

Meaning in Life as a Source of Entertainment

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Abstract. In this paper we mean to introduce into the field of entertainment computing an overview of insights concerning fundamental human needs. Researchers such as Hassenzahl and Desmet, discuss design approaches based on psychological insights from various and varied sources. We collect these and expand them with a focus on meaning in life as seen in humanistic philosophy. We summarise the various roles that these insights can play in our research on new technology, and illustrate the discussion with examples from the field of computer entertainment.

1 Introduction

Successful entertainment technology is all about achieving the right user experience. When we think about new computer entertainment, we explore new experiences that we can offer to the user through the invention of new technology and interfaces, or through the development of interesting new application concepts. However, we should also not forget to think about when and how these experiences are worthwhile. Not just because the interaction targets useful secondary goals (e.g. edutainment applications) but also because the interactive experiences themselves fulfil certain needs.

Designing for user experience is a challenging endeavour. As Hassenzahl says, experiences are elusive and ephemeral, and resist engineering. His solution is to similarly look below the surface of the experiences: underlying fundamental human needs engender and determine to a large extent the experience resulting from interaction with technology. He suggests that by properly understanding these fundamental needs, and understanding how they relate to user experiences, we can more easily systematically design for experience by designing for fundamental needs [17].

In the current paper we mean to introduce into the field of entertainment computing an overview of insights concerning fundamental human needs. Researchers such as Hassenzahl, Desmet, and others, discuss design approaches based on psychological insights from various and varied sources [17, 11]. We collect these and expand them with a focus on meaning in life as seen in humanistic philosophy, following the suggestion by Cockton [7]. We summarise the various roles that these insights can play in our research on new technology, and illustrate the discussion with examples from the field of computer entertainment.

2 Fundamental Human Needs and HCI

As early as 1997 there was a workshop to advance the HCI research agenda with a perspective on human needs and social responsibility (largely focused on accessibility and usability issues) [21]. At a later time, Cockton stressed the urgency to look at psychological well-being, motivation and needs in order to design beyond the task-efficiency oriented origins of HCI and the superficiality of much non task focused entertainment at the time. He proposed an approach aimed at designing for worth and value [7]. Hassenzahl et al. turned to fundamental human needs as a basis for their “design for user experience” approach because these needs allowed them to describe and understand individual user experiences in all their variety [17]. In computer entertainment, Wyeth et al. built upon a set of fundamental needs to develop guidelines for whole body gaming experiences for people with intellectual disabilities [29].

If we have a closer look at these approaches we see similar, but not quite the same, bases of needs, as can be seen in Fig. 1. In the remainder of this section we explain these approaches and the human needs they identify in some more detail, but first we briefly describe what human needs are: Human needs are motivations for our actions, signify what makes life worthwhile and what gives meaning to our lives. Baumeister and Leary specified that needs produce effects and affect, apply to all people, direct cognitive processing and behaviour, have implications that go beyond psychological functioning, and lead to ill effects if not satisfied [3].

2.1 Hassenzahl and the Needs of Sheldon et al.

Hassenzahl et al. aim to design for *user experience* for products and technology. They approach this from the premise that experiences are very personal and ephemeral and thus, to address those, one might benefit from starting with an underlying set of more universal fundamental human needs [17]. They base the underlying needs of their “design for experience” approach largely on the work of Sheldon et al. [27].

Sheldon et al. describe a set of fundamental human needs based on four pillars [27]. The first pillar is Deci and Ryan’s self-determination theory which stresses *autonomy*, *competence* and *relatedness*. The second is Maslow’s view, adding *physical thriving*, *security*, *self-esteem*, and *self-actualisation*, (with Maslow’s *love-belongingness* taken as similar to Deci and Ryan’s *relatedness*). The third pillar is Epstein’s cognitive-experiential self-theory (CEST), which adds pleasure (described as *pleasurable stimulation*).¹ The fourth pillar contains needs fitting the “American Dream” assumption: *money-luxury*, and *popularity-influence*. This results in a set of ten fundamental human needs.

