Pleasantness in Bodily Experience:
A Phenomenological Inquiry

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This study investigated the varieties of pleasantness in bodily experience in order to advance the aesthetics of interaction paradigm. Interviews were held with twelve people varying in age and occupation. They were asked to describe pleasant experiences for Sight, Audition, Smell, Taste, Touch, Action and Thought. A phenomenological reduction performed on the interview transcripts resulted in seven pleasantness themes: *sociality*, *aesthetics*, *comfort*, *agency*, *associations*, *vitality* and *progression*. These pleasantness themes involved multiple bodily faculties with a prominence of two or three specific ones, which allowed a preliminary mapping of the pleasantness themes in relation to the body. The results may advance the aesthetics of interaction paradigm by explicating the varieties in pleasant experience and how the body is involved in shaping them.

Keywords – Pleasantness, Bodily Faculties, Phenomenology, Aesthetics, Sensorium, Interaction.

Relevance to Design Practice – Awareness of relationships between bodily faculties and pleasantness themes can help designers to identify design opportunities that promote positive subjective experience.

Introduction

Within the design discipline, increased attention is given to the positive subjective experiences that are elicited during the interaction with artifacts. For instance, Jordan (2000), Norman (2004) and Hekkert (2006) all highlighted the importance of pleasure in product use, in addition to the traditional evaluation standards of effectiveness, efficiency and ease of use. The exploration of subjective experience in design has resulted in a variety of theories and approaches. Both aesthetics of interaction (Djajadiningrat, Overbeeke, & Wensveen, 2000; Overbeeke, Djajadiningrat, , Hummels, & Wensveen, 2002; Petersen, Iversen, Krogh, & Ludvigsen, 2004) and aesthetic consumption (Charters, 2006) highlight the fun and beauty experienced during product interaction. Goodness (Hassenzahl, 2004) and hedonomics (Hancock, Pepe, & Murphy, 2005) emphasize the manner in which perceived instrumental and stylistic qualities of products shape the overall interaction experience. The variety of appraisals and values that underpin these subjective (emotional) experiences that are evoked during interaction have been investigated by Desmet (2002) and Ross (2008).

Besides the focus on subjective experience in design, increased attention is given to the role that the body plays in shaping it. Experience is shaped by our *sensorium*, our bodily interface with our environment (Howes, 2004). In design, this has resulted in a shift from adopting a visual-cognitive focus on product experience, typically encountered in human-computer interaction (Dourish, 2001) towards adopting a bodily focus including multi-sensory experience (Schifferstein & Spence, 2008), behavioral richness (Frens, 2006), embodied cognition (van Rompay, Hekkert, & Muller, 2005) and the role of touch (Sonneveld & Schifferstein, 2008) and movement (Hummels,

Overbeeke, & Klooster, 2007) during interaction. It is argued that our bodily skills involved in interaction (i.e., feeling, doing and knowing) should be addressed simultaneously when designing for experience (Overbeeke et al., 2002).

Biologically, humans are endowed with a hedonic system in the brain supporting human functioning (Johnston, 2003; Berridge, 2003). In this system, signaling 'pleasure' involves several brain regions that are interconnected to many other brain areas (Matthews, 2000). For instance, it connects to areas related to visceral functioning, the processing of primary and combined sensory information and cognitive functioning. On a visceral level, food intake may lead to the pleasant experience of feeling satiated (Rolls, 2006), while seats that allow free blood circulation and do not exercise pressure upon muscles and joints may lead to the experience of feeling comfortable (Vink, 2005). Concerning information processing, perceptual fluency, i.e. the ease with which perceptual information is processed, may be subjectively experienced as aesthetically pleasing (Reber, Schwarz, & Winkielman, 2004). On a cognitive level, affective information can suggest that one has made a good choice (Damasio, Tranel, & Damasio, 1991), which on a social level can lead to the judgment of being of good taste (Woodward & Emmison, 2001).

