studies can offer useful insights for empirical, conceptual and constructive research. The high number of identified papers conducting case studies, however, may pose a problem for generalization of conclusions. Lazar et al. (2017) describes case studies as detailed examinations of one or more specific situations, but without a broad collection of studies examining a variety of different situations it is difficult to guarantee whether findings also apply to different contexts. In the case of the identified constructive papers, for instance, authors were able to demonstrate the successful use of the methods and artefacts they proposed by using demonstrative case studies. It is possible, however, that limitations of the proposed methods and artefacts could become more evident in different contexts of use. In this example, the conclusions put forth by these authors could be strengthened had they used different evaluation methods, or investigated a greater variety of use contexts for evaluating their propositions.

Number of papers from each problem type that are grounded in preexisting theories

		Research Problem Type			
		Total	Empirical	Conceptual	Constructive
Did Papers Cite a Theory?	Yes	42 (72.41%)	32 (78.05%)	21 (67.74%)	14 (66.67%)
	No	16 (27.59%)	9 (21.95%)	10 (32.26%)	7 (33.33%)
	Total	58	41	31	21

4.3 RQ3: ARE PAPERS GROUNDED ON A SPECIFIC THEORY OR METHODOLOGY?

Most papers (42 out of 58) cite one or a few theories or methodologies that serve as a fundamental groundwork for their proposition (Figure 4.2). Examining the kinds of research problems investigated by each paper, we can note that approximately 2 thirds of conceptual and constructive papers ground their contributions on a preexisting theory or methodology. In the case of empirical papers, however, this number increases to more than 4 fourths of papers relying on a theory or methodology.

Among the most cited theories and methodologies, we find two contributions from Psychology grounding 7 different empirical papers: Rokeach's theory of values was cited by 5 papers (Kheirandish and Rauterberg, 2018; Barr et al., 2005, 2006, 2007; Comello et al., 2019), serving either as definition of values, or as a reference to elicit values that should be considered; And Schwartz's value survey was cited by 4 papers (Kheirandish and Rauterberg, 2018; Griebel, 2006; Francis et al., 2016; Comello et al., 2019), who also use it to elicit values that should be considered.

Value Sensitive Design and Participatory Design are two of the most cited methodologies, serving as a methodological basis for 7 papers dealing with problems of an empirical and constructive nature. Value sensitive design was cited in 6 different papers (Bleumers et al., 2015; Flanagan and Nissenbaum, 2007; Flanagan et al., 2005a,b, 2007; Meyers et al., 2010) and Participatory Design was cited by 5 papers (Flanagan and Nissenbaum, 2007; Flanagan et al., 2005a,b; Szykman et al., 2018; Flanagan et al., 2007). It is evident that papers tackling the subject of value-sensitive game design should consider Friedman's work on VSD, but the number of papers relying on or influenced by Participatory Design also highlights a desire on the part of the authors to either bring players to the centre of the game design process or, at least, consider players values throughout the design.

Schön's work on the reflective practitioner is another that served as a grounding theory for multiple authors, being cited in 6 different papers. Two papers with conceptual discussion rely on Schön's concept of appreciative systems (Kultima and Sandoval, 2016; Chiapello, 2017), while other 4 constructive and empirical papers cite his reflective theory as one the foundations of their propositions (Flanagan and Nissenbaum, 2007; Flanagan et al., 2005a,b, 2007).

Among game specific theories and methodologies, Flanagan and Bogost are among the most cited authors. As discussed in Chapter 2, Bogost (2008) discusses how the procedural structure of games can be used in a type of rhetorical practice capable of persuading players. Bogost's theory on procedural rhetoric and persuasive games was cited in 5 papers (Antle et al., 2014; Navarro-Remesal and Zapata, 2018; Toma et al., 2015; Mariani et al., 2017; Escalante et al., 2019). Flanagan's work on value-centred game design with the VAP methodology and on critical play also appeared in 4 papers (Kheirandish and Rauterberg, 2018; Mariani et al., 2017; Escalante et al., 2019; Jerrett et al., 2020).

Other game-centred theories and methodologies were also cited. Sicart (2005) references Aarseth's ergodicity (Aarseth, 1997) when arguing that games bring within their own code the rules for interaction. Flanagan et al. (2005b) cite Crawford's insights on game design (Crawford,

1984) as an influence for the development of VAP. And Antonacci et al. (2017), though not grounded in their theories, cites Frasca (2013), Sicart (2011), and Flanagan and Nissenbaum (2014) when discussing games' influence on players and their capacity to invite players to make critical reflections.

Among less frequent theories and methodologies, authors cite contributions from Psychology, Human-Computer Interaction, Design, Education, Marketing, Philosophy and Games Studies. Though most theories and methodologies were cited only by a single paper, the diversity of theories from multiple scientific domains highlights multidisciplinary nature of the relation between games and values. However, while most papers ground their propositions in a foundational theory or methodology, of all 58 identified papers, only 10 are grounded on theories and methodologies that specifically address games or the relation between games and values.

As discussed in Subsection 4.1, the results obtained from this systematic mapping demonstrate the existence of a variety of conceptual contributions that could help ground the contributions of papers investigating the relation between games and values. Other authors such as Frasca (2001), discussed in Chapter 2, predate most of the 58 papers identified in this systematic mapping and yet are rarely cited as a groundwork for the discussions on any of the identified papers. Theories and methodologies, such as Schön's reflective practice and Friedman et al.'s Value-Sensitive Design, can bring useful insights for value-centred game design, but the lack of foundational theories addressing the specificities of games as an interactive media can be an indication of a wider problem with research on the relation between games and values.

On the one hand, the relation between games and values is a multifaceted phenomenon that can be explored from the perspectives of different scientific domains. This multidisciplinary nature of the relation between games and values may require researchers to use well established theories and methodologies from their respective scientific domains instead of relying on theories and methods developed specifically for the study of games. On the other hand, the lack general theories explaining the relation between games and values, as well as the number of papers relying on the results of non generalisable case studies, might indicate the difficulty in proposing a theory that is simultaneously useful for the many different perspectives and approaches identified in the literature. While we identified many conceptual discussions investigating how games relate to values, it is possible that none of them were broad enough to encompass the many ways in which games and values are related.

4.4 RQ4: WHAT DEFINITIONS FOR VALUE HAVE BEEN ADOPTED IN SCIENTIFIC LITERATURE?

An essential part of compiling a collection of researchers investigating the relation between games and human values is to understand what authors understand by value. Presenting a clear definition, however, is no simple task, and among the 58 identified papers, only 17 defined or cited a definition for values (Table 4.3).

The lack of a formal definition for the term value in the majority of identified papers complicates the analysis of the different perspectives held by each author, but, by looking at the definitions present in the discussed papers, it is possible to start understanding how authors approach the concept of human values.

The two most cited definitions for human values come from Schwartz et al. (2012) and Rokeach (1973). Schwartz et al., cited in 4 papers, defined values as "*trans-situational goals, varying in importance, that serve as guiding principles in the life of a person or group.*" (Schwartz et al., 2012, p. 2). Their view on values being guiding principles serves as the basis of the discussion proposed by Rothmund et al. (2015), who argues that the values of a person impact

Table 4.3: Definitions for values, and the IDs of the papers who cite them

Definition of Value	Paper ID
“value is an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence” (Rokeach, 1973, p. 5)	[01] [16] [23] [27]
“trans-situational goals, varying in importance, that serve as guiding principles in the life of a person or group” (Schwartz et al., 2012, p. 2)	[03] [08] [11] [41]
“value refers to what a person or group of people consider important in life” (Friedman et al., 2008, p. 57)	[02] [54]
“Values are abstract personal/higher level experiences that users may derive from attributes and they are at the apex of MECs theory. Values can be divided into ‘Instrumental Values’ that stem from preferences/behavioral cognition and ‘Terminal Values’ that describe the ultimate status of existence that users long for” (Gutman, 1982 <i>apud</i> Lin and Lin, 2014, p. 3)	[05]
“Game design values refer to the value propositions which guide the design decisions of game designers and developers” (Kultima and Sandovar, 2016, p. 351)	[12]
“Human values, according to the functional theory, are cognitive expressions of needs and are triggers of the actions” (Gouveia et al., 2015 <i>apud</i> Yildiz Durak, 2019, p. 1985)	[29]
“ ‘Values’ are important goals and targets that consumers strive to achieve through specific consequences they generate from particular attributes and can be separated into ‘Instrumental Values’ and ‘Terminal Values’ ” (Miele and Parisi, 2000 <i>apud</i> Yu-ling, 2015, p. 99)	[32]
“The value systems are the primary term we used here, which are considered to be modes of adjustment for coping with the perception of the reality of the world.” (Graves, 2005 <i>apud</i> Wang and Yu, 2017, p. 2)	[35]
“Values are superordinate constructs that organize lower order constructs of attitudes and cognitions” (Rohan, 2000 <i>apud</i> Comello et al., 2019, p.3)	[41]
“The appreciative system is characterized as a set of values held by a practitioner. It is used to frame a design problem and to evaluate the solutions that arise from the design situation: It is, in the final analysis, on the basis of our appreciative systems, the values we place on things attended to or overlooked, that we judge the adequacy of a way of setting a design problem.” (Schön, 1990, p. 136)	[42]
“However, it is recognized that values are not easily defined and can move from what is simply important to people to something more like moral or ethical expectations and principles. For our purposes, the importance of games is from the perspective of users and what the players themselves considered to be important” (Cairns et al., 2019, p. 264)	[58]

how they perceive virtual depictions of violence in digital games. Other papers citing Schwartz et al. use their tool for measuring values or his typology of values for analysing responses from online surveys, though Francis et al. (2016) recognise a possible limitation with this typology when investigating the values of a specific population.

Rokeach's definition of human values was also adopted in 4 papers, though 3 of said citations come from the same group of authors. Rokeach defines values as "*an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence*" (Rokeach, 1973, p. 5). Kheirandish and Rauterberg (2018) explicitly base their understanding of human values on Rokeach's definition while incorporating elements from different authors, such as Schwartz. The remaining 3 papers (Barr et al., 2005, 2006, 2007) draw from Rokeach's emphasis on modes of conduct and end states to discuss values in digital games in terms of actions and objectives available to players.

While different, Rokeach's and Schwartz's definition of human values do share some similarities. Both recognise the individual and social nature of values. For Schwartz, values can be principles held by individuals or groups, while for Rokeach they represent the belief in an individual or social preference. Rokeach does not explicitly mention goals, but if values are the belief that some modes of conduct are preferable, then they could be understood as guiding principles that guide the lives of people.

But if the two definitions are somewhat similar, they still differ in terms of their specificity. The trans-situational nature of values in Schwartz's definition means that, in order to be considered values, a person's or group's goals need to be consistent across a range of situations which, in turn, grants Schwartz's values an abstract character not necessarily present in values as defined by Rokeach. Rokeach's definition also includes abstract values, but the wording of his definition opens up the possibility of considering enduring situational beliefs as values, that is, by strictly following his definition, an enduring belief that an end state or mode of conduct is preferable should be considered a value even if this belief is only valid within the context of a specific situation. Rokeach's inclusion of situation-specific values ends up being particularly useful for Barr et al. (2007) as they investigate the values guiding players in the specific context of play.

Other than Schwartz's and Rokeach's definition of values, Friedman et al. (2008), as pioneers of Value Sensitive Design, were also cited. For Friedman, "*value refers to what a person or group of people consider important in life*" (Friedman et al., 2008, p. 57). In this definition we also see the acknowledgement of both the individual and social aspects of values, but where Schwartz focuses on trans-situational goals and where Rokeach focuses on modes of conduct and end-states of existence, Friedman opens up the definition of values to incorporate the value of anything a person or group might consider important. Value sensitive design was cited in 6 different papers, Friedman's definition of value, however, was only explicitly adopted twice (Bleumers et al., 2015; Meyers et al., 2010): Bleumers et al. (2015) explores the values of parents concerning hybrid toys and games played by children, while Meyers et al. (2010) discusses the ethos of communities surrounding virtual worlds designed for children.

While 17 of the identified authors defined or cited a definition for the term values, the 41 remaining papers did not, which could be a consequence of the difficulty in dealing with a concept as hard to define as "human values". Clearly and explicitly defining the term, however, is still necessary, as by doing so, authors can establish a theoretical foundation upon which to develop their discussions and conclusion about the subject. It should also be noted that authors who do not explicitly present a definition for values may still have an understanding of what

Distribution of papers grounded in preexisting theories and whether they present a definition for human values

		Did Papers Cite a Definition for Human Values?		
		Yes	No	Total
Did Papers Cite a Theory?	Yes	17	25	42
	No	0	16	16
	Total	17	41	58

values are. And this implicit understanding may, nonetheless, influence their discussions of the topic.

Analysing papers presenting a definition for values, we can note that all 17 of them are grounded on preexisting theories or methodologies, either explicitly relying on an established understanding of values, or drawing from previous discussions to present their own definition. However, papers grounded in theories or methodologies do not necessarily present a definition for values (Table 4.4). There are 4 papers (Flanagan and Nissenbaum, 2007; Flanagan et al., 2005a,b, 2007), for instance, that ground their contributions on both Friedman's Value-Sensitive Design and on Schön (1938)'s reflective practitioner, but still never explicitly adopt either Friedman's definition of value nor Schön's concept of appreciative systems. While these papers may have attempted to avoid limiting themselves by not adopting one definition over another, their implicit understanding of values may have, nonetheless, been influenced by the theories and methodologies upon which they base their contribution.

For the purposes of the present research, however, what we must discuss is whether the identified definitions can help us better understand values as they relate to games and whether these specific definitions can make us ignore relevant aspects of this relation between games and values.

Schön's appreciative systems focus heavily on designers and on how their value-systems are used for judging the adequacy of a design solution (Schön, 1938). Schön's focus on designers' value-systems was particularly well suited for the works of Kultima and Sandoval (2016) and Chiapello (2017), as they investigate a very specific aspect of the relation between games and values, that is, the way designers' values relate to game design. But as we recognise the importance of other stakeholders for the relation between games and values, our definition must be capable of taking other perspectives into account.

Here is where the definitions from Rokeach and from Friedman et al. seem suitable. The general nature of these two definition allows us to consider values held by designer, but also players and even other stakeholders. But if the perspectives from Rokeach and Friedman et al. can be useful for understanding psychological preferences or desires of individuals and groups, we should also recognise that values are not simply mental qualities of stakeholders, they come instead from the contextualised relation between a value-assigning subject and that which is being valued (Pereira et al., 2018).

Overall, while most identified papers did not define *value*, the definitions that do appear highlight different aspects of the term. Some definitions highlight the individual and social aspects of values, others, focus on how values guide decision making. However, if we are to construct a broad understanding of how games relate to values, then our conceptualisation of what values are should also be broad enough to take into account not only the ways in which values guide our actions and behaviours, or how values can be shared by groups of people, but also how values arise from the relation between a valued object and a valuing subject in a social context.

4.5 RQ5: HOW AUTHORS FRAME THE RELATION BETWEEN GAMES AND HUMAN VALUES?

As with the problem of defining values, we see many different approaches for the task of describing how games relate to values. These approaches vary from paper to paper but they also share similarities. By grouping each paper according to how they describe the relation between games and values we can organise the perspectives found in the literature.

To identify how authors frame the relation between games and values, text excerpts explicitly discussing how games relate to human values were extracted from all identified papers according to the research protocol discussed in Chapter 3. After extracting relevant text excerpts from all 58 papers, each extracted text underwent a descriptive coding process (Leavy, 2014). Each paper was associated with one or more codes representing the ways in which their authors frame the relation between games and values. Similar codes were grouped together and the clusters of grouped codes served as a basis from which a categorisation, illustrated in Figure 4.6, emerged. Note that perspectives represented in different categories are not mutually exclusive and a single paper can be included in more than one category.