From these needs the first three (autonomy, competence and relatedness), originating from the self-determination theory, were hypothesised by Sheldon

¹ On a side note, the theoretical framework of CEST contains the assumption that if a need is fulfilled at the cost of another need it will result in intensification of fulfilling the other needs. In extreme cases this may result in maladaptive consequences [12].

et al. to be the most essential ones. Based on questionnaires with self-reported rates of the selected needs, indeed these three but also self-esteem seemed to be important. Security emerged as an important need based on experience of unsatisfying events, the other identified needs were found to be less important, with money-luxury having the lowest need status [27].

It is worthwhile to notice that out of the four basic needs from Epstein’s theory pillar they choose to exclude *self-consistency*, which is supposed to bring a sense of stability. Sheldon et al. found it too similar to Maslow’s security need, but in our opinion it resembles more a set values to live by, or a sense of morality, a belief in what is good and bad that plays a central role in humanistic approaches to meaning in life. We will come back to this in Section 4.

2.2 Cockton and Aldorf’s ERG Theory

Cockton writes about value centred design (VCD) [7]. He places an emphasis on looking at value as represented in and produced by products. He distinguishes between two definitions of value: (1) the capitalist notion, and (2) moral value(s) as in the morally oriented approach of value sensitive design (VSD) [14, 15] and the embedded (moral) values of design of the “values at play” approach [13]. VCD acknowledges the importance of both, but focuses more on the first than on the second.² Cockton turns to Alderfer’s ERG theory to address what people might find worthwhile. Alderfer’s ERG theory consists of three (categories of) needs: (1) *existence*, including physiological and safety needs, (2) *relatedness*, including social and external esteem, and (3) *growth*, including self-actualisation and internal esteem [1, 7].

2.3 Wyeth et al. and the Self-Determination Theory of Deci and Ryan

Wyeth et al. proposed a set of guidelines for designing for whole body interaction for people with intellectual disabilities that is based on the Self-Determination Theory (SDT) of Deci and Ryan [29, 9, 25]. SDT is one of the most influential contemporary psychological models for human motivation and revolves around three primary needs: competence, autonomy and relatedness [9, 10, 25]. Self acceptance, personal growth and purpose in life are taken into account in the postulates of the theory [8]. Wyeth et al. also focused on the underlying principles of SDT and their intrinsic motivation factors such as free choice, interest, optimal challenge and the mentioned psychological needs but also including effectance and personal causation. Furthermore, in their work they apply three fundamental dimensions of supporting social contexts: autonomy support, structures, and involvement [29]. An important statement —exemplified by Wyeth’s choice of

² To prevent confusion with the second meaning, which plays a more central role in the humanistic tradition, Cockton later changed terminology to describe his method as Worth Centred Design.

the user group— is that fundamental human needs are universal and are relevant for any target user group.

Although many acknowledge the value of SDT, there are of course some discussion points on the SDT in the psychological field. Some point to the aspect of the subjective-perceived need fulfilment instead of actual fulfilment which seems to be addressed in SDT [22]. Others suggest a more central social comparative aspect of need fulfilment, people tend to see their fulfilment with respect to others [6]. Furthermore, according to Andersen et al., relatedness plays a more important role and they acknowledge autonomy and competence as important needs [2]. However, they also point to an explicit need for meaning and security and safety -a notion of stability and perceived future psychological and physiological states [2]. Also, Andersen suggests it would be valuable to look at the coherence with social-cognitive theory of Baumeister and others. Therefore, in the next section we look at such a theory of Baumeister on the meaning of life, and the humanistic view of van Houten.

