

Human Value Based Game Design

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Abstract—Human values play an integral role in human's life and accordingly in design for humans. Digital games as an influential media the same as other technical artefacts carry human values. However, considering human values in game design is not a common approach, which caused many ethical debates. HuValue is a card-based design tool based on a comprehensive value framework to help designers considering human values in different phases of their design process. This tool is created due to the lack of a comprehensive value framework for design and intended to be useful in general design practices. In this paper, inspiring from Values at Play project, we proposed three applications of HuValue for analysing games, defining vision and core value(s), and also translating the core values to action verbs and mechanics, which shows the capability of our tool for being used in game design area specifically for designing human value based games.

Keywords—Human Values, Value framework, Card-based design tool, Game design, Game elements

I. INTRODUCTION

A. Human values in design

Nowadays, life without technology is hardly imaginable. In this era, technology is interwoven with all aspects of life, and people perceive the world via artefacts [1, p. 235]. As artefacts are not self-formed phenomena, emphasising on the role of these products in human's life brings the responsibility of designers in the light [1, p. 234]. Nevertheless, while design in its origin "aims at changing existing situations into preferred ones" [2, p. 111] there are very few agreements on what a preferred/better situation means and how to be achieved. In this respect, human values can be introduced as a touchstone. In fact, values can be embedded in artefacts [3] and the expressed values by the designer should be interpreted by the user [4]. We used these points to argue that considering human values behind every human action, goal and decision can provide a wide and sensitive view. This view has great importance for a designer to understand what is preferable for the stakeholders and to make appropriate decisions [4].

Despite the significance of human values in everyday life and consequently in design, they mostly remain implicit and unarticulated in design projects [5]. Only a few design approaches concentrate on human values and aim to address

them in their design: Value Sensitive Design (VSD) [6], Value-led Participatory Design (VPD) [7], and Value-Centred Design (VCD) [8]. Nonetheless, there is a very little agreement between them to identify values. Indeed, these three design approaches have different ways to identify values: VSD, the most cited and well-known approach among the related works, uses a pre-defined list of values. So far this approach was the only one in design that provided a list of values. However, this list is not comprehensive. In other words, the core concern in this approach is only human values with ethical import that are often implicated in system design [9], which are not representative for different types of human values. The other two approaches, VPD and VCD, refused to use a fixed list, since they argued that every project is different, VCD "aims to elicit users' values in order to inform design, sometimes referring to pre-existing value taxonomies" [10, p. 246]; and VPD insists that values emerge in collaboration with stakeholders. Although the founders of VPD already know that "the kind of values that emerge depends on how designer orchestrate the design process" [7, p. 95], they did not suggest any method to raise the designer's awareness about human values. In other words, this approach can be valid only if the designer has a sufficient understanding of the concept of human value and has a broad perspective on its various dimensions.

In this respect, the lack of an established and accepted fundamental grounding [11] and a comprehensive list of values [12] can be considered as a major unresolved issue.

B. Human Values in game design

Digital games also have a significant influence on audiences' perception, since they allow players to inhabit the perspectives and roles of other people in a uniquely immersive way [13]. This fact drew attention to digital games in ethical debates [14, 15, 16, 17], which consider games as a moral object. Indeed, digital games are morally responsible not only for the virtual world they create but also by designing the experience of that virtual world and through these designs moral values can be conveyed and experienced [18]. In other words, games carry values in their narratives and also in their mechanics with or without the intention of designers [19]. Considering this quality, digital games are not only entertainment focused medium anymore, but their power is

being used for teaching ethics, and ethical thinking and also for prosocial causes [13, 20, 21, 22, 23, 24]. However, still very few designers are using this quality for fostering human values and sustainable practices in their games [24].