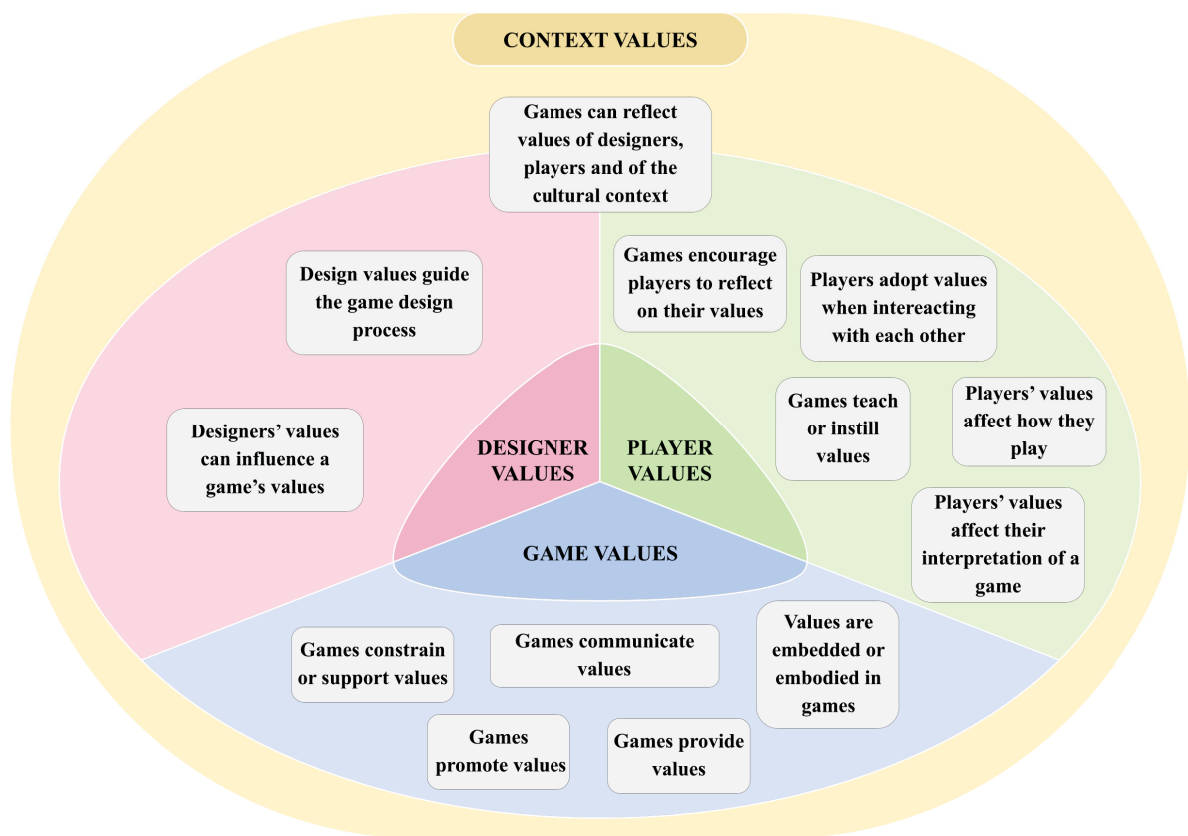


Figure 4.6: Different perspectives for framing the relation between games and values

The most comprehensive categories identified group papers according to whose values are being discussed. Some papers, while recognising the importance of both player and designer to some extent, frame values as being embedded in or supported by the game itself. Some papers focus on the values of players, investigating how players' values impact their behaviour in game, or how a game can impact players' values. Some papers focus on designers' values and how they impact the game design process. Furthermore, some papers highlight how a game may reflect

the values of the cultural context in which it exists. Each of these four main categories are further discussed below.

4.5.1 The Game's Values:

*“As media, games **contain** values as information communicated to players through elements such as the game’s narrative and aesthetics”* (Barr et al., 2007, p. 183); *“...games **carry** values in their narratives and also in their mechanics with or without the intention of designers”* (Kheirandish and Rauterberg, 2018, p. 6); *“This paper presents a values-oriented, socio-technical analysis of these hugely popular virtual spaces and how **they support and constrain** the values of different stakeholders”* (Meyers et al., 2010, p. 5). These authors write of the game as containing, supporting or constraining values. These are a few examples of how papers in this category frame the relation between games and values.

Meyers et al. (2010), Bleumers et al. (2015), Francis et al. (2016), and Comello et al. (2019), for instance, may discuss stakeholders’ values, but specifically focus on the aspects of a game that can support or constrain their values. Barr et al. (2005, 2006), as well as Sicart (2005) discuss, instead, how games can promote specific values. Other papers express the idea that games provide (Teng, 2018; Alghifari and Halim, 2020), contain (Barr et al., 2007; Tancred et al., 2018), carry (Kheirandish and Rauterberg, 2018) incorporate (Flanagan et al., 2005a), embody (Flanagan et al., 2007, 2005a,b; Cairns et al., 2019) values or have values embedded in them (Kheirandish and Rauterberg, 2018; Flanagan et al., 2005b; Hong et al., 2009; Flanagan and Nissenbaum, 2007; Flanagan et al., 2007; Jerrett et al., 2020; Sicart, 2005, 2009). These different terms, despite having slightly different connotations, all point towards the seemingly widespread idea that games, by means of their constituent elements, are imbued with values.

It is also evident that games do not exist on their own, and whatever values they may contain must be perceived and interpreted by players during gameplay. This perspective, therefore, must implicitly recognise this communicative aspect of games as highlighted by Barr et al. (2007), Heron and Belford (2014), Young (2015) and Sicart (2005). Games cannot just contain values, they must communicate them.

But the relation between games and values cannot be understood simply as a direct conversation between the designer and the player. While it is true that game elements and gameplay experiences capable of expressing a value were created by a designer, not all games and game elements are designed with the explicit intention of communicating a value. Designers might come up with game mechanics that inadvertently reflect their own values and, depending on the playing context, a particular combination of game elements might evoke values that oppose the ones a designer would choose to convey.

4.5.2 The Player's Values:

There are papers focusing on the impact a game can have in the player’s value-systems. Hong et al. (2009), as well as Flanagan and Nissenbaum (2007), describe games as having values embedded in them, but unlike other papers discussed in the previous category, these authors also discuss the capacity games have to teach or promote values. This is a perspective they share with a number of other authors who recognise the potential games have for teaching values (Lin and Sun, 2003; Khoo, 2012; Schrier, 2017; Toma et al., 2015; Yu-ling, 2015), influencing players (Gotterbarn and Moor, 2009; Antle et al., 2014; Barreto et al., 2013; Roussos and Dovidio, 2016; Mariani et al., 2017) or changing their values (Almeida et al., 2018; Shaza et al., 2021; Antonacci et al., 2017).

These 15 papers recognise the capacity games have for not only expressing values, but also for impacting the values of players. Once again the notion of games as communicating values is useful here, but, for these authors, players can not only perceive and interpret values, they may go as far as learning and assimilating them. What is not always explicit in this perspective is the agency of players. When considering the potential influence a game can have on players' value-systems, we must also consider how different players react differently to values communicated by a game. As Bogost (2008) points out, we, as players, are not simply receivers of the message a game communicates, but can actively reject the values a game presents us.

This is what separates Roussos and Dovidio (2016) from the other mentioned authors. As they explicitly recognise that players' ideologies can affect how a game will impact their values and beliefs.

Rothmund et al. (2015) and Young (2015) go one step further and discuss how the values of players, or even other stakeholders, affect the way they perceive and interpret a game. If we are to understand games as capable of communicating values, we must also recognise that the values a game communicates are not entirely fixed. This value communication cannot be a one sided process in which a game forces an idea into a player, but rather come from the interaction between player and game. Even if elements, such as gameplay mechanics or narratives, may limit the range of plausible interpretations, the way how a player perceives and interprets a game can still change depending on personal, cultural, or situational factors (Flanagan and Nissenbaum, 2014).

Player agency, however, allows for more than multiple interpretations of a game. Depending on how much freedom a game affords, we can also consider how games allow players to express their own values (Khoo, 2012; Griebel, 2006; Sicart, 2009; Antle et al., 2014; Barr et al., 2006; Dechering and Bakkes, 2018; Wang and Yu, 2017; Vanacker and Heider, 2011) or even explore different values as they play (Barr et al., 2005, 2007; Sicart, 2009). Authors sharing this perspective recognise how values held by players impact not only their perception of the game but also their behaviour within it. Recognising player agency adds a new layer of complexity to our understanding of the relation between games and values. On one hand, games, by means of their narratives, mechanics and other constituent elements, can communicate values that are perceived, interpreted and judged by a player, but on the other, they also offer virtual spaces where players can express themselves (Barr et al., 2006) and explore the values by which they play (Sicart, 2009).

This complex interplay between game and player may be where the impact of games can be seen. In 15 papers, authors highlight and discuss how games can encourage players to reflect on their values, either by challenging a player's values and beliefs (Whitby et al., 2019), by confronting them with complex moral decision (Toma et al., 2015; Mariani, 2016; Shaza et al., 2021; Heron and Belford, 2014; Iten et al., 2017; Barab et al., 2010; Christiansen, 2017; Cairns et al., 2019; Jerrett et al., 2020), making them consider the consequences of their behaviour (Navarro-Remesal and Zapata, 2018; Antle et al., 2014; Jerrett et al., 2020), or even interpreting the meanings of the actions performed by their in-game avatars (Nay and Zagal, 2017; Jerrett et al., 2020). Games, for these authors, are not manipulating the player, but rather creating an opportunity for players to consider the values guiding their actions during play.

Another perspective is presented by Yildiz Durak (2019) whose focus lies neither with the game's values nor on their impact on players, but on the players themselves. According to Yildiz Durak, players adopt human values in their interaction with others in online multiplayer games. Here, authors see games not as a virtual space where players can interact with in isolation, but as a shared playground that can give rise to complex interactions between people. In these virtual multiplayer spaces, individual values may guide the actions of individual players, but over

time, as Vanacker and Heider (2011) point out, the player community may develop a set of shared communal values that guide their interaction within the virtual world of a multiplayer game.

Finally, Szykman et al. (2018) describe a participatory design process for designing a game while actively trying to reflect its players' needs and values. A similar perspective is held by Lin and Lin (2014), who defend that educational games should be aligned with the values of learners. These papers imply that values held by designers end up embedded in the game and, therefore, bringing players into the design process is important so that their values may be appropriately reflected in the resulting game.

4.5.3 The Designer's Values:

Similar to Szykman et al. (2018) and Lin and Lin (2014), there are other authors who defend that games reflect the values of its creators. Lin and Sun (2003) and Christiansen (2017) highlight how designers might not be aware of how their own values can influence the design of a game. Barab et al. (2010) defend that designers should take their own values into careful consideration, while Sandovar et al. (2016) also add the importance of carefully considering the ethical implications of their design decisions. They defend that considering values in the context of design is not enough, and one must consider values in the context of play, taking into account how a game might be interpreted by its players.

Other papers in this category chose yet a different approach. Kultima and Sandovar (2016) and Kultima (2009) explore the concept of game design values. Chiapello (2017) elaborates a discussion of Schön's concept of appreciative systems. These 3 papers focus on designer values and, specifically, how their values shape the decision making process during game design. Unlike the authors previously mentioned, these authors are not interested in the ways designers' values end up embedded in game systems: rather, they discuss what kind of values guide the design process (Kultima and Sandovar, 2016; Kultima, 2009) and how flexible designers' value-systems are (Chiapello, 2017).

4.5.4 The Context's Values:

In the categories discussed thus far, we have focused on games, players and designers, but we can also frame the relation between games and values from a wider perspective. Games are cultural artefacts, they, along with the designers who create them and the players who play them, exist within a cultural context and, as highlighted by Colăcel (2015), Navarro-Remesal and Zapata (2018) and Shaw and Warf (2009), games can reflect the values of the culture in which they are created.

The cultural context surrounding games, designers and players can help us understand how designers may be unaware of the values they are communicating or offer us a key to understanding how players perceive and interpret the values of a game. Understanding games as a cultural phenomenon allows us to inquire about how players interpret the values of a game from a culture they are unfamiliar with or even how our judgement of a game may change as our cultural values shift over time.

To understand how authors frame the relation between games and values, we have discussed a collection of perspectives. We have seen authors that recognise the influence of designers' values on game development, authors who highlighted that players' values can impact how they experience a game, authors who recognise that the constituent elements of a game can impact the values of that game, and also authors who acknowledge that the social context can impact the values emerging during game design or game playing.

The categorisation scheme we presented in Figure 4.6 is one possible way of organising this diverse set of papers, drawing attention to different kinds of relations and subjects (games, players, designers, culture). It should be used as a lens to help us look at values from different perspectives, dealing with their inherent complexity.

Understanding games as communicating values may be one possible way of combining these different perspectives. From the selected papers, we can say that designers have systems of values that guide the decision making process in game design. Designers may attempt to create games with the explicit purpose of communicating a value to its players, while other games might end up unintentionally echoing the values of their designers or even communicating completely unforeseen values depending on the context of play.

A game might not hold values by itself, but it can still, by means of its constituent elements, communicate or evoke values to its players. These values emerge during interaction, as they are perceived and later interpreted by players. Players also have values of their own, and these values help shape the way they interact with a game and with each other. Players' values can impact how they perceive their game playing experience and how that experience can, in turn, impact them.

4.6 RQ6: WHAT ELEMENTS PLAY A ROLE IN THE RELATION BETWEEN VALUES AND GAMES?

Similar to the process used to answer RQ2, in order to identify what elements play a role in the relation between games and values, text excerpts explicitly discussing the ways in which the relation between games and human values manifests were extracted from all identified papers. After extracting text excerpts from all 58 papers, these texts underwent a descriptive coding process (Leavy, 2014) identifying elements that, according to each paper, play a role in the relation between games and values. Figure 4.7 shows how many papers cite each of the identified elements.

It should be noted that the elements in Figure 4.7 simply represent the elements that were mentioned in each of the 58 selected papers. While some authors dedicated more time to discuss some of those elements, others only passingly cited broader elements as a way of exemplifying their views. Some elements are, therefore, more abstract and may encompass more specific ones. The identified elements in no way form a complete set of all elements involved in the communication of values, but they do cover a wide range of aspects related to games and shows how varied those elements can be.

As shown in Figure 4.7, there are papers highlighting how values can come, at least in part, from designers, as their values may influence the contents of a game as well as the way a game reacts to players actions within it. Still focusing on designers, other papers investigate the design process and how designers' values guide design decisions. Kultima and Sandovar (2016), for example, note that "*Developers' rationalisations of their design processes as well as design choices are often based on value propositions*" (Kultima and Sandovar, 2016, p. 64), while (Chiapello, 2017) describes values as tools designers use to evaluate situations that arise during design. They differ from other papers as their interest lies not on the values of the game itself, but on the ways values appear during the design process.

But the relation between games and values can also be influenced by other elements both internal and external to the game. Some of the most frequently identified elements come from the game itself. There are authors who identify the many features of a game, highlighting how these features communicate values to players. These authors cite elements such as game mechanics, in-game choices, rewards, rules, consequences, goals, user interface, failure conditions, success

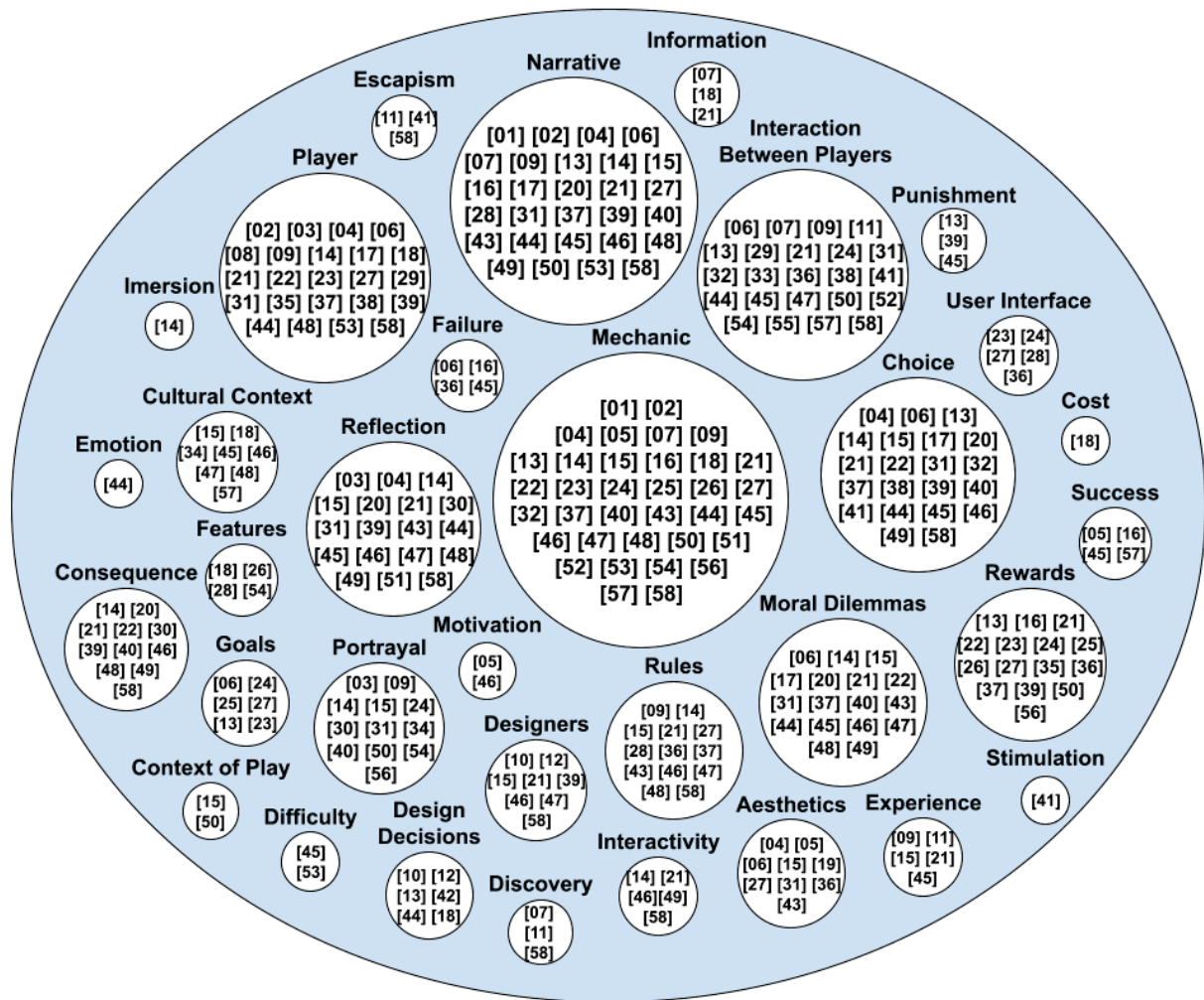


Figure 4.7: Elements cited that play a role in the relation between games and values, and the papers who cite them. The numbers indicate the ID of the papers as shown on Table 3.4

conditions, the presentation of information, punishment, difficulty and cost as playing a role in the relation between games and values. Some authors also acknowledged other elements related to how a game is portrayed, highlighting, for instance, the influence of narrative, moral dilemmas and aesthetics on this game-value relation.