3 Adding Two Humanistic Viewpoints

Fig. 1 summarises the fundamental needs from the HCI literature discussed above. The secondary references on which they base their work, however, suggest that it will also be useful, or even necessary, to look more explicitly at humanistic philosophy and its view on meaning in life. In this section we take a look at the seminal work of Baumeister, and the work of Van Houten, leading to additional entries in the overview in Fig. 2.

3.1 Baumeister

Baumeister wrote extensively about meaning in life and proposed a set of fundamental universal human needs for meaning in life [4]. His theory is based on a meta-analysis over several fields, including history, sociology and anthropology. We choose to incorporate this meta-study as it is based on a broad range of disciplines, has not yet been mentioned in HCI context, and in our opinion gives an insightful addition to both the theoretical framework and the list of fundamental needs that can be addressed in our work.

Baumeister states that human need for meaning in life can be divided into four basic needs: a need for purpose, a need for efficacy, a need for self-worth and a need for (moral) values in life. If someone does not satisfy one or more of the needs to satisfaction, it will lead to negative connotations such as depression or sadness. In general, if people are faced with a reduction in fulfilment of one (or several of) the need(s), they will cope by intensifying other activities in order to fill the gap. Besides this they might be more open at that point to engage in new activities that might satisfy one or more needs. Below, we discuss the four needs in some more detail.

This table has been based on several viewpoints, looking at the same question of "what makes somebody tick" using different terms: fundamental human needs, intrinsic motivation, and meaning in life.

#	Model	Psychological needs					Hassenzahl (2010) ⁶ for fun		Wyeth et al. (2011) ⁶ for whole-body gaming with 10		Farragan & Nissenbaum (2007) VAP ⁴		Cockton (2006) for worth		Desmet & Hassenzahl (2012) flex	
		autonomy	competence	relatedness	effectance ¹	personal causation ¹	X	X	X ¹⁰	X ¹⁰	X	X	X	X	X	X
2	Deci & Ryan (1991 ¹ , 2000), Ryan & Deci (2000) ¹	autonomy					X	X ¹⁰								
3	Ryan & Deci (2000) ¹	competence				X	X									
4	related to Maslow, Alderfer, Csikszentmihalyi, Lepper, Baumeister & Leary, Reiss	relatedness				X	X	X ¹⁰	X ¹⁰							
A		effectance ¹				X	X									
A		personal causation ¹				X	X									
6		physiological / physical thriving ²				left out										
8		safety /security ²				X										
=4 ²	Maslow (1943 / 1954**)	love(-belongingness ²)				X	X ¹⁰	X ¹⁰	X ¹⁰							
=1 ²		esteem				left out	X ¹⁰	X ¹⁰	X ¹⁰							
7		self-actualization (-meaning ²)				X	X									
1		self-esteem				X	X ¹⁰	X ¹⁰	X ¹⁰							
=4 ²		relatedness				X	X ¹⁰	X ¹⁰	X ¹⁰							
5	Epstein (1990)	pleasure (vs. pain) / pleasure stimulation ²				X	X ¹⁰									
=8 ²		self-concept consistency /sense of stability ²				X	X ¹⁰									
9	American Dream	popularity influence				X										
10		money luxuries				left out										
	Rokeach (1973) ³								X ¹⁰					X		

¹ Wyeth et al. used an extended interpretation of Deci & Ryan(1991) and Ryan & Deci (2000) as a starting point, resulting in these two additional mentioned needs: *personal causation*, that is the intention to produce change in the environment, and *effectance*, which they describe as dealing effectively with an environment. Whereas, competence and autonomy are central in mastery behaviour to develop interests and capacities.