Indeed, although there is very little agreement on the definition of a game [25], entertainment, rules, and competition are kind of common cores for defining games [26]. Regarding this, *Pleasure, Lawfulness, Creativity and Successful* can be considered as common values of games. Also, in group games, *Connectedness* and *Cooperation* can be considered as other relevant values in games. Nevertheless, other relevant values are mostly hidden. In this respect, Values at Play (VAP) is a project in the Values in Design Council¹ that aims to “investigate the role of social, moral, and political values in digital games” [27, p. 1], by modifying or creating new value-driven computer games [28]. This project focus on three phases: (1) Discovery, to consider the relevant values, (2) Translation, to translate those values into game elements, and (3) Verification, to test the intended values of the game [29]. “Grow-A-Game” is a card-based game design tool, developed by the Values at Play research project to facilitate values-focused critical analysis and design of games via brainstorming exercises [19]. This deck of cards contains four categories of cards: (1) Values Cards: Each card lists a value term (e.g., trust, privacy, liberty, sustainability); (2) Verb Cards: Each card lists a game-related verb, or mechanic (e.g., leading, building, matching, avoiding, nurturing); (3) Games Cards: Each card names a familiar game to build upon, or mod (e.g., Hopscotch, Pac-Man (Namco, 1980), Civilization (Meier, 1991), World of Goo (2D Boy, 2008)); (4) Issues Cards: Each card names a problematic social issue (e.g., displacement, global warming, racism, urban sprawl). This research project reported using the cards in a variety of educational contexts [19].

Despite the fact that VAP correctly focused on considering human values in games, still the number of considered values in this approach is limited, as they already mentioned their list does not intend to be exhaustive [19].

II. HUVALUE TOOL

Considering the lack of a comprehensive value framework for design, we created a toolkit to help designers bringing human values into their design process. Our toolkit, called HuValue, consist of a comprehensive value framework (as a theoretical basis), a card-based tool (as tangible materials) and a perspective (as design approach) that all together support designers during their design process to analyse everything (object/subject/situation) from a value point of view. Our tool enables a designer to be aware and sensitive about human values and consider various aspects of their topic and different types of values even if they personally do not prefer them. Applying our tool and its perspective during a design process, as evidenced by the experimental study with design students [30], is effective for embedding human values in design concepts. In this paper, we intend to propose some applications for game design, since this tool aims to be useful in different design areas.

A. HuValue Framework

The HuValue tool is grounded in our value framework that is a comprehensive value framework for design [30]. In this respect, we focused on ‘human’ values, in contrast with a value of an object, as “what is important for people”, not only in relation with objects but also generally in relation with life including themselves, other humans and nature. Indeed, by emphasising on ‘human’, we aim to address relevant values to humanity. For this purpose, despite the existence of many different ways to define this concept, we applied Rokeach’s definition which is the most relevant and also the most cited one: According to Rokeach [31], 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” [31, p. 5]. Human values guide human actions and behaviours in daily situations. They give expression to basic human needs. Values have a strong motivational component. They refer to desirable goals. Values serve as standards and criteria, and value systems are general plans employed to resolve conflicts and to make decisions [31, pp. 3-25].

Our framework was created and developed via a research with various theoretical, empirical and design-based approaches to compile, classify and structure the existing value lists, including Rokeach’s [31], Schwartz’s [32], Peterson and Seligman’s [33] and 10 more value lists from the last century [30]. This framework has nine value groups, in which each value group is introduced with a descriptive sentence, five key values, and some extra values to provide more diversity. The nine groups are **Carefulness, Justice, Ecology, Respect for others, Meaningfulness, Status, Pleasure, Respect for oneself and Personal development**. Moreover, the relation of the value groups to four general themes including “Basic believes”, “Nature”, “Self” and “Society” is distinguished.