Sicart (2003) has argued that the ideologies conveyed by a game do not come from its plot, but from its rules and gameplay. However, while these gameplay elements can play an important role for value-communication within a game, ignoring other aesthetic elements of a game can make us oblivious to some of the ways in which games can communicate values.

The rules that define how a game works, the kinds of actions available to a player and the ones that are forbidden, the goals and desirable states set up by a game, and the way it rewards players for attaining those goals or punishes them for failing are all elements that indicate, within gameplay, what kinds of play styles are encouraged, which ones are not, and which ones are not even allowed within the game's possibilities. These elements shape how a game is experienced and are important factors to consider when examining the kinds of values a game can communicate.

A game, however, is a complex artefact composed of many other elements. A game's portrayal of its world and its stories, the game's narrative, its visual and even musical styles, all these elements and more interact with one another to create a playing experience that will

be interpreted by a player in a specific context. We can even look at each of these elements in isolation, but, as (Flanagan and Nissenbaum, 2014) points out, a complete understanding of how values are communicated through gameplay requires us to study how all these elements work together to shape the meaning of a game.

Among identified papers, there are also authors who discuss how values can come from players themselves, highlighting that values of players might shape the way they interact with the game or recognising that players' value-systems can influence how they perceive or interpret a game. Values can even emerge from the interaction between players as they interact with each other, cooperate, and even shape the values of a gaming community.

The act of playing or interacting with a game also needs to be considered. Games' interactivity, the gameplay experience, or the emotions evoked by a game are all highlighted as elements that play a role in the relation between games and values. Playing games can encourage player reflection, offer the experience of discovery or exploration, the chance to escape one's reality, the feelings of engagement, motivation, stimulation, and even the context in which a game is played can alter the gameplay experience.

The experiences afforded by games, the emotions they evoke, the reflection they may trigger, and the context of play are all elements that are involved in the relation between games and values. To take these elements into account we need to consider not only the game itself but also the context of interaction and the related phenomena that emerge from said interaction. As previously discussed, the values a game can communicate do not come exclusively from the way different game features relate to one another, but also from the way players and other stakeholders interact with said features in a given context.

Finally, the cultural and political context surrounding a game can also play a role in the relation between games and values. Games may reproduce widespread prejudices, promote discussion about taboo topics, and encourage players to reflect about their social context. Game criticism can encourage discussions about the politics behind a game. Even changes in our cultural values can impact our notion of what constitutes a good game.

Though not a comprehensive list, the collection of elements involved with value-communication in games demonstrates the complexity of the relation between games and values. A relation that involves factors surrounding game designers, games, players and the social contexts in which games exist. On one hand, the values that guide the game design process play a role in shaping the structure of games. On the other hand, when stakeholders interact with and interpret the many constituent elements that make up these game, these elements can, together or in isolation, communicate values. How players and other stakeholders interact with and interpret a game, however, is influenced by a set of other factors, such as values of players themselves, the context of play, interactions with other player, and even the cultural background surrounding the game.

4.7 RQ7: WHAT VALUES ARE EXPLICITLY ADDRESSED IN EACH PAPER?

All the 58 papers discuss human values, but not all of them work with an explicitly set of values. As will be further discussed in Subsection 4.9, most of them choose to discuss values in a more general way, without ever limiting the scope of the discussion with a list of values, but there are 24 papers that present or discuss an explicitly defined list of values. The values explicitly cited in each of these 24 paper cover a wide range of values: from the more practical values of *Play* and *Progress*, dealing with players' goals and behaviour inside a game, to more abstract social ideals such as *Justice* or *Liberty*. To better understand the values cited in the identified papers, all

extracted values were classified according to the value framework proposed by Kheirandish et al. (2020) as shown in Figure 4.8.

Based on empirical findings and on a literature review encompassing published works covering the topic of human values in the social sciences, philosophy, and psychology, Kheirandish et al. (2020) compiled a list 170 values classed as 9 different value groups: (1) *Meaningfulness*, with values related to the search for meaning in life; (2) *Ecology*, with values related to caring for nature; (3) *Respect for oneself*, with values related to regulating oneself; (4) *Personal Development*, with values related to the development of one's abilities; (5) *Pleasure*, with values related to the enjoyment of something or being satisfied; (6) *Carefulness*, with values related to caring for others; (7) *Justice*, with values related to fair and just treatment; (8) *Respect for others*, with values related to connecting to others; and (9) *Status*, with values related to distinguishing oneself from others.

After attributing each extracted value to one of 9 value groups we can notice that some papers seem to give a greater focus to a few specific value groups. Unsurprisingly, as they investigate the educational value of digital games, Hong et al. (2009) focus on values grouped under personal development. The two papers investigating the link between consumption values and online gamer loyalty (Teng, 2018; Alghifari and Halim, 2020) mostly focus on values classified under the pleasure group, which is in line with their investigation of values related to enjoyment or fulfilment of player's expectations. The list of values presented by (Flanagan and Nissenbaum, 2007; Flanagan et al., 2007) serve only as examples, but the listed values mostly fall under the justice or respect for others groups, two groups that include values related to fairness in society or with social connections, which may indicate these authors' attention to social issues.

As shown in Figure 4.9, some value groups appeared more frequently than others. *Respect for Others* and *Personal development* were the groups with the values more frequently discussed, covering respectively 21.5% and 20.9% of all values extracted from the identified papers. The prominence of the *Respect for Others* value group might indicate that the identified authors, when considering the relation between games and values, are aware of the importance of considering social issues, citing values such as *Tradition*, *Sense of Belonging*, and *Diversity*. The presence of other values, such as *Creativity*, *Learning*, and *Experimentation*, may also indicate that identified authors acknowledge the potential of games for personal development of designers and players alike.

Values under the groups *Status*, *Respect for Oneself*, and *Ecology* were less frequent, respectively making up 7%, 4.1% and 2.3% of all values, but the values under the group *meaningfulness*, making up only 0.5% of all values, appeared significantly less than all others. This smaller frequency of these value groups could be a result of their specificity. While, for instance, it might be reasonable to expect a paper discussing an educational game about sustainability to consider values related to the *Ecology* group, it is also possible these values may not be as relevant in other research contexts. These less frequently cited values, however, can still provide insights to discussions about games. Values under the *Status* group, such as *Achievement* and *Peer Respect*, might serve, for instance, as a basis for discussions surrounding how players relate to one another, demonstrating their status in the game worlds.

It should be also noted that the value framework proposed by Kheirandish et al. (2020), while attempting to be as comprehensive as possible, may not be universal. The classification of each value extracted from the literature was not always self-evident, as the lack of formal definition for each value complicates adequate classification.

There are cases in which authors added some explanations for what the cited values are supposed to mean. Barreto et al. (2013), for instance, present a brief description of a few words explaining each of the values elicited from the participants of their study. Some authors, such as

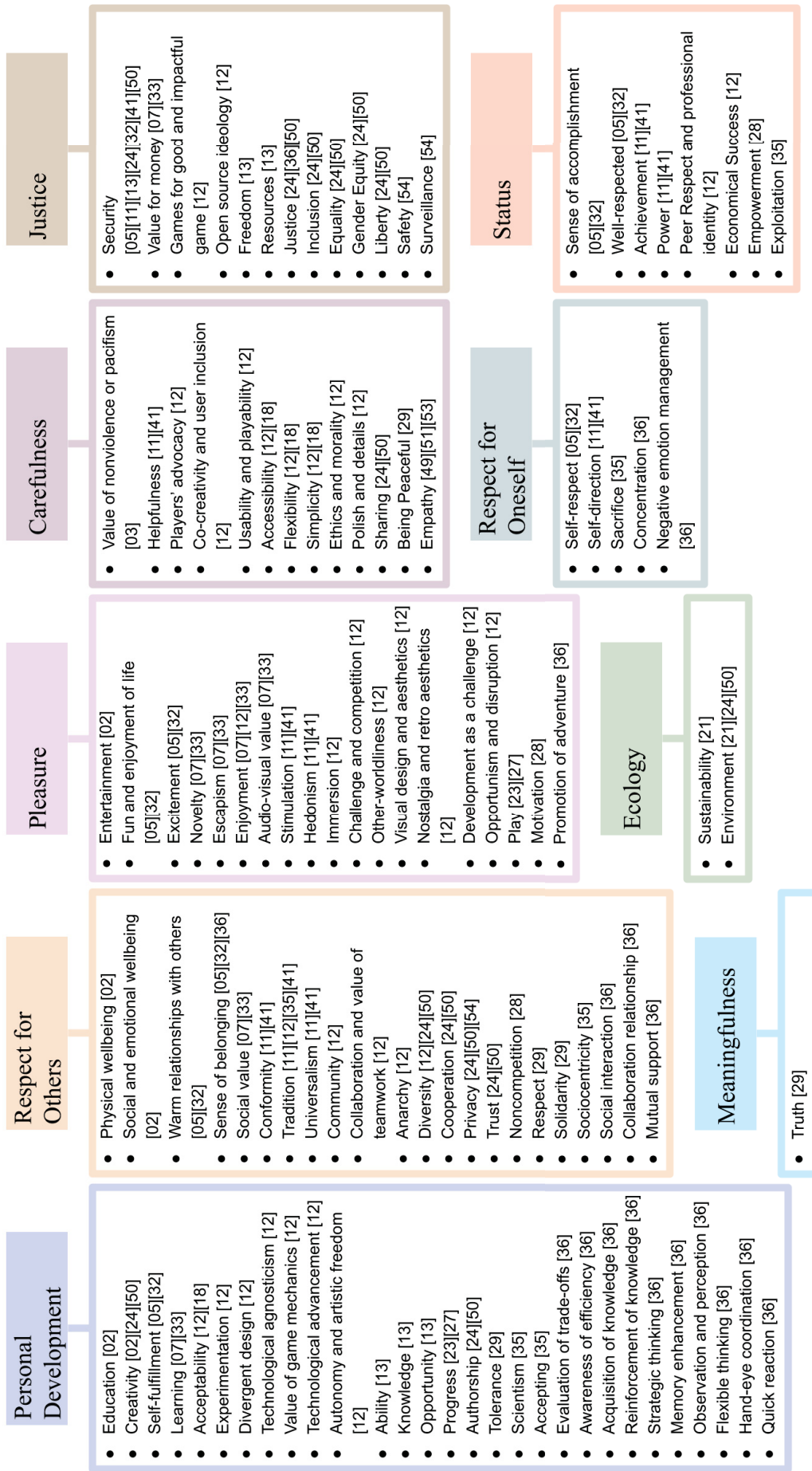


Figure 4.8: The values cited by each paper assigned to the value categories proposed by Kheirandish et al. (2020). The numbers besides each value indicate the ID, shown on Table 3.4, of the papers that cite them.

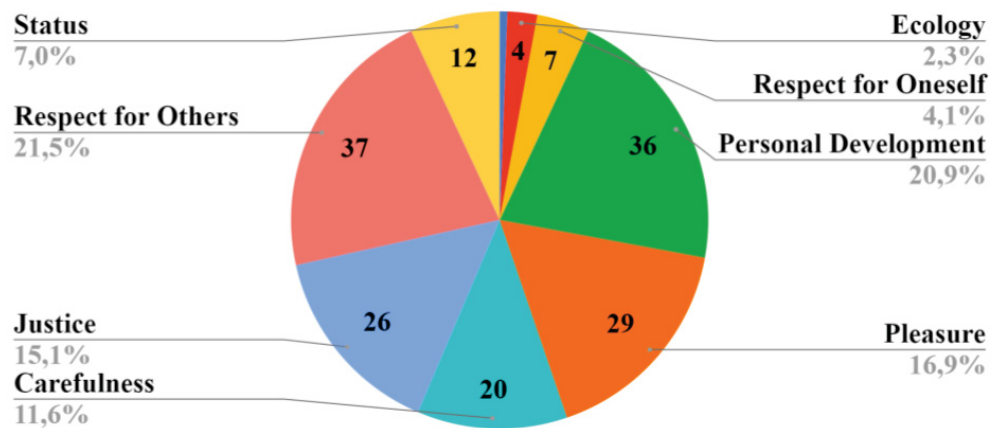


Figure 4.9: Distribution of values on each value category

Meyers et al. (2010), may not explicitly define all values, but their meaning can be understood from context. And there are also a few papers that simply do not present any explanation of the values they list (Flanagan and Nissenbaum, 2007; Yildiz Durak, 2019; Flanagan et al., 2007).

This lack of formal definitions can complicate comparisons between the values cited in each paper, as many values, such as *Liberty* or *Fairness*, can leave room for multiple interpretations that, in turn, could have significant impact for game design and analysis. But while this lack of explanations can pose difficulties for classifying the values from each paper, we can nonetheless ask whether there is a good reason for leaving those explanations absent or if the lack of detailed explanations indicate a deeper problem with the literature on the relation between games and values.

To answer this question we must first acknowledge the heterogeneous nature of the set of papers identified in the present mapping. As we mentioned, there are papers that define a set of values to serve as the focal point of their studies (Rothmund et al., 2015; Teng, 2018; Antle et al., 2014; Szykman et al., 2018; Yildiz Durak, 2019; Alghifari and Halim, 2020; Shaza et al., 2021; Antonacci et al., 2017; Roussos and Dovidio, 2016; Meyers et al., 2010). In such cases, understanding what authors mean by the values they list is essential if we are to comprehend the contributions and limitations of each paper. Meyers et al. (2010), Roussos and Dovidio (2016), Rothmund et al. (2015), Teng (2018), Szykman et al. (2018), and Alghifari and Halim (2020), for instance, are all clear when discussing the values they study. Yildiz Durak (2019), on the other hand, never explicitly define the values they analyse, using instead a method (and values) as proposed by previous authors (Kilicer et al., 2017).

There are cases where a lack of explanations may be justified. Flanagan and Nissenbaum (2007), as well as Flanagan et al. (2007), list a series of values that serve simply as an example and an in depth discussion about their meaning would be beyond the scope of the papers in which they appear. Flanagan and Nissenbaum argue that, for each design context, designers should discover the values relevant for the design team and stakeholders and then discuss the meaning those values should take for the project at hand. In such scenarios, a lack of explanations is not the same as a lack of rigour, but serves as an intentional decision that invites designers to consider the meaning of the values they take into consideration when designing a game.

This subjective nature of values poses a difficult challenge when it comes to formally defining them. And the lack of clear definitions for complex and abstract concepts, like Justice or Equality, may very well be unavoidable. But in these cases it is still necessary for authors to acknowledge how values may have different meanings for different people in different contexts.

Recognising how the meaning of a value can change from person to person is a first step towards knowing whether a formal definition is essential or detrimental for a research.

4.8 RQ8: WHOSE VALUES WERE CONSIDERED IN IDENTIFIED PAPERS?

When investigating human values and their relation with games, the question of whose values are being taken into consideration is answered differently by different papers. Some authors, such as Roussos and Dovidio (2016), look at the values of players, investigating how they may be impacted by a game. Other authors, such as Chiapello (2017), bring forward discussions about the values held by designers. And some authors, like Flanagan et al. (2005b), still recognise the importance of identifying the values designers want to embed in games while also paying attention to the values held by players and other stakeholders.