² As used, mentioned and interpreted in Sheldon et al.'s list

Fig. 1. Overview of human needs in HCI

Model	Psychological needs	Humanistic views					
		Hassenzahl (2010) ⁶ for UX	Wyeth et al. (2011) ⁶ for whole-body gaming with ID	Flanagan & Nissenbaum (2007) VAP ⁴	Cockton (2006) for worth	Desmet & Hassenzahl (2012) for UX	
Alderfer ⁷	Existence (physiological and safety) or Identity Relatedness (social and external esteem) or Belonging Growth needs (self-actualization and internal esteem)	X ¹⁰	X ¹⁰	X ¹⁰	X	X ¹⁰	
Friedman and Kahn (2003) ⁵				X ⁹	X		
Baumeister (1991)	Purpose						
	Values			X ^{8, 10}	X ^{8, 10}		
	Self-worth	X ¹⁰	X ¹⁰	X ¹⁰		X ¹⁰	
	Efficacy			X ¹⁰		X ¹⁰	
	solidarity (other-relatedness)			X ¹⁰			
van Houren (1999)	artistic dimension of aesthetics e.g. creatively active and open-mindedness		X ¹⁰	X ¹⁰		X ¹⁰	
	self-consciousness (reflecting on one's life)	X ¹⁰		X ¹⁰		X ¹⁰	

³ Rokeach proposed two sets of universal values (although differing in strength), (1) *terminal values*, those to be fulfilled before death: a comfortable life, an exciting life, a sense of accomplishment, a world at peace, a world of beauty, equality, family security, freedom, happiness, inner harmony, mature love, national security, pleasure, salvation, social recognition, true friendship, wisdom, and (2) *instrumental values*, those modes of behaviour to attain end-state of existence: ambitious, broadminded, capable, cheerful, clean, courageous, forgiving, helpful, honest, imaginative, independent, intellectual, logical, loving, obedient, polite and self-controlled

⁴ Flanagan and Nissenbaum proposed some values relevant to games, those underlined were targeted in their case study of Rapunsel: gender equity, environmentalism, security/safety, creativity and expression, cooperation, sharing, trust, authorship, liberty, diversity, justice, inclusion, equality, privacy, and personal autonomy

⁵ They refer to Value Sensitive Design and discuss a set of 12 human values with ethical import: human welfare, ownership and property, privacy, freedom from bias, universal usability, trust, autonomy, informed consent, accountability, identity, calmness, and environmental sustainability

⁶ We omitted the in the paper present set of items from Jordan and Tiger, Gaver and Martin, and Hassenzahl's earlier work. These were reflecting more experiences or were design solution oriented.

⁷ We use two terminologies here as described in Cockton's work

⁸ "Values" can be interpreted in many different ways as Cockton makes clear, e.g. worth, morality, being of personal or monetary value etc.

⁹ Referenced to Friedman's 2003 paper only in a related publication of Flanagan, Howe and Nissenbaum (2005)

¹⁰ Seems to be addressed in their approach (to some extent) but not based specifically on this literature on needs

Fig. 2. Overview of human needs in HCI (ctd.)

3.2 Purpose

Purpose concerns the interpretation of one's activities and how these seem to influence future states. Directly linked to this are *goals* and *fulfilment*. Fulfilment deals with positive affect and achieving the goals. Goals are more related to extrinsic motivations. An activity might be unpleasurable in itself but is done to reach or to come closer to a goal. When the entertaining value or fulfilment results from performing the activity itself it is an intrinsic motivation.

3.3 Self-Worth

The need for Self-Worth concerns the fact that people need to feel that they have something to contribute. This often results in people having the tendency to feel better than others. This can be done by showing-off, engaging in competition or scraping together small details to form a superior identity. It has some overlap with value and especially having positive value. Nonetheless, it is a distinct need and the two can even conflict.³

3.4 Efficacy

Efficacy, control and competence are very important feelings about being capable and being strong in life. Remarkably, it is especially about the *perception* hereof. An illustrative example is given from Rodin and Langer [23]. In this experiment elderly were made aware of their responsibilities for themselves and were given the task to care for a plant. It gave them a sense of efficacy and being needed. Results showed that this group felt better and lived longer.