B. HuValue card-based tool

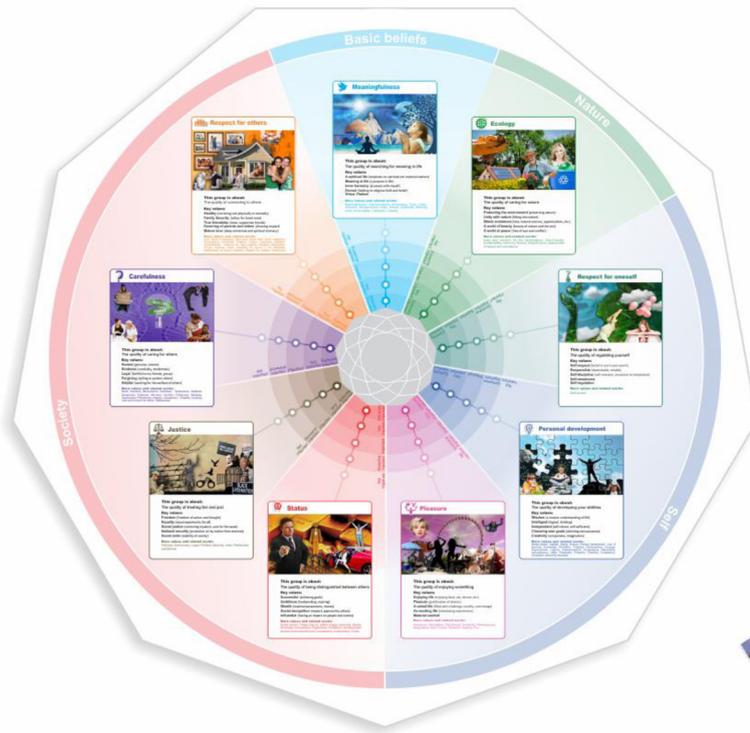
The tangible material of the tool designed in the form of a card-based design tool containing a value wheel, 45 value words and 207 picture cards (Fig. 1), to facilitate working with human values in a design process and bringing those values into account.

Value wheel is a circle with nine value groups. Each value group is introduced with an icon, a label, a mood-board, a descriptive sentence, five key values, and some relevant terms. In the wheel, you can rank each value group in their order of importance to you. Every value group has a 5-point-scale as “Extremely important”, “Very important”, “Important”, “Somewhat important”, and “Not important”. In addition to the words, colour saturation separated various levels of the scale; the highest saturation for “Extremely important” and the lowest saturation for “Not important” and three more in between.

Value words are 45 two-sided cards (5 × 7 cm) with a value word on the front and its relevant value group (based on empirical research for grouping the value words [30]) at the back.

¹Helen Nissenbaum has created the Values in Design Council, which is a suite of projects for “re-designing Internet architecture to handle ever-expanding modes of usage with fewer problems due to design mistakes about values” [28, p.26]. Values in Design focuses on values such as privacy, trust,

security, safety, community, freedom from bias, autonomy, freedom of expression, identity, dignity, calmness, compassion, and respect [39].



Value Wheel



Value Words



Picture Cards

Fig. 1. HuValue is a card-based design tool, containing a value wheel (with nine value groups), 45 value words and 207 picture cards.

Picture cards contain 207 cards (7 × 10 cm) in three different types; 66 activities, 66 characters, and 75 product/services. Every activity cards contain a picture showing activity or behaviour, without any description. At the bottom of these cards, there is a space in which people can write their own interpretations. The other cards are combinations of pictures and texts. Character cards include well-known people from all over the world in different disciplines, without judgment about their positive or negative influences, in addition to some artificial characters. Product/services cards contain a wide variety of products, services, and design concepts.

C. HuValue Perspective

Generally, the HuValue tool is a means to facilitate thinking and discussing human values. This tool supports designers with simple and flexible materials during their design process to analyse everything (object/subject/situation) from a value point of view. For instance, in a design project it can be a person as a designer (e.g., to define the vision) or as a user (e.g., to identify her/his needs, wants and ideals), or an existing product or service (e.g., to know which value(s) become stronger/weaker by using this product) or a situation and context of use (e.g., to clarify the design challenge and to

define the design goal) or a design concept or an idea (e.g., to evaluate a concept).

III. APPLYING HUVALUE FOR HUMAN VALUE BASED GAME DESIGN

The HuValue tool is designed for general design usage, and flexibility of the tangible material make the tool capable of being used in different design areas for various purposes. Following this goal, for finding relevant applications of the tool in game design, we used the three phases of (1) discovery, (2) translation, and (3) verification introduced by VAP. Based on these phases we proposed three applications which will be presented in the following sections.

A. Analysing games regarding human values: a brief study

As the main function of our tool is to analyse everything from a value point of view, our very first proposal is to apply the tool for analysing games in terms of human values, which is inspired by the verification phase. This activity can be done with an individual or group of designers and/or designers can ask a group of players to assess the game concepts in the pre-production phase and/or the existing games in the market.