Figure 4.10 shows different stakeholders who were explicitly acknowledged in the selected papers, by using the stakeholder identification diagram (SID). SID is an artefact from Organisational Semiotics (Stamper, 2001) used to aid the identification of stakeholders affected by a system being designed. In SID, each layer corresponds to a different kind of stakeholder. Closer to the centre of the diagram are represented stakeholders who more directly involved with a system, such as designers and users, while the outer layer contains stakeholders indirectly affected by the system, such as those who may not use the system but may still be affected by it. Using SID to organise the different stakeholders considered by different authors (Figure 4.10), we can see what stakeholders are more frequently mentioned and what types of stakeholders tend to be favoured.

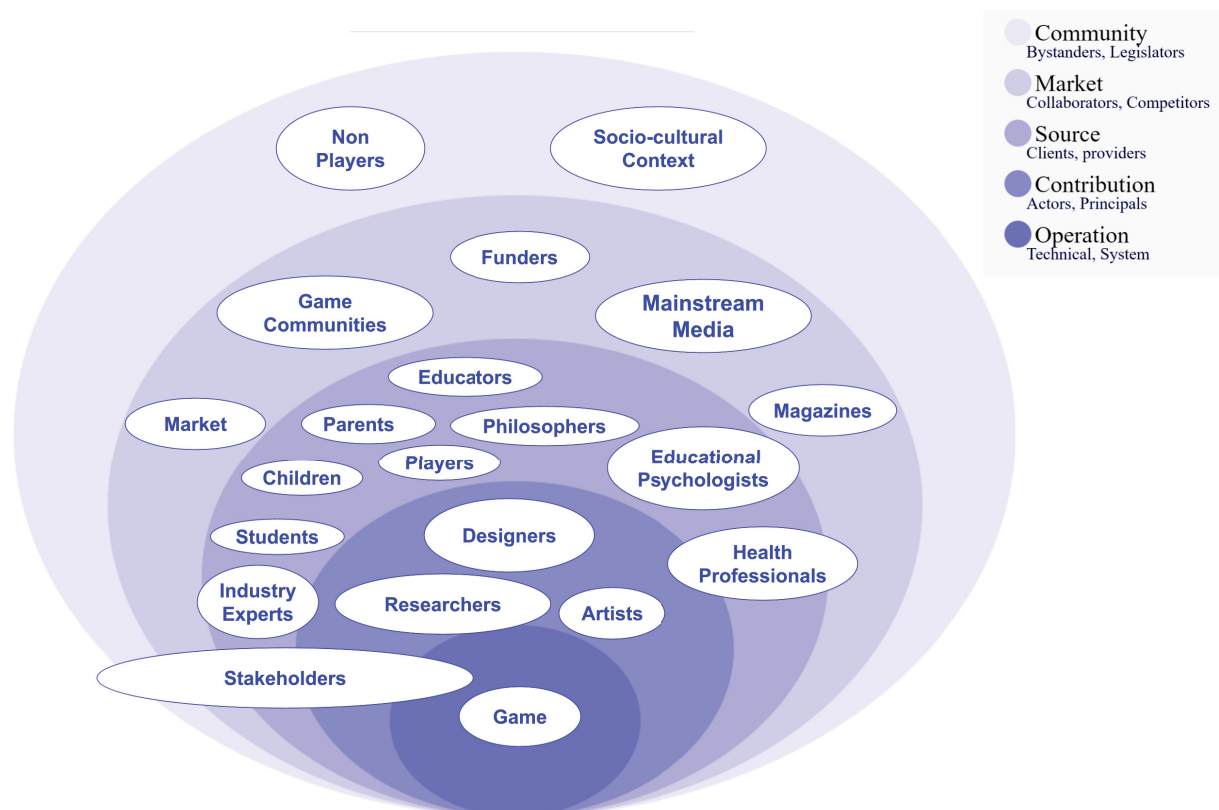


Figure 4.10: Stakeholders considered in the 58 identified papers categorised according to the stakeholder identification diagram

All papers discuss the values from at least some stakeholders in their analysis, though there are authors who are more specific than others or consider a greater variety of stakeholders. Some authors explicitly highlight the importance of taking the values of direct and indirect stakeholders into consideration (Flanagan and Nissenbaum, 2007; Flanagan et al., 2005b; Meyers et al., 2010; Barreto et al., 2013; Sandovar et al., 2016). Among them, there are those who cite examples of different stakeholders (Flanagan and Nissenbaum, 2007; Flanagan et al., 2005b; Meyers et al., 2010; Barreto et al., 2013), but there are also those that simply state the importance of considering different stakeholders without explaining what kinds of stakeholders should be considered Sandovar et al. (2016). This a lack of specificity from Sandovar et al. may come from an intentional decision to avoid presenting a limited set of stakeholders, but Flanagan et al. (2005b) gives us a different approach. The presence of varied examples as the ones presented by Flanagan et al. shows us how diverse these authors' perspective is.

As Figure 4.10 illustrates, values from a variety of different stakeholders were at some point cited, discussed or analysed. But we can also see that stakeholders closer to the game seem more numerous than the ones further away. Most of the stakeholders cited in the 58 papers are either directly involved in the design process (contributors), or are directly impacted by it (sources). This focus on contributors and sources may result from how readily identifiable those kinds of stakeholder are, but it could also indicate that indirect stakeholders are not being considered frequently enough.

A significant number of authors focused their discussions on the values of players (considered in 42 papers), games (considered in 15 papers) and designers (considered in 18 papers), an observation that is not surprising given that games are at the centre of any investigation of the relation between games and values, and given that players and designers are the two stakeholders more directly involved with games. Among the stakeholders less cited, there are examples whose importance may change depending on the context: stakeholders like Students (Yu-ling, 2015), Educational psychologists (Hong et al., 2009) or Educators (Flanagan et al., 2005b; Barreto et al., 2013) can become more relevant when discussing the values of educational games. Other stakeholders, such as player communities (Vanacker and Heider, 2011; Toma et al., 2015), the market (Shaw and Warf, 2009), funders (Flanagan et al., 2005b), gaming magazines (Toma et al., 2015), mainstream media (Colăcel, 2015), non-players (Rothmund et al., 2015) and the socio-cultural context as a whole (Colăcel, 2015; Navarro-Remesal and Zapata, 2018; Mariani, 2016; Mariani et al., 2017; Jerrett et al., 2020), can raise complex questions about their potential impact on the values a game can communicate.

Considering the values of designers can help us understand how their biases and world views may influence the games they create. Understanding the values of players can help us grasp what they expect from games, how they interpret and how they interact with them. But individual players and designers are not the only stakeholders capable of influencing the relation between games and values. Players' communities can impact how players behave in a game (Vanacker and Heider, 2011) and, along with game journalism, can help shape discussions surrounding the values a game communicates (Toma et al., 2015). Designers and their decisions could be influenced by the interests of funders and by the values of the industry (Shaw and Warf, 2009) or of the wider socio-cultural context (Colăcel, 2015; Navarro-Remesal and Zapata, 2018; Mariani, 2016; Mariani et al., 2017; Jerrett et al., 2020).

There were also 15 papers who considered the values of the game itself. At first glance this approach may seem to detach the concept of values of any human subject, as if we were discussing not the values of any one person but the values of an object. But at a closer inspection, the choice not to attribute the values that emerge from gameplay to an individual highlights the complexity of value communication in games. As interaction does not occur by itself, the values

of a game could be understood as the value that are communicated when someone interacts with the game. As the values communicated by a game are not dictated solely by the designer and nor are they dependent only on a player's interpretation, the values that emerge from gameplay might not accurately reflect the values of any one person but be the result of the interaction between the many factors that, together, affect how a stakeholder might interpret the values a game can communicate.

Ultimately, we have seen, among identified papers, authors considering the values communicated by games, as well as the values of designers, players, and other stakeholders directly or indirectly impacted by games, but the specific stakeholders cited in each paper vary from author to author. Authors like Flanagan et al., for instance, cite a variety of stakeholders as examples. There was, nonetheless, a tendency of researchers to focus on the values of those directly involved with games, like players and designers. Stakeholders in the Market and Community levels, for instance, were never cited in more than 5 papers. The values of other stakeholders, however, should also be considered. Acknowledging the values of funders, for instance, might help us understand how economic decision influence game design and considering the values of non-players might also give us insights into the impact games may have outside of gaming communities. In order to understand the relation between games and values, researchers and designers alike should continue to consider the values of players, and designers, but should nonetheless take other indirect stakeholders into account.

4.9 RQ9: DO VALUES EMERGE FROM CONTEXT?

When discussing the relation between games and values, some authors centre their discussions around specific values while others choose to be general, not tackling any specific set of values. Choosing whether to work with a predetermined collection of values, or to work with values that emerge from the context, as well as the kinds of discussions resulting from each choice, can have significant implications for the way we perceive the relation between values and games. And among the 58 selected papers we can identify a few different approaches, summarised in Figure 4.11.

Among the 58 selected papers, 21 of them start off with or propose a specific set of values. Other 6 papers work with a number of values elicited from their respective contexts. The remaining papers either do not build a list of values or only mention a handful of values as practical examples.

While almost half of identified papers (27) do list a specific set of values, 7 papers assume that a predefined list of values can be relevant in different contexts. These 7 papers either use a list of predefined values proposed by a different author, or they propose a list of values to serve as a basis for other researches, analyses or evaluations. Kheirandish and Rauterberg (2018), for instance, explicitly create a framework with an easy to follow list of values to be considered; Hong et al. (2009), with the help of experts, determine a list of 74 educational values used to assess the educational values of video games; and Kultima and Sandoval (2016) proposed a framework with a list of game design values to aid future research. Francis et al. (2016); Comello et al. (2019) and Griebel (2006) all use values listed by Schwartz (1992) and Wang and Yu (2017) focused their analysis on the value-systems modelled by Graves (2005). Francis et al. (2016) and Comello et al. (2019) both recognise that, while useful, Schwartz's values system may need to be adapted to the research context in order for researchers to account for values particular to specific groups, but in these 7 papers, even when they recognise that their lists are not exhaustive, we find the underlying assumption that it is possible to determine a set of values that are relevant regardless of the specificities of a problem's context.

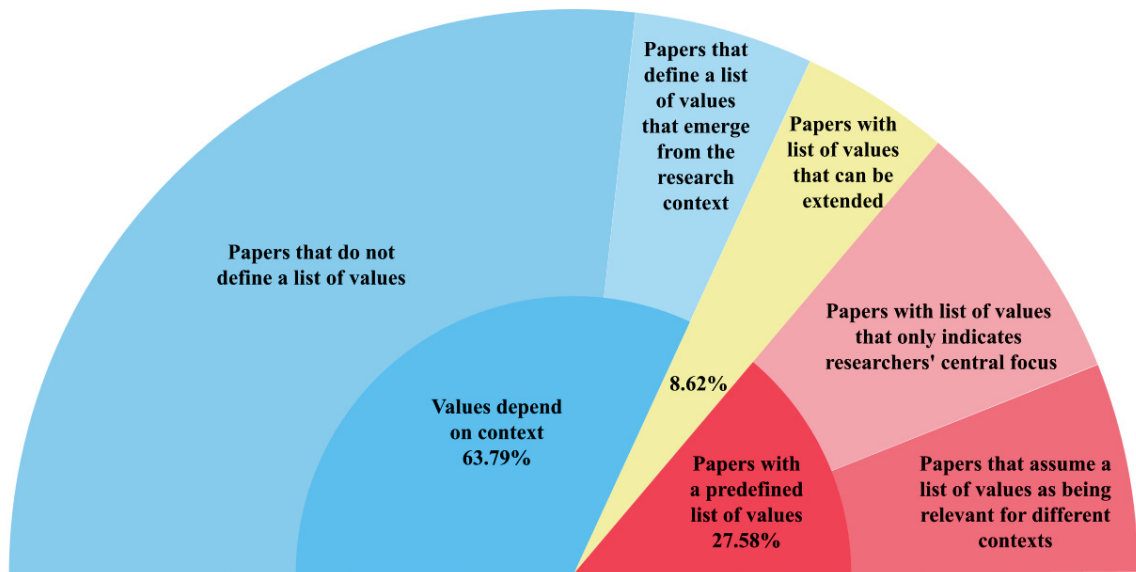


Figure 4.11: Diagram categorising papers as to whether they work with a predefined set of values or understand that values are context dependant

Other authors, however, recognise how relevant values may change depending on the context. Of the 9 papers that do list a specific set of values, 5 (Gotterbarn and Moor, 2009; Barr et al., 2006; Flanagan and Nissenbaum, 2007; Barr et al., 2007; Flanagan et al., 2007) mention a list of values only as examples or starting points that should be expanded according to the needs dictated by the design context or by the analysis being made. Some authors, on the other hand, only work with a specific set of values as a way to delimit the scope of their research (Rothmund et al., 2015; Teng, 2018; Antle et al., 2014; Yildiz Durak, 2019; Alghifari and Halim, 2020; Shaza et al., 2021; Antonacci et al., 2017; Roussos and Dovidio, 2016; Meyers et al., 2010). The choice to focus their research on a specific set of values may indicate what value these researchers consider important. It does not, however, mean that these researchers assume that the values they work with are the only ones worthy of consideration. The scope of their research may reveal the values held by the researchers themselves, but these researchers are not proposing a list of important values to be considered regardless of circumstance.

As illustrated by Figure 4.11, most authors identified, by either directly acknowledging that relevant values emerge from the context of the problem being addressed, or by discussing the relation between values and games in a more general way without limiting their analysis to any specific set of values, seem to explicitly or implicitly recognise this contextual nature of values. This does not mean, however, that the values listed by Kheirandish and Rauterberg (2018), Hong et al. (2009) and Kultima and Sandovar (2016) are not useful.

As Kheirandish and Rauterberg (2018) point out, a predetermined list of values can be a useful way of guiding an inexperienced designer through a value-sensitive methodology, but we should nonetheless be aware of their limitations. Different contexts may require us to consider different sets of values, and values relevant in one context, might not be as relevant in another. No predetermined list of values can account for the specificities of a given research or design problem, and researchers and designers should, therefore, remain open to recognising the values that arise in a different context.

4.10 RQ10: HAVE VALUE-CONFLICTS BEEN CONSIDERED?

When studying games from a value-centred perspective, we should also consider value-conflicts and how they might influence the design process and gameplay experience. While creating a game, it is possible that designers might have conflicting ideas about the kinds of values their game should communicate. Similarly, it is possible that, when perceived and interpreted by players, different game elements might contradict each other by communicating conflicting values.

The acknowledgement that conflicts between values are a topic worthy of consideration is reflected in the discussions presented in the identified papers, as many authors investigate or at least recognise value-conflicts in their research. As we can see in Figure 4.12. A total of 24 of the 58 papers, for instance, dedicated time to explore the significance of such conflicts. While 4 of these papers (Bleumers et al., 2015; Kultima and Sandovar, 2016; Gotterbarn and Moor, 2009; Kultima, 2009) only briefly mentioned value-conflicts, other papers that explicitly addressed the topic discussed different kinds of value-conflicts and their consequences for designers and players, some even attempted to suggest strategies and approaches for dealing with them as they appear.

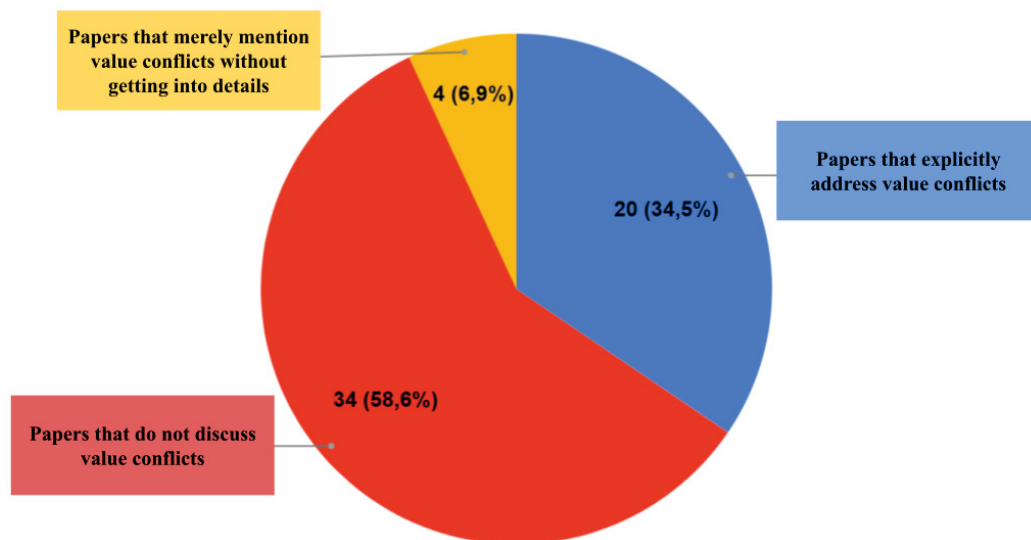


Figure 4.12: Distribution of papers that acknowledged value-conflicts

The selected papers discuss multiple kinds of value conflict that can be discussed either in the context of design or in the context of play. A number of papers that pay attention to value-conflicts (9 of 24 papers) do so by focusing on conflicts that appear during design. These papers acknowledge, for instance, that different stakeholders might have conflicting ideas about what values should guide the design process. Among these we can also find discussions about how designers should carefully consider the values they want to communicate in a game and how they are communicated, as the lack of a critical examination of a game's values and implementation can lead to different aspects of the game communicating conflicting values. Barab et al. (2010) briefly discuss conflicts between designers and players, as they raise questions about designer intentionality and player agency. They highlight that the values of designers may influence the narratives they create, but regardless of their intentions, they cannot fully control the experiences of players. As the values guiding designers are not necessarily the same as the values

guiding players, the act of game developing involves designing for an experience rather than the experience itself. The approach presented by Chiapello (2017) differs from that of other authors as the author does not discuss the conflicts occurring during play as the game communicates values that contradict those of the player, nor does it investigate the conflicts that occur during design when deciding what values should be communicated by a game. The author recognises that every design problem requires different solutions and focuses on the value-systems of the designers themselves. They highlight how the value systems of designers may conflict with the need that arise from a design problem and argue that designers should be flexible enough to allow their value systems to adapt to new problems as they arise.