Primary and secondary control – A subitem of the need for efficacy is *primary control*. It is a form of control in which the environment is changed for one's own benefit. *Secondary control* means that one adjusts to the environment or situation. An sub-category of this latter is *interpretive control*. This means that merely understanding something already provides a sense of control. Furthermore, even the illusion of having control over negative aspects of an environment can have beneficial results.

3.5 Values

Having values, a belief in what is good and bad, can be a source of a sense of meaning in one's life – independent of whether one actually manages to live according to the values. Also, people want to justify their behaviour even if it is not a key factor of a choice. Morals are generally stated in negative ways, like

³ When the self-worth of a person is raised by things that actually conflict with their own values, this discrepancy may negatively influence the *self-consistency* discussed by Epstein.

“*Thy shall not kill*”. Positive morals or values such as sharing, helping others and defending the group, exist as well in most societies. A specific type of value is a “value base”. This kind of value, according to Baumeister, are values that need no further justification. Typical examples are doing something “*for God’s sake*” or “*for the children’s sake*”.

Value gap – The Judeo-Christian religion that shaped western society do no longer provide the uniform, unquestioned set of values to live by, to the majority of people. According to Baumeister this hollowing of value bases resulted in a “value gap”, no longer everyone knows what to live by (e.g. the ten commandments) and for (e.g. to enter heaven). Moreover, many traditions have been stopped as their reasons for existence were questioned; in a diminishing amount one uses “*because we’ve always done it that way*” as a value. The capitalist work ethos, “*because your boss tells you to*”, seems to have further weakened morality. As a result financial values have become more dominant, but these are often inadequate and unsatisfying. According to Baumeister a response is to turn to the other needs, finding a basis for values from these. In modern society this especially seems to be the self or self-identity, but also work ethic and the sacredness of family.

3.6 The Humane Life of van Houten

We see the view of Van Houten as a second important source representing a more humanistic side of human needs [18]. He noticed that the Dutch society has been classifying, standardising, normalising and discriminating. In current society being able to work has seem to been established as a central value. Even for those who are not able to work, attempts at work are more or less imposed and ultimately expected. If they can’t, they are felt sorry for and are excluded of parts of life. As an alternative approach to this, he proposes three main lines for values for a humane life and society: three necessities for a good life, “beyond the common man”.

The first is centred around *solidarity* and can be described as other-relatedness; it is based on the social nature of humans. An important role is played herein by the autonomy of the person, respect for others and responsibility. Being cut-off, manipulated or used are identified as threats to this.

The second is an artistic dimension: *aesthetics*. In other words making something beautiful, being creatively active and open-mindedness help one to lead a fulfilling life.

The third is *self-consciousness*. This concerns the attempt to reflect on one’s life and aim for a “prudent” (well-considered and well thought-out) way of life. This latter, according to Van Houten, should not only hold for individuals but for companies and society as a whole as well. Although we understand the relevance for this need, we are somewhat hesitant to incorporate it as a core need because it relies heavily on cogitation and a high level of rational, cognitive ability. We would prefer instead to turn to expression of oneself one’s identity and especially becoming that what one can be as part of the self-actualisation of Maslow [19].

4 Needs in Entertainment

In this section we briefly explain the identified needs of the several models that can be targeted and fulfilled with entertainment. We address the needs from Figure 1 and 2. The mentioned examples are not exhaustive but are intended to show that entertainment on itself can fulfil a wide array of human needs. Although the several models are not easily fitted into a universal model of everything, turning to these needs in the design and development process for new (entertainment) technology still yields worthwhile and interestingly new applications.

Autonomy Autonomy as mentioned here is about the need to be self-consistent and feeling a sense of volition. Not merely about free-choice, for which it is often mistakenly interpreted [10]. The need as such, is targeted often in games. People have been playing games in which there are no clear pre-defined goals and part of the game is the goal creation or selection. In our experience this gives a feeling of volition, experimenting with odd goals, and finding those fitting one's identity. In this line of work one could think of open-ended entertainment in which players come up with their own interpretations and rules [5].