TABLE I. SEVEN DIGITAL GAMES: EACH GAME PRESENTED WITH AN ICONIC PICTURE, NAME, COMPANY, GENRE, AND DESCRIPTION, IN ADDITION TO THE KEYWORDS OF THEIR NARRATIVES AND MECHANICS.

Game	Company	Genre	Description	Keywords	
				Narrative	Mechanics
	Amiuroo Glitter Bomb Games	Simple	In "Amiuroo" the player takes a dive into the deep waters of Persian Gulf, visits the creatures of the sea and tries to catch fish under the sea.	- Fishing - Earning money - Saving	- Jumping - Shooting - Hunting - Throwing - Collecting - Equipping
	GT Speed Club KingKode Studio	Sport	GT Speed Club is a drag racing game that challenges the player differently.	- Drag Racing - Top speed - Acceleration - Power - Competition	- Driving - Changing gears - Accelerating - Equipping
	Mencherz (Online Ludo) Incvtel	Family	Mencherz, is a variation of "Ludo".	- Racing - Competition	- Throwing a dice - Moving - Managing
	Pa Pa Land: Head Escape Nova Games	Simple	In the Pa Pa land's world aliens want to push the heads out of their home. The player should help the heads to survive and don't miss their world.	- Living in peace - Uniting to overcome the aliens - Help - Rescue - Resistance	- Flying - Escaping - Tricking - Beating
	Rooster Wars Medrick	Action	Rooster Wars is about intense fights between roosters in Roosterland. The player can select his/her roosters among various races and grow them over time by participating in battles.	- Intense fights - Establishing Law and order - Using various weapons	- Fighting - Equipping - Shooting - Stabbing - Punching - Jumping
	Spring Farm Medrick	Strategy	Spring Farm is a farming game in which the player will produce countless products from crops to fruits and dairy to deliver endless orders. The goal is taking part in the yearly competition to win an ancient golden egg!	- Management - Contribution - Development - Production - Decoration - Show off - Competition - Healthy - Farm	- Producing - Farming - Building - Feeding - Extending - Delivering orders - Selling - Shopping
	The Dark Wings 2 Lexip Games	Adventure	The Dark Wings Episode Two is essentially a horror adventure game with a mysterious narration about missing a famous actor.	- Rescue - Good vs. evil - Mystery - Curiosity - Horror - Darkness (Understand the value of the light)	- Searching - Solving puzzles - Finding solutions



Fig.2. The keywords of narratives are assigned to different value groups in the value wheel.

Demonstrating this application, we did a brief study with some existing Iranian games as cases: To investigate which human values are embedded in games, first, we selected several digital games; second, we highlighted the representative keywords of narratives and mechanics of the games; third, we analyse the keywords on the value wheel and discuss the relevant values for each game.

In this respect, we used the award-winning games in the Seventh Tehran Video Game Festival, 10th March 2018[34], as case studies. In the main section of this festival, nine games out of 172 games were awarded in various genres, which seven of them are publicly available: Amiroo, GT Speed Club, Mencherz, Pa Pa Land: Head Escape, Rooster Wars, Spring Fam, The Dark Wings 2. This list is introduced in Table I, in which each game presented with an iconic picture, name, company, genre, and description. In addition, based on the published description of the games on websites of Cafebazaar.ir and ireg.ir, we provided two columns of keywords for each game: narrative and mechanics. For this, we focused on the main narratives and mechanics introduced in the games. Then we assigned the keyword to the relevant value groups and value items. The results of this study are presented in the previous page.