Value-conflicts may also occur outside the design process. Some papers, for instance, discussed how conflicts may emerge from the interaction between players in multiplayer games, as players behave according to different sets of values (Khoo, 2012; Antle et al., 2014; Vanacker and Heider, 2011). In some cases, such conflicts can have harmful consequences for players (Vanacker and Heider, 2011), while in others, conflicts can lead discussions between players facilitating moral reflection (Antle et al., 2014) and have the potential to improve understanding and communication within a player community (Khoo, 2012). Though less frequently mentioned, the values communicated by games can come into conflict with the values of stakeholders, as a stakeholders' perception and interpretation of a game can lead to different stakeholders arriving at different judgements on the morality of a game (Rothmund et al., 2015; Young, 2015).

Value-conflicts may also be integrated into the gameplay experience. As highlighted in 8 papers, value-conflicts can be intentionally crafted as part of the gameplay experience, triggering moral reflection by creating situations where players are forced to consider the values by which they play and the moral consequences of their actions (Khoo, 2012; Barab et al., 2010; Sicart, 2009, 2010; Iten et al., 2017; Heron and Belford, 2014; Whitby et al., 2019; Antonacci et al., 2017).

Among the identified papers, we see authors discussing conflicts that may exist between the values of designers, or between the values of players, as well as conflicts between the values of a stakeholder and the value-message a game may communicate. Under specific and controlled circumstances, value-conflicts between players may be desirable, as in the case discussed by Antle et al., in which conflicts led to moral reflection. Other conflicts, such as in the case of conflicts between designers negatively impacting the game design process, are problems that need to be resolved.

4.10.1 RQ10.1: How have such conflicts been handled?

Among the papers who discuss value-conflicts, there are those that suggest different ways of handling the problems that might arise from them. Chiapello (2017) investigates the situation in which the designer's values are inadequate for designing an appropriate solution for the design problem at hand. Chiapello understands values, in the context of design, as the principles which will guide the designers' judgement during the design process, and argues that designers that hold too tightly to their own values might become paralysed when trying to solve a design problem. While Chiapello does not explain how this problem should be solved, the author still suggests that designers use their own values not as strict rules but as more flexible guidelines that should evolve and adapt in accordance with the design problem at hand.

Other papers discussing ways to handle value-conflicts focused on how it is sometimes impossible to properly implement conflicting values. There are cases, for instance, when a design decision based on a particular value goes against another value. For dealing problems that arise from value-conflicts during design, different strategies were suggested. One such strategy involves trying to find a way to dissolve the conflict without any compromise (Flanagan et al.,

2005b,a; Flanagan and Nissenbaum, 2007). In this case, authors recommend that designers carefully study the values they hold and consider alternative design decision that are compatible with said values. Another strategy involves negotiating which values should be prioritised and finding an acceptable trade-off (Flanagan et al., 2005b,a; Flanagan and Nissenbaum, 2007; Meyers et al., 2010; Szykman et al., 2018; Lin and Sun, 2003). In this case, when value-conflicts cannot be dissolved, designers should examine which values they consider more important to the context at hand, either finding a compromise between conflicting values or choosing to prioritise one value instead of another.

Flanagan et al. (2005a) offer the most complete list of possible strategies to deal with value-conflicts, proposing both the compromise and the trade-off approach, while other papers either proposed a trade-off approach or were too vague in their descriptions of how to deal with conflicts. Kultima and Sandoval (2016), for instance, only briefly mention the possibility of conflicting designer values, arguing that their framework can help to negotiate a solution, without explicitly describing what that negotiation entails. Sandoval et al. (2016) also highlight a series of ethical dilemmas that could be understood as value-conflicts that can occur during gameplay and should be considered during design, but no explicit approach to deal with such problems is suggested, the paper only focuses on drawing attention to the importance of ethical considerations during design. While not discussing value-conflicts per se, Young (2015) highlighted how conflicts in judgement can occur between different stakeholders with similar value-systems. They also discuss how a consensus may be reached by different stakeholders with different values that arrive at a similar moral judgement about a game.

There are, however, cases in which value-conflicts are desirable. Khoo (2012) and Antle et al. (2014), while discussing conflicts between players during gameplay, highlight that such conflicts can lead to constructive discussions between players. Antle et al. (2014), for instance, explicitly creates a game scenario where players must discuss their values in order to choose a course of action in the game. Other papers discuss how value-conflicts may be a tool for triggering moral reflection by presenting moral dilemmas, or forcing players to confront the consequences of acting according to a specific set of values (Khoo, 2012; Barab et al., 2010; Sicart, 2009, 2010; Iten et al., 2017; Heron and Belford, 2014; Whitby et al., 2019; Antonacci et al., 2017). Barr et al. (2005, 2007), while not among the 24 papers explicitly addressing the issue of value-conflicts, chose to use a method they called oppositional play as a way of identifying the value-systems communicated by a game. According to this approach, *“By seeing how the game responds to opposed forms of play, we gather evidence for the values that are emphasised in the gameplay”* Barr et al. (2007, p. 188). These authors do not discuss value-conflicts per se, but their method highlights how such conflicts can be artificially constructed during play as a useful way of bringing to light the values a game communicates through its gameplay elements. In such cases, value-conflicts are not problems to be avoided but rather tools that, when carefully implemented, can allow a game to communicate specific messages.

From the internal conflicts of designers' value-systems to the complex interplay of game elements and stakeholder's interpretation of a game's message, discussions related to conflicting values in the literature highlight how value-conflicts can take different forms and have varying consequences. Designer's value-systems should be flexible enough for them to be capable of dealing with varied situations, but it is nonetheless useful for designers to have a clear vision of what values a game should communicate. How this communication takes place can vary from game to game. Some games might force the player to experience the consequences of a given set of values, others might simply create possibilities for players to explore different values by making multiple choices or discussing and interacting with other players.

5 DISCUSSION

The authors identified in the systematic mapping demonstrate that the relation between games and values is a multifaceted phenomenon that can be approached from multiple perspectives. There are authors who focus on the values held by designers, acknowledging the influences they have on the game design process. Others centre their attention on players, highlighting that games can trigger moral reflection and influence players' values, or that different players might express different values when playing. There are author who focus on the game itself, arguing that games and its structures have values embedded in them and can support, constrain or communicate values. And there are authors who acknowledge the role played by the socio-cultural context in the relation between games and values.

When acknowledging factors and actors involved in the relation between games and values, the identified authors cite a variety of elements, both internal and external to games. There are those citing the game itself, and its constituent elements, such narrative, gameplay mechanics, rules, objectives and others. There are also those who highlight elements, such as the values of designers, the values of players, interactions between players and even the socio-cultural context, as important factors involved in the relation between games and values.

Different authors consider the values of a variety of stakeholders. Their discussions highlight the importance of considering the values of designers and players, directly involved with game playing or game design. There are also those who acknowledge the importance of considering the values of indirect stakeholders, who may not be directly involved with games, but can nonetheless be impacted by them or contribute to their design. When it comes the what values one should consider, most papers identified in the literature recognise that values depend on context, and the values relevant in a given situation may not be as important in another.

A broad understanding of the relation between games and values must be capable of encompassing these many perspectives identified in the literature. It should allow us to think about designers, players, stakeholders, their values and how they relate to games. But before we describe how games relate to values, we must first discuss how we are to understand values in a way that allows us to consider the many values different stakeholders may hold in different contexts.

5.1 A SEMIOTICALLY INSPIRED DEFINITION FOR HUMAN VALUES

As previously discussed, different authors adopt different understandings of what exactly is a value, and the focus of each paper can shift the attention of its author to different kinds of values. A number of identified papers, for instance, focused specifically on moral or ethical values. They discuss how stakeholder's judgements about a game are influenced by their moral values (Rothmund et al., 2015; Young, 2015), investigate game's potential as moral educators (Khoo, 2012; Schrier, 2017), and discuss the design and impact of ethical gameplay and moral dilemmas in games (Sicart, 2005, 2010).

The discussions in these papers are related to people's notions of 'right' and 'wrong'. Moral or ethical values in this sense are more than simple evaluations of objects and situations, but assume deontic characteristics. When Young (2015) discusses how different people judge violent games, the author is not simply discussing how people evaluate those games as good or bad, but also whether or not these games *should* exist as they are, whether they are moral or immoral. Similarly, the many discussions about the design of games with complex moral choices

are not simply about creating experiences where players can act in whatever way they prefer, but about creating situations where players can consider the moral implications of their actions and allowing players to think about how they *should* act.

Moral and ethical values were among the issues discussed in the identified papers, and should undoubtedly be considered if we are to understand what values are and how they relate to games. But moral and ethical values are not the only kinds of values we should consider. Schwartz et al. (2012) describe values as trans-situational goals that guide people's behaviours, Rokeach (1973) defines values as preferable modes of conduct or end-states of existence. Friedman et al. (2008) broadly explain values as that which is important to a person or group. All these definitions for values do not rely on notions of morality and, while they are not incompatible with moral and ethical values, they also do not depend on deontological assumptions. In other words, these notions of values that appear in the literature encompass the values by which people act and not only the ones by which people think they *should* act. Humans are, after all, complex beings capable of holding multiple (and sometimes contradictory) values and the values that guide a person's actions may not always align with the values by which they believe they *ought* to act.

This complexity only increases when we start to consider not only the values by which people act, but also the values by which they play. Huizinga (2014), when trying to identify the defining properties of play, notes how games are temporally and spatially separated from the real world. Within the magic circle of play we find a world with its own order and, as we have seen in the selected papers, this separation between game world and physical world, though not always as clear as Huizinga makes it seem, can have notable impacts on the values people express when playing games.

Players within a game find themselves in a context different from that of the real world and may not always act according to the same values that guide their actions in real life. The narrative and gameplay possibilities afforded by games, for instance, may offer players an opportunity to explore different values within the safety of the virtual world (Barr et al., 2005, 2007; Sicart, 2009). People may be morally disengaged with the games they play, undermining the moral implications of their in-game decisions (Dechering and Bakkes, 2018; Toma et al., 2015). They may act in ways that are egoistic, but strategically advantageous for them (Nay and Zagal, 2017; Gotterbarn and Moor, 2009). Some games can even use this conflict between players' real life values and their in game behaviours as a way to encourage moral reflection (Navarro-Remesal and Zapata, 2018; Heron and Belford, 2014).

When investigating the relation between games and values we can note that, when constrained by the rules and objectives of a game, players may favour certain types of behaviours in order to achieve success in the context of that game (Barr et al., 2007). Or even that, by interpreting the elements of a game and the possibility spaces they create, player can "*read*" from a game certain values with which they themselves do not agree (Bogost, 2008).

What exactly can be considered a value can change depending on which definition we use, and the specific design or gameplay context may impact the values by which people play. Whatever definition we adopt must, therefore, be broad enough to allow us to consider as many identified value-related phenomena as possible, while still considering the context of interaction. The definition proposed by Pereira et al. (2018) might be a useful starting point for the development of a value-centred player computer interaction. Drawing from Pierce and Buchler's (1955) semiotic theory, they allow us to take into consideration both the relational nature of human values and the expressive nature of games.

In their semiotic theory, Pierce and Buchler define a sign as "something which stands to somebody for something in some respect or capacity" (Pierce and Buchler, 1955, p. 99). With this definition, Pierce and Buchler draw attention to the relational nature of signs, as they

stand between an object being represented and the idea of that object in the mind of someone interpreting the sign ¹. Drawing on Pierce's definition of sign, Pereira et al. define values as "something that denotes importance to somebody for something in some respect or capacity." (Pereira et al., 2018, p. 6). By proposing this definition Pereira et al. recognise that values do not come only from inherent properties of an object nor exclusively from the mental capacities of a subject, but they arise from a contextualised relation between an object being valued and a valuing subject (Pereira et al., 2018). This particular understanding of a value as a context dependent relational property between an object and a subject has some advantages. It allows us to consider both the objective properties of an object being valued and the subjectivity of a value attributing subject all while acknowledging that the relation between subject and object may change depending on the social context. In the case of digital games, it allows us to consider the defining characteristics of games with their constituent elements, how they relate to the stakeholders that interact with games and how the context of interaction can affect this relation.

This definition also has its limitations. It could, for instance, be seen as focusing more on individuals and not as much on social groups. Pereira et al. (2018) recognise that values of an individual may change depending on the social context, but the definition of values as something that denotes the importance of something to somebody, while capable of explaining how values change from individual to individual, may not be capable of accounting, on its own, for broader cultural phenomena, such as the shared values of a given community and how those values can shape the values of individuals within those communities. That said, while this definition for values may focus on the values of individuals, it is also not incompatible with a broader cultural perspective. This limitation may point towards future improvements, but it does not rule out the validity and usefulness of this definition for investigating the relation between games and values.

Another possible limitation involves the wide number of value-relations that can be described by this definition. As with the definition proposed by Friedman et al. (2008), the definition for value defended by Pereira et al. (2018) does not specify what kinds of things can be considered important. Under this definition, anything, from physical objects to people, situations and ideas, can serve as the basis for a value as long as someone considers it important in some respect or capacity. It could be argued that the all-encompassing nature of this definition includes such a wide range of different phenomena that its usefulness as a description of values is compromised. When it comes to investigating the relation between games and values, however, and more specifically, when it comes to considering the varied perspectives of different authors on the topic, the flexibility afforded by the definition proposed by Pereira et al. can be advantageous. This definition of values shares, with previously mentioned definitions, the advantage of including, but not being limited to, moral and ethical values. Under this definition we could, for instance, consider how players relate to notions of morality when they are forced to make a decision about harming or helping a character in a game, but we could also consider how important a good score is to the same player as they attempt to maximise the number of points they get in a particular game level. This definition, thus, allows us to consider values of different kinds, from the more abstract values, such as those dealing with moral decision making, to more concrete values, such as those related to pragmatic decisions that may emerge during design or gameplay situations.

We can also join this definition for value proposed by Pereira et al. (2018) with the understanding that values can serve as guiding principles for people, as defended by Schwartz et al. (2012). In this way, we recognise a value as that which denotes the importance that something has to someone in a given context and how this importance can guide the actions of this someone

¹Pierce and Buchler describe this semiotic process as a triadic relation involving (i) the *sign*, also called *representamen*, (ii) the *object* to which a sign refers; (iii) and the *interpretant*, the idea a person has of the object, a new sign resulting from a person's interpretation of the representamen (Pierce and Buchler, 1955)

in that context. A person, for instance, might consider gender equality as an important objective that needs to be achieved, and this value may guide this person to take political actions towards making gender equality a reality in their social context. This specific understanding may be useful if we seek to understand not only the values of different stakeholders, but also the different ways in which these stakeholders and their values relate to the way they interact with games. Equipped with the perspectives of a variety of game scholars investigating the relation between games and values and with a definition of what value are and how they guide peoples actions we can now combine this understandings in order to build a broad description of the relation between games and values.

5.2 TOWARDS A BROAD UNDERSTANDING OF THE RELATION BETWEEN GAMES AND VALUES

The relation between games and values is a multifaceted phenomenon influenced by a series of elements and actors. There are authors discussed in the previous chapter highlighting that the value-systems of designers guide their decision making process during design and how their values can lead to biases in games' representations of reality. They discussed how games, with their narratives, gameplay mechanics and other constituent elements, can communicate or support, constrain and promote certain values. Many authors also discuss the role of players and how they impact and are impacted by games, discussing how the values of players influence the way they interpret and interact with games, how games can encourage reflection, and how games can influence the values of players themselves. Some authors still recognise that all these phenomena occur within a larger socio-cultural context by acknowledging how shared cultural values can also influence games.