Efficacy Efficacy, control and competence focus on the need of feeling capable, and being strong in life. As stated in Baumeister, merely understanding something helps to fulfil this need of efficacy. The whole edutainment movement signifies the importance of this.

Social-Relatedness Social-relatedness, to feel connected to other people, preferably in a reciprocal way, is a very strong and important need in life [3]. For example, interactive playgrounds for children can (actively) encourage social interactions [5, 20].

Physiological Thriving The need for physiological thriving focuses on aspects of feeling healthy, including the need for food, water and exercise. With the recent introduction of controllers, platforms and devices for whole body interactions, such as the Wii and Kinect but also mobile devices integrating GPS, games have been used to target fitness. Another aspect is the need for the right nutriments. No realistic entertainment alternatives exist for these but entertainment has been used to increase the enjoyment of eating and drinking by combining it with other needs [28].

Safety/Security The need for safety and security is about perceived threats for future need fulfilment. Related to the need for efficacy mentioned earlier, learning to deal with such threats might increase security as well as efficacy. There are several serious games targeting security with the use of virtual reality to train police officers and the military, and to help people with a variety of phobias [16].

Self-esteem To feel worthy, good and in some cases better compared to others, are essential in the need for self-esteem. Again this need is related to efficacy and competence but has its own specifics. In practice, in games this aspect is often limited to the use of high-scores, bulletin boards, levels and solving puzzles.

Self-actualisation, Creativity, Open-mindedness and Self-Expression

The need to express one self and to become who one really is, many see it as an artistic dimension, although this is only a part of what self-actualization is about. Many game designers make use of this expressiveness, the joy of creation and personalization in their games, allowing for exploration and creativity, some even explicitly target self-actualisation of Maslow's hierarchy of needs [26], or make creativity and self-expression the main point of the game (e.g. minecraft and other sandbox games).

Pleasure Stimulation The enjoyability of beautiful things, the aesthetics, (passively) undergoing a pleasant experience, the hedonic quality of things, these are the basis for the need for pleasure stimulation. The increase in performance of computer technology allows for more and more sensual stimulating experiences, ranging from artpieces, to virtual worlds or virtual tours through existing landscapes. Moreover, pleasant experiences such as enjoying humour, the thrill of being scared and reliving enjoyable memories help to fulfil this need.

Purpose Purpose is about having goals and attaining fulfilment, to do things for a reason and the expected influence of this on future states. The turn to gamification to solve hard problems with humans, for instance via crowdsourcing is one of the ways in which the need for purpose is satisfied through entertainment.

Values Having certain values to live by, moral standards and things to measure up to, the 'basics' that can give guidance to one's life, those are central in the need for values. Traditional board games, take into account values in an indirect way. Many allow and depend on a set of house rules, additional rules to make the game *fair*, *age appropriate* or enhancing the aspect of *personal causality* by reducing randomness. These rules make such values explicit. Values could also be targeted through contemplation. For instance, the game series of GTA and Molleindustria contain a set of explicit values (although odd and perhaps morally crooked) that could encourage the gamer to contemplate on their own set of values.

5 Conclusion

In this paper we looked at fundamental human needs in an HCI perspective, looking at existing work in this direction, and adding work from humanistic philosophy. This provided us with an overview of fundamental needs that might

be addressed through new technology as well as some general insights from the various underlying theoretical frameworks. By linking entertainment examples to the list of identified needs, based on a variety of theories, we showed that entertainment can be more than mere fun. We conclude that entertainment can be a welcome addition for intrinsic motivation, mental well-being, and for increasing meaning in life. Turning to needs in the design and development process for new (entertainment) technology might also be useful in setting up requirements, during design, and evaluation and help in selecting projects and activities to engage in. Entertainment can be a very valuable tool and an outlook on needs adds to life.

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