Furthermore, we assigned the keywords of narratives to different value groups in our value wheel. For this purpose, we try to find the relation between the keywords and the value groups. In this respect, five out of seven games were related to a value group or a place between two value groups. However, two other games, Spring Farm and The Dark Wings had relation to four value groups. Considering the number of relevant narratives to each value groups, we scored the nine value groups on a 5-point rating scale, “not relevant” (= 0), “somewhat relevant” (= 1), “relevant” (= 2), “very relevant” (= 3), and “extremely relevant” (= 4). Fig. 2 and Table II present the relation of the keywords of the narratives with the value groups and the scores. As Fig. 2 indicates, the value group of **Status** with a score of 4 is “extremely relevant”, **Justice** with a score of 3 is “very relevant” and **Personal development** and **Carefulness** with the score of 2 are “relevant” value groups. **Meaningfulness**, **Ecology**, and **Pleasure** are “somewhat relevant”, and **Respect for others** and **Respect for oneself** are “not relevant”. In this respect, we considered the relevance of the keywords to some value items such as *Ambitious*, *Competition*, *Social recognition*, *Wealth*, *Freedom*, *An exciting life*, *Curiosity*, *Creativity*, *Intelligent*, and *Helpful*.

TABLE II. RELEVANT VALUE GROUPS TO NARRATIVES

Game	Value groups									
	Carefulness	Ecology	Justice	Meaningfulness	Personal development	Pleasure	Respect for oneself	Respect for others	Status	
Amiroo										✓
GT Speed Club										✓
Mencherz (Online Ludo)										✓
Pa Pa Land: Head Escape	✓		✓							
Rooster Wars			✓							
Spring Farm	✓	✓			✓					✓
The Dark Wings 2			✓	✓	✓	✓				
SUM	2	1	3	1	2	1	0	0		4

Also, the results of assigning the keywords of mechanics of the games to different value groups are presented in Fig. 3 and Table III, which show that Personal Development and Status are the most relevant value groups regarding the mechanics. In this respect, we related the keywords such as

Racing and Fighting to Competition, Successful and Power, Jumping, Shooting, Escaping to Capable; Searching, and Finding to Curiosity and Intelligent; and Solving, Producing, Extending to Creativity, and Competence.



Fig. 3. The keywords of mechanics are assigned to different value groups in the value wheel.

TABLE III. RELEVANT VALUE GROUPS TO MECHANICS

Game	Value groups									
	Carefulness	Ecology	Justice	Meaningfulness	Personal development	Pleasure	Respect for oneself	Respect for others	Status	
Amiroo					✓					
GT Speed Club										✓
Mencherz (Online Ludo)										✓
Pa Pa Land: Head Escape					✓					
Rooster Wars										
Spring Farm					✓					✓
The Dark Wings 2					✓					
SUM	0	0	0	0	4	0	0	0	0	3

As reviewing the selected games showed, not all games have a story, for instance, Mencherz. Indeed, many game designers believe that computer games do not need to tell a story [35]. However, as comparing Fig. 2 and Fig. 3 shows, more diverse human values are embedded in narratives rather than mechanics of the games; we found seven value groups relevant to the keywords of narratives and two value groups relevant to the keywords of mechanics. In these cases, we found that two games Spring Farm and The Dark Wings 2 in their narratives addressed more diverse values (four value groups) rather than the other games. This study also showed that, in most of the cases, the story does not play a strong role inside the games and in forming the mechanics. For instance, the back-story of Pa Pa Land: Head Escape can be related to the values of *Helpful*, *Care and Concern for others*, *Freedom*, and *National Security*. Nevertheless, these values cannot also be found in the mechanics of this game. Similarly, the mechanics of Spring Farm and The Dark Wings 2 are mostly related to **Personal development** and do not convey the other addressed values in the stories.

All in all, these results indicate that embedding human values can be easier and more feasible in narratives rather than mechanics of the games. Indeed, without any intention to tell a value-based story, most stories use human values as motivation. However, the mechanics include simple action verbs (e.g., jumping, collecting, avoiding) that usually do not support special values. In this respect, a clear connection between the core value(s) of story and the action verbs of mechanics can make a cohesion towards a value-based gameplay.

Indeed, gameplay, technology, and story can be considered as three distinct and unrelated areas of the form for brainstorming a game idea. These different origins are interconnected and choosing one of them as the origin of the game limits the accomplishment in the other two areas. For instance, when beginning with gameplay, the type of gameplay defines the technology requirements and also limits the types of story can be told [35]. Accordingly, for designing a human value based game, we highly recommend starting with a story. Although story is a less common starting point

rather than gameplay and technology [35], this seems crucial for creating a game with the mechanics and other elements that support the core value(s) of story and narrative. In this respect, designers should first have a value-based story, and then try to translate it into the game mechanics. However, thinking of gameplay possibilities in the early stages can lead the process to a successful translation. Indeed, designers should consider the story as the central vision that determines all other aspects of the game [35].