By exploring the multiple aspects of the relation between games and values through the lenses of the semiotically inspired definition for value we are adopting, we now start building an understanding of this relation that accounts for all the varied perspectives identified in the literature. To do this, we will follow the perspectives presented in Chapter 4 Section 4.5, and analyse the implications of our understanding of value for games. Firstly, we discuss the relation between games and values from the perspective of designers, then we discuss games themselves and how they may communicate values, afterwards, a discussion of how values emerge from the ways players interact with and interpret games, and, lastly, a brief discussion of possible ways a given cultural context can impact the relation between games and values.

5.2.1 Understanding the relation between games and values from the perspective of designers

Firstly, we inquire about how the definition for value proposed by Pereira et al. (2018) can help us understand the relation between games and values from the perspective of designers. Some authors highlight how design values impact design decision during game design (Kultima and Sandovar, 2016; Kultima, 2009; Chiapello, 2017), acknowledging that the values of designers can influence the games they create. According to our adopted definition, values are what denotes importance to somebody for something in some respect or capacity, and the values of individuals guide their actions and behaviours in a given context. In this case, the values of a designer could be understood as a relation that denotes the importance of something to the designer, or design team, in question. It follows, then, that the values from designers can have an impact on games they create as they influence designers actions during game design.

If we look at discussions surrounding design values from Kultima (2009) and Kultima and Sandovar (2016), we find lists of things (such as accessibility, immersion, enjoyment and

others) that, in some respect or capacity, can be deemed important to a team of designers working on a game. For every designer, the degree of importance and the way in which these things are important can change. As we understand that values, as Schwartz et al. (2012) defend, can serve as guiding principles, then the things which designers hold to be important can guide their design decisions and may tend to be prioritised during game design. If, for example, a designer believes that accessibility is a property their game should have, then it seems more likely that this designer will attempt to implement accessibility options, while a designer who considers accessibility to be unnecessary or less important than other properties might not prioritise the implementation of accessibility options.

Alternatively we could apply a similar reasoning to understand Chiapello's discussions about appreciative systems. Based on Schön (1990) work, Chiapello describes appreciative systems as sets of values used by designers to frame and evaluate design solutions Chiapello (2017). If we accept that the values of designers guide the way they evaluate design decisions and solutions, then, designers will tend to prefer design decisions and solutions that are more aligned with the things they consider to be, in some respect or capacity, more important. A designer who believes that a good level of accessibility is essential may favour design decisions that support, or at least do not hinder, the accessibility of a game.

The situations discussed so far deal only with values that relate specifically to design decisions during game design, but there are cases in the literature where authors discuss the ways in which more general values and ideological positions of designers can, intentionally or unintentionally, influence the games they create. Barab et al. (2010), for instance, highlight their ideological position claiming that education should involve the social and moral development of the individual and explicitly recognise how this perspective influences the educational games they design. Here we see an example where, after examining their own values, designers are aware of one thing they consider to be important and are explicitly committed to designing games that reflect this value.

However, there are also cases in which the values and ideologies of designers can lead to games that present an uncritically biased representation of reality. Lin and Sun (2003), for instance, when describing the development of a Multiple User Dungeon (MUD) game depicting a simulated society, explain how biases from the design team lead to difficulties when it came to identifying essential functions necessary for the job creating society simulated by the MUD. Christiansen (2017) also gives examples of designers that, when creating historical games, end up anachronistically projecting values from the present to these virtual representations. The author cites examples of games like *World of Warcraft* 2004 that depict a fictional medieval setting but have nonetheless modern market capitalism as an integral part of the in-game economy. In both instances we see example of situations where the ideological positions of designers caused them to attribute more importance to some things and to ignore the importance of others, which, intentionally or not, lead to the creation of games where characteristics deemed unimportant were left out, creating virtual worlds that reflect the bias of their creators. While designers do have an influence over the artefacts they design, the values that influence design decisions and the biases they can reflect may not always come exclusively from designers themselves but may result from external influences. But to understand what it means for a game to be biased, we need to shift our focus from the perspective of the designer to look at the games themselves.

5.2.2 Understanding the relation between games and values from the perspective of games

The definition of values we are adopting states that “a value is something that denotes importance to somebody for something in some respect or capacity”(Pereira et al., 2018, p. 6). According to this definition, values do not come from an object but from the relation between a valued object

and a valuing subject in a social context. When it comes to applying this understanding to games, the most immediate implication is that games do not have values on their own, as they are not a *someone* for whom something can be important in some respect or capacity.

This is not to say that games are value neutral, however. There are authors that discuss games as containing, carrying, incorporating or embodying values. The conclusion that games do not have values may seem, at first glance, to contradict these perspectives identified in the literature. It is still possible, however, to understand these perspectives using the definition proposed by Pereira et al. (2018) if we explicitly recognise the semiotic nature of games as capable of conveying messages.

To use an allegorical example, we can imagine a conversation between person *A* and person *B*. Person *A* considers *X* to be important in some respect or capacity and wishes to convey that value to person *B*. Person *A* can then encode this value in the sentence: “*I hold X to be important in some respect or capacity*”. According to the definition of value proposed by Pereira et al. (2018), this sentence, in itself, does not have values, not being *someone* for whom something can be important in some respect or capacity. But as a *sign*, this sentence can still encode the values of its author. When perceived by person *B*, this sentence can be interpreted as the affirmation that denotes the importance, in some respect or capacity, that *X* has for person *A*. In summary, this sentence does not have values of its own, but can nonetheless communicate values, as long as there is someone to make sense of it. If we understand games as systems of signs, a similar reasoning could explain how games can communicate values while they themselves do not have values of their own.

Semiotic engineering is a theory that seeks to understand HCI from a semiotic perspective, describing human-computer interaction as a communicative process in which computer-systems can be seen as one-shot messages sent from designers to users. Under this theory, designers, by means of a system’s interface, communicate with users, indirectly telling them how to interact with the system at hand (De Souza, 2005), a process called metacommunication. Applying a similar understanding to digital games, we could explain the relation between games and values as a communicative process in which games can be seen as communicating to a player a particular set of value, as defined by Pereira et al. (2018).

Some of the identified authors already highlight the communicative aspect of games (Barr et al., 2007; Heron and Belford, 2014; Young, 2015; Sicart, 2005). As mentioned in the previous chapter, this capacity of games for communicating values also suggests the potential of a semiotic approach for understanding games, which is also already attested in the literature. Frasca (2001), for example, extends Pierce and Buchler’s (1955) semiotic theory to describe how games, as signs, can be interpreted differently by different stakeholders. Following Frasca’s footsteps and inspired by the concept of metacommunication from semiotic engineering, we can explain how games can communicate values, while not having values themselves.

When creating a game, designers create narratives, gameplay mechanics, rules, objectives and other elements that will give shape to the gameplay experience. These constituent elements may communicate to players how to interact with the game at hand, possibly suggesting values players should adopt within the magic circle of play. In a game like *Sonic the Hedgehog* (1991), for instance, the player is rewarded extra points for finishing a stage quickly (Figure 5.1). We could say that the game’s reward systems are suggesting that players adopt, within the boundaries of play, the value of speed².

²To say that a game is suggesting to players that they adopt the value of speed, in this context, means the same as saying that this game is suggesting to players that speed is something that players should consider to be important for their gameplay experience



Figure 5.1: The player receiving bonus points proportional to how fast they finish a stage in *Sonic the Hedgehog*

The gameplay experience as a whole could also be interpreted as sending more general value-messages that indicate not only how the players should act within the game, but also what things should be considered valuable in general. There is a quest in the RPG *The Elder Scrolls Online* (2014), for example, that deals with the topic of racism and abuse by exploring the relations between different fictional races in a military training institution. In the game, players may come across the *College of Aldmeri Propriety*, a place where *wood elves* and *khajiit* are trained by a supremacist group of *high elves*. Throughout the quest, by exploring the college and talking to in-game characters, players uncover and fight against the cases racism and physical violence to which students are subjected (Figure 5.2). At the end of the quest, the elven supremacists in the college are defeated, the player is rewarded with gold and equipment, and an allied character promises to continue working towards a future where the other races can be in positions of power in that game's fictional social structure.

In this example, the game depicts fictional cases of racism and physical abuse, against which the player is encouraged to fight. By portraying the high elf supremacists as enemies to be defeated, the game is not simply showcasing the racist values of its enemy characters, it is also suggesting that players adopt antiracist values, and may even be interpreted as communicating a more general value-message about the importance of fighting against racist power structures and abusive institutions. We can thus say that games, by means of their narratives, gameplay mechanics, rules, objectives and other constituent elements, can tell stories and create spaces that, when interacted with and interpreted by players and other stakeholders, can communicate values.

This perspective can not only explain how games communicate values, but can also shed light on how to understand the perspectives of other authors. Games are composed of multiple meaningful parts that work together to create the semantic structure of games (Flanagan and Nissenbaum, 2014). These interrelated elements interact with one another to create a complex and dynamic gameplay experience that allow the expression of values. But, as players interact with these systems, the possibility spaces afforded by these games can at the same time constrain the expression of some values and make the expression of other values more viable. The kinds of action afforded by these possibility spaces as well the ways in which said actions are portrayed in the games narratives can favour some interpretations of what values a game can communicate. As Flanagan and Nissenbaum put it “Game mechanics and narrative elements create constraints that preclude some interpretations and steer players toward others. [...] The point is, we can



Figure 5.2: A khajiit character in *The Elder Scrolls Online* telling players about cases of abuse in the College of Aldmeri Propriety

rule out or minimize some interpretations while also describing a range of plausible and relevant interpretations.”(Flanagan and Nissenbaum, 2014, p. 16). Games, thus, do not *carry* values, per se, nor do they have values *embedded* in them. They do, however, *communicate* values to players and other stakeholders.

These communicated value-messages are not fixed during design, nor are they exclusively dependant on designers intentions, but they arise as players and other stakeholders interpret the meaning of a gameplay experience. Still, the specificities of how a game’s constituent elements interact with one another as well as the ways in which they are interacted with and interpreted by players and other stakeholders, can make some interpretations of what values a game communicates more plausible than others.

Joining the definition of value proposed by Pereira et al. (2018) with a semiotic understanding of games as systems of signs that can communicate values can lead us to an apparent contradiction. According to our understanding, values denote the importance of something to *somebody*. When we discuss game design and the impact values may have on design decisions, the somebody for whom something is important can be designers themselves or other stakeholders considered during design. When we analyse the values that guide a player’s actions during gameplay, the somebody for whom something is important is the player. However, when we understand games as communicating values and we discuss these values that players and other stakeholders may perceive as being communicated by a game, then this *somebody* for whom something is important is no longer immediately apparent. In other words, while a game can communicate a value to some stakeholder, it is not immediately clear from whom these values come.

This *somebody* is not necessarily the player (nor other stakeholders interpreting the game), as the values a game is communicating may not align with the values of a stakeholder interacting with and interpreting the game. Bogost (2008), for instance, points out that players can critically examine and reject the messages of games. One could argue that this someone refers to the designers of a game as they are the ones who create all the meaningful parts that make up the game and have some influence over what values it communicates. But this *somebody* cannot be the designers either, as games may communicate to some stakeholder a value with which the designers themselves do not agree. Designers, then, give shape to games that can

communicate *somebody's* values to players and other stakeholders, but this *somebody* is not the designers, nor the players, nor other stakeholders interpreting the game's value-messages.

Metacommunication can once again help us explain this phenomenon. Semiotic Engineering describes how designers, by means of a system's interface, communicate with users at interaction time. Designers, however, are not present at interaction time. All a user has access to is the system's interface as created by the designer. Designers, therefore, must have a vision of who will use their systems, what these users need from the system and how they might interact with the system so that the system's interface can act as a collection of signs that encodes the information designers intend to convey to users at interaction time (De Souza, 2005).

The same reasoning can be applied to games. Designers develop games with particular intentions³, among those intentions there may or may not be a desire to communicate specific value-messages. Designers' intentions, whatever they may be, are ultimately translated into a game with a specific semantic structure composed of all meaningful constituent elements like narrative, gameplay mechanics, rules and others. When interacted with and interpreted by players and other stakeholders, these elements may come to communicate specific value-messages.

There is, however, a gap between game designers and game players that is always mediated by the game itself. As De Souza (2005) points out, users and other stakeholders do not have access to designers' intentions when interpreting the signs that make up an interactive system and, as a consequence, there is no guarantee that the messages intended by designers are the same as the messages received by users and stakeholders.

When it comes to value-messages specifically, we cannot say, by simply interacting with a game, that a value-message interpreted by players and stakeholders at interaction time, was ever intended by designers. The game communicating a value-message may have been created by designers, but the possible meanings of the gameplay experience also depend on the stakeholders interacting with and interpreting the game.

From the values they interpret from a game, players and stakeholders may still infer the existence of a subject who holds the values a game communicates, i.e. *somebody* for whom the communicated values are important. Just as game designers have a vision of who will interact with the games they design, so do players and other stakeholders have a vision of who designed the games they interact with. There is a gap between the subjects from whom the intended value-message originates, i.e. the real designers, and the fictional subject from whom the interpreted values come, i.e. the image players and stakeholders have of a game's designers.

This observation echoes the distinction made, in literary criticism, between a real author and an implied author. A real author refers to the real person responsible for the creation of a literary work, while an implied author is a fictional entity that enunciates a text. The implied author could be understood as the image of an author inferred by readers from the text (Silva, 2007). The values of the implied author and those of the real author may or may not be the same. The same distinction can be applied to our discussion of digital games. The values a game communicates to some stakeholder can be understood as the values of an implied author and they may or may not correspond to the values of any real individual responsible for the creation of the game.

The concept of an implied author thus seems to solve the apparent contradiction we identified. Designers create games that can, when interacted with and interpreted by players and stakeholders, communicate values. A communicated value denotes the importance of something to *somebody*, but this *somebody* may not be the designers, nor the players, nor any

³Digital games are typically developed by teams of designers, each of whom may have different, and sometimes even contradictory, intentions. The point here is not that games are created with a clear and coherent agenda, but that design decisions are based on intention that may be reflected in the designed game

other real stakeholder. On one hand, game designers have values of their own, and might even wish to convey particular value-messages with the games they create. On the other hand, when interpreting the possible meanings of a game, players and stakeholders might perceive specific value-messages being communicated. These value-messages do not necessarily denote the values of any real stakeholder. Rather, when players perceive a value-message as being communicated by a game, they are identifying the values of a fictional subject, i.e. these value-messages denote the importance of somethings for this fictional subject that exists in the mind of the interpreting players as a result of the interpretative process. In other words, values communicated by games correspond to the values of an implied author.

This is not to say that designers have no responsibility for the possible meanings of the games they create. It is always possible that a player or another stakeholder, when interacting with a game, will interpret a value-message significantly different from the ones intended by designers. However, by investigating the signs that make up a game, the possibility spaces they afford, and by observing how players interact with and interpret these signs, designers can tweak their design solutions to steer players towards some interpretations and away from others, making it more likely that the value-messages perceived by players and stakeholders are the same, or at least similar enough, to the value-messages intended by designers.

Describing games as systems of signs helps us understand how games can be seen as capable of communicating values while not being subjects for whom things can have value. Furthermore, we can understand how games steer players towards certain interpretations of what values it communicates, by investigating the interactions between the constituent elements of games that make up these systems of signs. But to properly understand this process of value communication, it is not enough to investigate games themselves. We must therefore look at the interaction between games and players to understand how players can explore, perceive and interpret values through gameplay.

5.2.3 Understanding the relation between games and values from the perspective of players

Among the papers identified in the systematic mapping, the player-centred perspectives of the relation between games and values can be divided in two main categories. (i) There are authors who focus on the values that influence players' in-game behaviour, (ii) and those that focus on the ways games can impact players and how they interpret the game.

The value definition from Pereira et al. (2018) and the way it leaves room for considering both objective properties of the game and the subjective nature of value attribution, seems particularly suited for understanding how values can guide players actions and behaviours inside games. Applying this definition of value to understand the values that guide player's actions, we see that values can be understood as that which denotes importance to players for something in some respect or capacity. As different players value different things, they may express their values by playing the game differently. Differing value hierarchies, for instance, might lead to some players attributing more importance to the speed with which they finish a stage, leading to them attempting to finishing stages as quickly as they can. Alternatively, other players might attribute more importance to the interactions they have with in-game characters, which could lead them to spending more time exploring all dialogue options when talking to an in-game character. Thus, different value relations between players and games can lead to multiple gameplay styles. The specific things a player considers important in the context of a game, and the ways in which players consider them important can change depending on a series of factors, such as the values players hold outside the game, the specificities of the game being played or even interactions with other players.

Depending on how much freedom a game affords, players may be able to express their own values. However, protected by the boundaries of the magic circle of play, player may attempt to play according to values different from the ones that guide their actions in real life (Barr et al., 2005, 2007; Sicart, 2009). The specific combinations of game elements and the possibility spaces they create can suggest that players adopt a particular set of values, encouraging players to interact with the game in a particular way. Some games, for instance, by allowing, or even actively rewarding, players to use non-lethal approaches for overcoming obstacles, can encourage players to experiment with values of pacifism. In the case of multiplayer games, it is also possible that values collectively developed and shared within a player community can guide the actions of individual players who share the values of said community.

Khoo (2012), for instance, cites the example of the game *World of Warcraft* (2004) where players can join different organised player-groups called guilds. Different guilds may prioritise different things, some focusing on achievements and rewards while other may focus on social interactions between its members. As Khoo explains, members of guilds that value high performance tend to be less tolerant of those who do not meet expected standards, while the values of teamwork, cooperation and patience may be found in guilds that seek to foster social interaction and friendships.

Thus, the specific way in which players choose to interact with the games they play, the actions they perform and behaviours they adopt, be understood as being guided by the values players hold within the boundaries of play. The specific values players hold when playing can be influenced by a series of internal and external factors. Within games, players may be guided by the same values that guide their actions in real life, but the values players adopt within the boundaries of play can also be influenced by a game's constituent elements and what they communicate to players, as well as by the shared values of a player community.

But in order to understand the relation between games and values from the perspective of players it is not enough to recognise that values guide the actions of players within a game. Players can perceive and interpret the values a game may communicate, and interacting with a game can impact the values of players themselves. We have seen authors acknowledging that the values of players affect the way they perceive and interpret a game (Rothmund et al., 2015; Young, 2015). Understanding games are systems of signs capable of communicating values to stakeholders, then a semiotic explanation of value communication might help us better understand this phenomenon.

As previously mentioned, Frasca (2001) attempted to explain how games, as signs, can be differently interpreted by different players. To do this, he extends Pierce and Buchler's (1955) triadic model of semiosis to include HCI's concept of mental model. As shown in Figure 5.3, Frasca describes the semiotic process as a relation between 4 main categories: (i) the *sign*, or *representamen*, that is, the thing that stands to somebody for something in some respect or capacity; (ii) the *object*, the something to which a sign refers; (iii) the *interpretamen*, the idea, or mental model a person has of the representamen; (iv) and the *interpretant*, the idea a person has of the object, a new sign resulting from a person's interpretation of the representamen. According to Frasca, different interpretations of a sign may result from different interpretants or from different interpretamens, i.e., different interpretation may come from different understandings people have of the object being represented, or from different understandings people have of the sign representing the object (Frasca, 2001).

The four categories proposed by Frasca (2001) offer us a useful structure with which to analyse value-communication in games. With Frasca's model we can analyse the many elements that make up the game as individual signs, investigating how a player perceives these game elements and interprets their meaning. We can also look at the whole game as a system of signs,

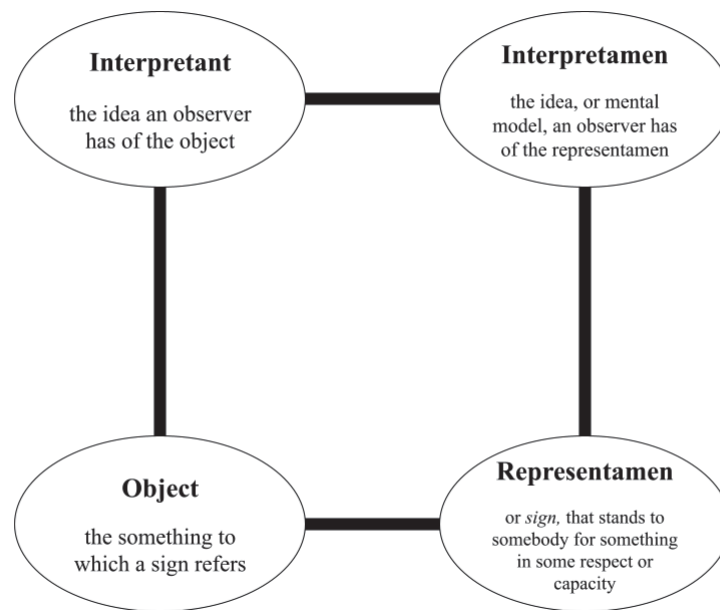


Figure 5.3: Frasca's Semiotic model, consisting of the object, representamen, interpretamen and interpretant (Frasca, 2001)

allowing us to investigate how players explore these game elements, and how they later interpret the possible value-messages their gameplay experience communicates.

Applying Frasca's model to the context of our discussion, we can, for instance, look at the game's narrative or gameplay mechanics as representamen; the communicated values can be seen as the object to which these constituent elements refer; the interpretamen, in this case, would be the mental model a stakeholder has of the game's mechanics or narrative elements to which they are exposed; and the interpretant could be seen as the value-message a stakeholder interprets as being communicated.

We can also apply Frasca's model to the game as a whole to investigate the possible meanings it can communicate. In this case, we could look at the game itself as a sign, or representamen; the values communicated by the game as the object to which the game, as a sign, refers; the representamen as the mental model a player has of the game; and the interpretant as the value-message a player interprets as being communicated by a game. With this perspective in mind, we can look at game elements and at the gameplay experience as capable of communicating a value to some stakeholder. We can also recognise that the specific values a stakeholder interprets from a game depend on how this stakeholder understands the communicated value-message, and on how they understand the game elements that help communicate that message. Players interact with the game, perceiving its constituent elements and exploring the possibility spaces they create.

As players are exposed to different sides of the game, they form a mental model of the game they play. Based on this mental model, players may extract some meaning from their gameplay experience and arrive at the conclusion that a game is communicating particular value-messages. By applying Frasca's understanding to our discussion of games as capable of communicating values, we can explain how different interpretations of a game's value-message may stem from a different mental model players have of the game (differences in interpretamens), or from the different relations they have with the values being communicated (differences in interpretants).

In some games, the decisions made by players, as they interact with a game, can impact the aspects of a game to which they are exposed. In a big RPG, for instance, players might choose to ignore the story of an important side quest, or they might not use a gameplay mechanic unsuitable for their play styles. Thus, different players, based on their personal play experiences, may form different mental models of the stories and gameplay possibilities afforded by games (Frasca, 2001) and, consequently, arrive at different interpretations of what values a game communicates.

It is also possible that some interpretations are impacted by the ways different players relate to the value-messages they receive. To use Frasca's illustrative example, when faced with a sign representing a tree, the resulting interpretant in the mind of a botanist may represent a tree in much more detail than the resulting interpretant in the mind of somebody who lives in a desert and had very little contact with trees (Frasca, 2001). Similarly, when players perceive a game as communicating a value, the way they relate to the value being communicated may influence the way they interpret a game. Two different players interacting with the same game might form very similar mental models of said game and might even interpret, from their gameplay experience, very similar value-messages, but the way each player relates to the communicated value can still be different. In a competitive multiplayer game, for instance, players who value competition may perceive the game very differently from players who favour cooperation over competition.

Once again, taking the position defended by Pereira et al. (2018) that values are relational properties that denote the importance to somebody for something in some respect or capacity, then we could argue that the kind of relation between a player and the values communicated by a game could also be understood in terms of value relations. As a result, we can say that designers, by means of the games they create, can communicate to players the values of an implied author. Players, in turn, can interpret these communicated values by examining their relation with said values, i.e., making their own value judgements over them.

This conclusion not only helps us understand that the values held by players can impact the way they interpret a game, but also offers us a way to think about how games can encourage value-reflection. As we have seen, games may encourage players to adopt specific values when playing. As players explore the possibility spaces afforded by games they may engage in a critical examination of the values by which they play, making value judgements over the values they adopted within the boundaries of play. Furthermore, when interpreting the possible meanings of the gameplay experience as a whole, players may make value judgements over the value-messages of the games they play, either accepting, challenging or even rejecting the communicated values.

Now, it should be noted that, while the arguments presented in this section focus specifically on players, a similar reasoning could be applied for understanding how other kinds of stakeholders perceive and interpret games. The arguments here presented focused primarily on players interacting with games by playing them. Other stakeholders, however, might interact with games in a different way. Someone who has not played a game, but has watched a playthrough of it, can still form mental models of the games they watched, perceive values communicated by those games and even examine how they relate to the values communicated by those games. The degree to which a stakeholder is exposed to a game, and the way in which they are exposed can impact how these stakeholders perceive and interpret a game. Frasca's (2001) semiotic model, however, can still serve as a useful tool for describing how these stakeholders perceive and interpret the values of a game.

5.2.4 Acknowledging the role of the cultural context for the relation between games and values

In this chapter we have seen how the definition for values proposed by Pereira et al. (2018) and Frasca's (2001) adaptation of Pierce and Buchler's semiotic theory can serve as tools to help

us understand the relation between games and human values from the perspective of designers, games and players. Pereira et al. (2018), however, also highlight that values are an aspect of the relation between a subject and an object in a *social context*. Games, game design, and gameplaying are socially situated phenomena and as such the values communicated by games, and the values that may emerge during game design and gameplaying are influenced by the sociocultural context in which these actions occur. While the role of the sociocultural context for the relation of games and values was not the focus of most authors identified by the systematic mapping, we can nonetheless highlight the possible effect it can have on the perspectives that were discussed in this research.

We have seen that the values of designers can impact the game design process and can influence the values a game communicates. While designers do have some power over their creations, the design process, however, still takes place within a larger political-economic and cultural context and a series of economic, political, institutional, and social constraints might limit the degree of freedom designers have when designing an artefact (Feng and Feenberg, 2008). The values that guide the decision making process of a game could be, to some extent, influenced not only by designers' previous experiences, but also by external factors, such as the characteristics of other games, the expectations of players, critiques from specialised game journalism and pressure from game publishers and investors. The combination of these internal and external influences could create a complex web of competing values whose influence over designed games could, in some cases, be difficult to pinpoint. The ways in which conflicts arising from this web of values encourage or constrain design decision could lead to discussions about the creative process of game design and the autonomy of game designers.

Among the identified papers we have seen authors acknowledge that games can reflect the values of their cultural context (Colăcel, 2015; Navarro-Remesal and Zapata, 2018; Shaw and Warf, 2009). Flanagan et al. (2007) even highlight an example where the specific context of a playing session changes the meaning of a gameplay experience. Further research is still necessary for us to understand how the values of a given cultural context can influence the way we perceive games. It is possible, for instance, that players from different cultural backgrounds can end up with significantly different interpretations of the values communicated by games. Investigating how the cultural context can affect game design or how the cultural background of a player may influence how this player interacts with and interprets the game can grant us a better understanding of how context shapes value communication in games.

As with the values of designers, the values of players and other stakeholders could also be influenced by a series of external factors. Both the values by which players play, and the values by which players and stakeholders interpret their interactions with a game could, to some extent, be influenced by their previous experiences with games, by critiques from specialised game journalism and even by their interaction with other players and stakeholders, both inside and outside games. While there are authors who recognise the impact of the cultural context in the values communicated by a game, the role of the cultural context for the relation between games and values remained mostly unexplored in the papers identified in the systematic mapping presented in this research. Further investigations are necessary to understand how the relation between games and values are affected by these culturally specific phenomena

5.3 THE POTENTIAL OF A SEMIOTIC APPROACH FOR UNDERSTANDING THE RELATION BETWEEN GAMES AND VALUES

So far we discussed a definition for values and a way of understanding digital games as capable of communicating values. The adopted definition of values states that values are what denotes

importance to somebody for something in some respect or capacity. This particular definition when applied to games allows us to consider the values not as fixed properties of games themselves but as relational properties that emerge from the interactions between the game and a stakeholder either during design or during interaction with a finished game. Furthermore, we have also attempted to understand the relation between games and values in terms of a communicative process where a game may communicate values to a stakeholder. From this perspective, the possible meanings of a game, and the values it may communicate, are not determined exclusively by the elements that make up a game, nor is it arbitrarily defined by the player (or stakeholder) interpreting the game. The game instead, with its meaningful narratives, aesthetics, gameplay mechanics, rules, objectives and other constituent elements, creates a virtual space that can be explored and acted upon by players. As players (and other stakeholders) perceive and interact with these meaningful game elements they may come to interpret the meaning of a game and the values it communicates and, ultimately, make their own value judgements over the values being communicated during interaction.

5.3.1 Semiotic implications for the relation between games and values

Understanding games as capable of communicating values to a stakeholder, has the advantage of highlighting the interactions between game and stakeholder as the background from which values emerge. It comes with the realisation that value communication in games is influenced by the stakeholders involved in the interaction, the specificities of the games being interacted with, and the context in which the interaction takes place. With this perspective in mind, when it comes to understanding the values by which players play, we can ask questions about a player's preconceived values and how these values impact the way they play, and how they interpret their gameplay experience.

Frasca's (2001) semiotic understanding of games can help us understand the mechanisms by which different stakeholders perceive different values as being communicated by a game. Understanding how a player's interpretation of the values communicated by a game changes as they explore different aspects of a game and how this interpretation depends on the mental models players have of the games they play can be an important tool for the analysis and design of digital games. When we look at games as systems of signs capable of communicating values to stakeholders we open the way for an in depth analysis of a game's structure. If games are composed of multiple meaningful parts we can start looking at how each of these parts helps or hinders the value-communication process and how they, together, shape the possible meanings of games. We can investigate, for instance, how different elements of a game might communicate similar values by different means or how the values communicated by those elements might conflict with one another.

In the game *Journey* (2012) (Figure 5.4), for example, the gameplay mechanics, and the dynamic behaviours that can emerge from them, allow players to cooperatively aid one another while not permitting players to hinder each other's progress. In this way, we could say that the gameplay mechanics of *Journey* can communicate to players the value of cooperation. Meanwhile, as players advance through the game's story, told through in-game cutscenes and by the game's level design, players are shown the history of the fall of a civilisation that could be read as a warning against values of exploitation and aggression. In this way, the value-messages communicated by the gameplay mechanics and by the game's narrative complement one another, reinforcing the game's overall theme of peaceful cooperation. This example highlights an instance where different game elements are in harmony with one another, but there are also cases in which different elements might communicate conflicting messages.



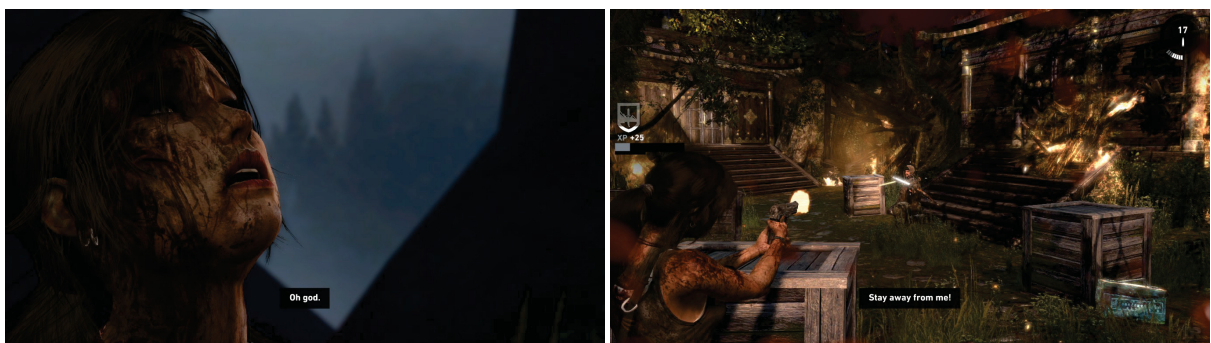
(a) Two players aiding each other's progress

(b) The player exploring the ruins of a civilisation sunken in the sand

Figure 5.4: Two screenshots from the game *Journey*

In a particular section of the game *Tomb Raider* (2013) (Figure 5.5), the main character Lara Croft, in a struggle for her life, is forced to kill the man assaulting her. In the cutscene following this interaction, the main character is visibly distressed after having killed a man for the first time. In the gameplay section immediately following this cutscene, however, not only the character of Lara seems unaffected by her trauma but she is capable of killing dozens of enemies with seeming no negative emotional reaction. While the cutscene frames killing as a traumatic, though necessary, event that could potentially have harmful consequences for the main character's mental health, the gameplay not only forces players to kill in order to progress but also actively rewards players with experience points for killing as many enemies as possible. In this particular section of the game there is a disconnect between the main character as portrayed in the game's narrative and main character as controlled by the player. This conflict between a game's story and gameplay, also known as ludonarrative dissonance (Hocking, 2009), can have a significant impact on the values ultimately communicated by that game, as different parts of the game can communicate contradicting values.