In this respect, we propose applying the HuValue tool to define the vision of a game and also to simplify translating the core value(s) to action verbs and mechanics. Inspiring from the discovery and translation phases, the following sections propose ways how the tool can be used for these purposes.

B. Defining the vision and core value(s) of a game

A vision statement is an aspirational description of what a person or an organization would like to achieve or accomplish in the future. It is intended to serve as a guide for making current and future decisions [36], and human values as “what is important for people in life” [37] forms the core of this statement. In this respect, the HuValue tool can be used to identify the relevant value. It would help people to think about what matters to them most and explain themselves based on their personal values. For instance, in a few simple steps, people can make a value-board that shows which values are important for them, which activities are valuable for them, and how they relate the activities to values.

- 1- Rank the groups of values in their order of importance to you.
- 2- Find important values (between value words) for you.
- 3- Find important activities (between picture cards) for you.
- 4- Assign your important activities to groups of values.
- 5- Assign your values to your important activities.
- 6- Capture the result in a photo as your value-board.

This procedure can also be applied by designers not only to define their personal values but also to discover the common values of the team. For this, team members can make separate personal value-boards and then compare the results

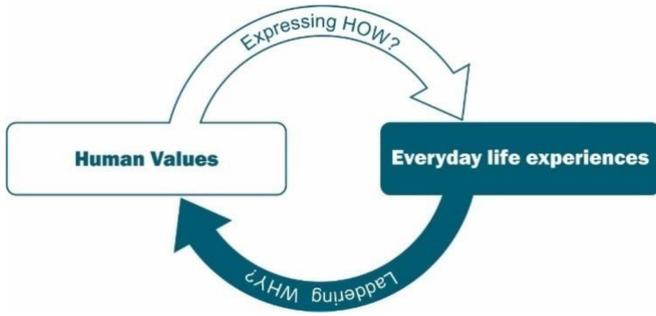


Fig.5. Expressing human values with everyday life experiences “How can this value be actualised?”, and revealing the human value(s) behind daily experiences by asking “why is this experience important?”

The picture cards can be applied in a game design process to make a clear picture of the intended values, which can simplify finding relevant gameplays. In this respect, designers should start from intended values that are specified in the vision statement and express them with relevant picture cards of activities, characters, places, and objects. With these cards, the designer can make a clear picture of the core values and extend them to the material of a story. Providing a list of possible gameplays and linking them to the specified activities, characters, places, and objects can help the designer for a wise decision about relevant gameplays and mechanics, which support the core values and complete the story. Fig. 6 presents an example of this application.

IV. CONCLUSION

HuValue is a toolkit to help designers being aware of human values in their design and consider them explicitly in different steps of decision making. In this paper, we proposed three possible applications of the tool in game design. Using the three phases of discovery, translation, and verification introduced by VAP as the guideline shows that the proposed applications of HuValue can also be useful for game design. These applications aim not only to raise designers’ awareness about different groups of human values conveyed in games but also can facilitate designing human value based game concepts. In the latter case, we recommend designers to start brainstorming from a vision and related core value(s) and then develop a relevant story. Afterward, designers should tailor the story to relevant, valuable actions and mechanics. In this respect, we argue that HuValue can contribute to the field of game design and in this term can compete with Grow-A-Game, which is not comprehensive regarding human values. HuValue is equipped with several features like measuring scales, visual expressions, and examples that in comparison with Grow-A-Game including only word cards is a better fit for design practices. In future work, we plan to apply the HuValue tool in real game design situations to test the efficiency of the proposed applications and discover further opportunities. Our long-term goals are to develop the tool to be applied in different design areas and help designers towards human value based design.



Fig. 6. An example of possible usage of the HuValue tool for translating the vision and core value of a game to action verbs and mechanics.

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