Contradictions, however, do not necessarily harm the messages of a game, and on some circumstances they can be used by game designers to reinforce a particular value-message. The games *September 12th: a toy world* (2003) and *Spec Ops: The Line* (2012) (Figure 5.6) illustrate this phenomenon: in both games, the central gameplay mechanics, i.e., the actions available for player to perform, are centred around acts of violence that players must perform if they want to continue playing the game. While these gameplay mechanics, in isolation, could be perceived as communicating a message in favour of the values of violence and military interventions, when analysed in conjunction with other game elements they may come to communicate the opposite. In *September 12th*, all the player can do within the game is aim and shoot missiles at armed



(a) Lara Croft distressed after killing the man assaulting her

(b) The player being rewarded experience points for killing enemies

Figure 5.5: Two screenshots from the game *Tomb Raider*



(a) Civilians crying over the damage caused by anti-terrorist airstrikes in the game *September 12th*



(b) The game's protagonists finding soldiers chasing down civilians in the game *Spec Ops: The Line*

Figure 5.6: Two screenshots from the games *September 12th* and *Spec Ops: The Line*

terrorists. Shooting terrorists in this game, however, inevitably causes the deaths of innocent civilians, which, in turn, motivates other innocent civilians to become terrorists themselves. In *Spec Ops: The Line*, which has gameplay mechanics similar to those of other Third-Person Shooters, players use a variety of weapons to shoot and kill series of enemies in order to progress. While progress in the story is tied to killing enemies, the narrative elements of the game highlight the horrible moral implication of the actions performed by the game's main characters. Both games use violent gameplay mechanics as a required means of playing but the juxtaposition of these acts of violence with their gameplay and narrative consequences resignifies the gameplay mechanics framing violent military interventions not as valid and desirable solutions, but as harmful ones with terrible consequences.

Gameplay mechanics that reinforce the values of the narrative, or rules and narratives that give new meaning to gameplay mechanics are but two examples of how the interplay between different game elements can influence the values a game communicates. As a poet plays with the structure of a poem, using rhymes, alliterations, paradoxes and metaphors to express an idea or emotion, so too might game designers use the interplay between game elements to communicate values. By analysing game elements and the way they interact with one another to create the semantic structure of a game, we can arrive at a deeper understanding of the processes by which games communicate values. Understanding games as systems of signs capable of communicating values to stakeholders, allows us to investigate the structure of games and how they impact the value communication process all the while highlighting the interactive nature of this process, as players and other stakeholders perceive, interact with and ultimately interpret the values-messages received during play.

5.3.2 How existing methods and artefacts can aid a semiotically inspired and value-oriented approach for game analysis and design

Our semiotic understanding of the relation between games and values can also have implications for a value-centred design of digital games, from initial conception, to implementation and later evaluation and analysis of implemented solutions. By adopting and adapting already existing approaches for value-oriented game design we can have methods that consider value-related issues, while also recognising the communicative nature of games.

Pereira and Cecília Calani Baranauskas (2015) proposed the Value-oriented and Culturally Informed Approach (VCIA) for the design of interactive systems. With the VCIA model, the authors propose the use of a collection of artefacts and methods for considering values and cultural related issues, and integrates these artefacts and methods into a design process.

The VCIA contains artefacts that help designers identify stakeholders, list their values, identify system requirements related to these values, compare different existing solutions, and evaluate implemented designs. VCIA offers tools that, when combined with our understanding of games as communicating values, can help game designers understand a design problem from a value-oriented and culturally informed perspective.

The VCIA model, for example, uses the Stakeholder Identification Diagram to identify stakeholders directly or indirectly affected by an interactive system, and uses the Value Identification Frame as a way to help designers identify the values each of these stakeholders brings to a project. When designers understand games as interactive systems capable of communicating values, these artefacts can help designers identify the values they wish to communicate, stakeholders' values that can impact the way a game's value-message is received, and the values these stakeholders might want to adopt within the context of play. With this information, designers can start to look for design solution suited for the value-messages they want to communicate. They may also consider whether the adoption of specific values in the context of play should be encouraged or discouraged.

Other artefacts from VCIA can also help designers consider value-communication when designing games. The Value Comparison Table, for instance, is an artefact that allows designers to compare the design of existing systems or prototypes, with regard to whether the values of stakeholders are reflected by the implemented solutions. This artefact can help designers compare different existing games, analysing whether these games and their constituent elements can communicate specific values. Another potentially useful artefact is the Culturally Aware Requirements Framework, created to aid the identification and organisation of requirements related to the values and culture of different stakeholders. An artefact such as this can help game designers to identify requirements that should be implemented if their game is to adequately communicate the value-messages they wish to convey. The Culturally Aware Requirements Framework can also help game designers to consider possible requirements necessary for allowing, promoting or even constraining certain value-expressions during gameplay.

By recognising the semiotic nature of games, we also open the way for evaluating the effectiveness of design solutions for communicating value-messages, possibly leading to more specific insight into how a game is perceived and interpreted by players during interaction. After recognising the semiotic nature of games, a possible next step could involve the adaptation of semiotic methods for inspecting and evaluating value-communication in games. Semiotic Engineering offers methods that could be adapted to take into consideration value-related issues when evaluating games.

If, following Semiotic Engineering, we view computer-systems as one-shot messages sent from designers to users, the *Semiotic Inspection Method* (SIM) can be understood as an inspection method focused on the emission of such messages. SIM offers a way for designers or researchers to investigate the many signs that make up a system's interface and reconstruct the designer's message, identifying possible communication problems in the process. A designer or researcher using this method is free to explore the system for as long as necessary, exploring as many interaction paths as they might want (De Souza and Leitão, 2009).

A similar approach could be used for investigating not only a game's interface, but could also be adapted to include an investigation of the interplay between the many meaningful elements that make up a game. Those inspecting the game can explore the game's mechanics, rules and objectives while also exploring different narrative branches and gameplay possibilities, reconstructing the possible meanings they may convey, in isolation or in conjunction. When it comes to designing a game, it is not enough for designers to consider what value-messages they want to communicate, it is also important for designers to keep in mind the game elements to

which a player is exposed and how they might be interpreted. If a specific gameplay mechanic or narrative element is essential for the value-message a designer wants to communicate, then they should be careful when implementing these elements. These essential narrative and gameplay elements should be made as clear as possible and players should be exposed to them under the right circumstances for the perceived value-messages to be as close as possible to the meanings intended by the designers.

An adapted version of SIM could help designers, critics and researchers to investigate these kinds of situations, identifying possible communication problems that may stem from the structure and presentation of game elements, and even gaining insights into how these elements can be reorganised to facilitate value-communication. In a game with branching narratives that depend on player choice, for instance, players tend to be exposed to a single narrative branch per playthrough. In order to thoroughly examine the possible meanings and values communicated by such a game, it might be useful to use an adapted version of SIM to investigate the different meanings of each narrative branch and how they can, when analysed together with other game elements, complement or contradict each other and how alternative design solutions could more accurately communicate an intended value-message.

Another method from Semiotic Engineering that could be useful for value-centred evaluation of digital games is the *Communicability Evaluation Method* (CEM). Both SIM and CEM come from Semiotic Engineering, but while SIM focuses on how a designer's message is emitted, CEM focuses on how these messages are received by system's users. With CEM, designers or researchers can observe how users interact with a particular system, thus allowing for the identification of possible communicative breakdowns that may occur as users interact with the system (De Souza and Leitão, 2009).

An adapted version of CEM, focused on how players and other stakeholders perceive and interpret the games they interact with, could help us understand the possible value-messages of a game. As we have seen, the value-messages received by players as they interact with a game may be different from the value-messages intended by a designer. Even a broad analysis of all game elements may not uncover all possible meanings of a game and the way a specific player or stakeholder interprets a game can hard to predict. An adapted version of CEM could harness the unpredictability of value-communication in games and help us uncover possible but unexpected interpretations of a game's meaning that may arise during interaction. By directly observing players' interactions with a game we can not only identify possible communication breakdowns that may come from the game's interface, but we can gain further insights into the value-messages players receive as they play while also collecting evidence of the kinds of values players adopt within the virtual spaces of the game.

It is worth noting that unexpected value-expressions and unpredictable interpretations of a game's value-messages may not always be an undesirable result of game design. In an open ended sandbox game, for instance, designers might want players to set their own objectives and express their own values. In a game designed to present an ambiguous narrative, designers may want players to engage with the many possible, even unexpected, interpretations of a game's messages. It is even possible that, when interpreting the meaning of a gameplay experience, a player might receive a value-message that, while not originally intended by a designer, is still in line with a designer's vision of the game. By using an evaluation method like CEM, however, designers still empirically observe what kinds of values are being received and expressed by players, giving designers the choice to embrace the unexpected value-messages or to take actions to eliminate the undesirable ones.

Adapting methods and artefacts from VCIA and Semiotic Engineering may be a useful way to establish a collection of tool for designers to consider value-communication in game design.

But, as we have seen, value-centred game design is not a new concept. The VAP methodology already considers the processes of value discovery, translation and verification. Flanagan and Nissenbaum (2014) discuss general guidelines helping game designers to carefully study the values they consider to be important, translating these values into the semantic structures of games, and, ultimately, evaluating the impact their games have on players.

The VAP methodology, however, can be complemented by the methods and artefacts we just discussed. The Stakeholder Identification Diagram and the Value Identification Frame, for example, are useful tools for identifying relevant stakeholders and their values. These two artefacts can, thus, be integrated into the value discovery stage of the VAP methodology. Our perspective on games as communicating values also allows designers to focus not only on identifying and understanding relevant values, but also defining the value-messages they may wish to convey and requirements necessary to do so.

Semiotically inspired approaches for game evaluation also complement the verification stage of VAP. When discussing how to verify whether values were successfully integrated into a game, Flanagan and Nissenbaum (2014) focus on investigating how games impact players' attitudes and behaviours and on how they influence players' understandings of particular values or value-related issues. These kinds of investigation are undoubtedly both useful and important for assessing whether a design objective was satisfactorily accomplished. But by recognising the semiotic nature of games, we open the way for also evaluating the effectiveness of design solutions for communicating value-messages. Before investigating how players' values are affected by the gameplay experience, we can verify whether players receive the intended value-message, possibly leading to more specific insight into how the game design might be refined to create the expected results.

By adapting methods like SIM and CEM we can conduct a value-centred semiotic evaluation of digital games that can ultimately complement methodologies like VAP, by allowing us to investigate not only the impact games have on players, but also allowing us to identify what values a game can communicate, what kinds of value expression they allow, and even possible communicative breakdowns that may occur during play.

The methods here discussed can complement the stages of value discovery and verification from the VAP methodology. With their help, game designers can identify value-messages to be communicated, consider the values they want their players to be able to express during gameplay, and evaluate whether their designs can adequately fulfil these purposes. There still exists, however, a gap between the definition of game designers' vision for a game and the actual implementation of a game that reflects said vision.

Flanagan and Nissenbaum (2014) do discuss implementation, as they ask designers to pay attention to a game's elements and consider how a game conveys values to players and other stakeholders. However, the specific processes by which game's elements communicate values still needs further research. An essential part of designing games for value-communication is to understand how different game elements can be used to communicate different values. Adapted methods from Semiotic Engineering, like SIM and CEM, can help us analyse the values communicated by game narratives, gameplay mechanics, rules, objective, and other constituent elements, helping us understand how these elements interact with one another to create the semantic structure of games. Insights gained from this analysis could then be further refined for the elaboration of methods, artefact, or guidelines to aid the design of games capable of communicating the value-messages designers wish to convey.

6 CONCLUSION

The main objective of this research was to investigate the relation between digital games and human values. Acknowledging the complexity of value related phenomena, the unique nature of games as both technological artefacts and expressive media and the consequent multiple possible strategies and perspectives for understanding the relation between games and human values, in this research we sought to identify the varying perspectives of different game scholars on the relation between games and values so that, after characterising and categorising these different approaches and perspectives we could work towards elaborating an understanding of the relation between games and values that takes into consideration the multiple perspectives identified in games literature.

In order to identify and characterise the perspectives on the topic of values and games, we conducted a systematic literature mapping, so that, by following a rigorous and well documented search protocol, we could answer how the relation between games and values has been understood by game scholars. The papers identified in the literature cover a range of empirical, conceptual, and constructive research problems. Their methodologies often rely on case studies and their respective contributions are grounded in a variety of different theories and methods from multiple scientific domains.

When it comes to how different authors discuss the relation between games and values, we noted that they do so from multiple perspectives. There are authors who focus on the values held by designers and their influence on the game design. Others centre their attention on players, discussing how they impact or are impacted by the games they play. There are author who focus on the game itself arguing that games and its structures have values embedded in them, supporting, constraining or communicating values. And there are authors who acknowledge the influences of the socio-cultural context in the relation between games and values. The smaller number of authors discussing the impact of the socio-cultural context on the relation between games and values indicates the need for further research on the topic. The number of perspectives identified, however, demonstrates that the relation between games and values is a multifaceted phenomenon influenced by a myriad of elements.

After identifying the different elements acknowledged by authors as playing a role in the relation between games and values, we note a collection of factors and actors, both internal and external to the game, that can complement our understanding of how games relate to values. Based on these results we acknowledge that the values of designers can guide the decision making process of game design and, thus, help shape the structure of games. These structures (composed of narrative elements, gameplay mechanics, objectives, rules, and other constituent elements), in turn, shape the experiences of players and other stakeholder as they interact with games. How players and other stakeholders interact with and interpret a game, however, is influenced by a series of other factors, such as values of players themselves, the context of play, interactions with other player, and even the cultural background surrounding the game.

Based on the results from the systematic mapping, we then proceeded to elaborate an understanding of the relation between games and values that takes into consideration the perspectives identified in games literature. By conceptually exploring the implications of the definition of values proposed by Pereira et al. (2018), we came to understand values as that which, in a given social context, denotes importance to somebody for something in some respect or capacity, and can help guide people's behaviours. When applying this understanding to games, we recognise that values are not exclusively determined by the objective properties of games,

nor by mental capacities of the people who interact with these games. Values, instead, come the relation between people and games, emerging from the social context within which this interaction takes place.

This allows us to look at the values held by different stakeholders in different contexts, and at how these values influence the way they interact with games. The values of designers not only guide their decision making process during game design, but can also lead to the creation of games that can, intentionally or unintentionally, echo the values of its creators. The ways in which players interact with games are guided by the values they adopt within the boundaries of play and the values adopted by players are, in turn, influenced by a series of factors, from interactions with other players to the structure of the game itself.

In order to understand the relation between games and values, however, we must also understand the role played by games in this relation. Based on a semiotic understanding of games inspired by Frasca (2001)'s work, and on the concept of metacommunication from semiotic engineering (De Souza, 2005), we arrived at the conclusion that the relation between games and values could be understood as a communicative process in which designers create games that, by means of their constituent elements, can communicate values to players and other stakeholders.

Games can be understood as systems of signs composed of a series of interrelated elements that work together to create their structure. These interrelated elements, when perceived and interpreted by players and other stakeholder, communicate values. The ways in which players, or other stakeholders, interpret the values communicated by a game are influenced by both how they perceive the game and how they relate to the values being communicated. While the value-messages communicated by a game are, in part, determined by the structure that make up this game, the specific values communicated to players and other stakeholders are also influenced by a series of factors, such as the values of players and stakeholders, the game elements to which they are exposed, and socio-cultural context within which interaction takes place.

The developed discussions are still heavily dependant on the perspectives and observations identified in the described systematic mapping. As we have seen, there are value-related game phenomena that remain underexplored in the 58 identified papers, such as the impact of cultural influences in the values and perception of designers, players and other stakeholders. The conclusions drawn from the systematic mapping could be further expanded by the inclusion of different perspectives presented in papers not reached by the search protocol described in Chapter 3. Alternatively, further empirical studies can be conducted in order to observe the influences of the cultural context on the process of value communication in games. These gaps in our understanding of how games relate to values suggests the need for further research. However, they do not necessarily invalidate the conclusions here presented.

Understanding games as systems of signs capable of communicating values to a stakeholder offers us a way of thinking about the relation between games and values that not only highlights the interactive nature of value-communication, but can also have implications for a value-centred game design, from initial conception, to implementation and later evaluation and analysis of games. Adapted methods and artefacts from VCIA and Semiotic Engineering may be a useful tools for designers and researchers to consider value-communication in game, and can ultimately complement existing value-centred game design methodologies like VAP. Based in our understanding of games as capable of communicating values, future research may focus on adapting or developing methods for a value-centred game conception, implementation and evaluation, offering game designers, critics and researchers a set of tools for design and analysis of digital games that can further our understanding of value-centred player-computer interaction and help us investigate how value-communication takes place.

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