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To advance the aesthetics of interaction paradigm further within the scientific design community, knowledge is needed on the constituents of the aesthetic experience and how it can arise during interaction. In this respect, two frameworks are discussed. According to Locher, Overbeeke, and Wensveen (2010), aesthetic experiences are based on information that flows between person and artifact during interaction. This information, labeled functional, inherent and augmented information, is perceived, reflected and acted upon though a person's cognitive and sensory-motor capabilities. In the framework proposed by Petersen et al. (2004) aesthetics is viewed form a pragmatist philosophical perspective (Shusterman, 1992). Here, an aesthetic experience is shaped by social norms and political landscapes, involving both "bodily sensations and intellectual challenges" (p 271). It surpasses a merely decorative value and involves the artifact appropriated in use. Although the two frameworks describe aesthetics of interaction from different perspectives (information processing vs. a pragmatist philosophical view), they both acknowledge that aesthetic interaction is rich, involving multiple aspects of human (and social) functioning, and is contextual, i.e. grounded in everyday practices.

In this paper we contribute to the discussion of the aesthetics of interaction paradigm by introducing a phenomenological perspective regarding the experience of pleasantness within the human body. One characteristic of the aesthetics of interaction paradigm is its inherent *positivity*: Positive qualities are pursued in the interaction. This contrasts with the traditional usability agenda that typically focuses on avoiding negative experiences (Hancock et al., 2005). A second characteristic of the aesthetics of interaction paradigm, as discussed earlier in this paper, is the holistic focus on bodily functioning (Peterson et al., 2004; Locher et al., 2010), rather than focusing on a single experiential aspect, such as the fixation on sensory experience often encountered in classical empirical aesthetics (e.g., Berlyne, 1971). Departing from these two starting points, we map the varieties of positive experiences and how these relate to the human body by addressing Sight, Audition, Smell, Taste, Touch, Action and Thought, on the basis of people's personal accounts of their experiences. Results of this study may advance the aesthetics of interaction paradigm by explicating varieties in experienced pleasantness and how the body is involved in shaping them. Hence, our outcomes can increase awareness of the bodily role in positive experience and, thereby, stimulate scientific discourse and possibly allow aesthetic interactions to be designed accordingly.

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Method

A phenomenological approach was used to map out people's experiences of pleasantness on different levels of bodily functioning. Phenomenology as a distinct method of inquiry is based upon the classic philosophical works of Husserl and Heidegger (Moustakas, 1994). It provides a structured approach to investigate subjective experience, allowing the discovery of shared ideas and common experiences among people (Maggs-Rapport, 2008). A traditional data collection method for phenomenological inquiry is the qualitative, in-depth interview (Lopez & Willis, 2004). Since this method can be time-intensive, interviews are often semi-structured, hereby maximizing researcher efficiency while still allowing people's freedom of expression (Barriball & While, 1994). In order to increase the scientific rigor of phenomenological research, balanced integration is promoted (de Witt & Ploeg, 2006). Balanced integration relates to "…the general philosophical theme and its fit with the researcher and the research topic, in depth intertwining of philosophical concepts with the study methods and findings, and a balance between the voice of the participants and the philosophical explanation…" (p. 224). Our inquiry goals were to investigate the pleasantness of everyday activities experienced within the human body in relation to the aesthetics of interaction paradigm, using a biological perspective on human functioning. In order to reach these goals, we set out to obtain in-depth understanding of a large variety of pleasant, everyday experiences.

Participants

During the recruitment of participants, we tried to maximize diversity in responses by searching for people who used different sensory modalities in their professional work and who had different demographic characteristics. Participants were 12 Dutch citizens varying in age, background, income, and level of education. Their occupations were: Disk jockey, music conductor, preacher, psychology student, Reichian body worker, physiotherapist, maitre/sommelier, manager in the perfumery industry, architecture student, dance teacher, fashion design student and secretarial worker. Participants were selected through professional listing services and through our social networks. Care was given that interviewers were not personally acquainted with any of the participants. Participants' ages ranged from 20 to 72 years. Six participants were women and six were men.

Procedure

Three researchers conducted a total of 12 in-depth interviews in which participants gave personal accounts of pleasantness in everyday life. Interviews were held at people's homes or work environments. A setting was created that was perceived as quiet and safe, allowing participants to talk clearly and freely. The interviews were recorded on audio. In the briefing of the interview, multiple terms such as pleasure, good feeling, nice and beautiful were used to address pleasantness. Each interview was divided in seven parts related to the different bodily faculties: Sight, Audition, Smell, Taste, Touch, Action and Thought. The order in which these were presented to the participants was determined

by chance in order to avoid any learning effects and attention-span effects. For each faculty, participants were allowed ten minutes to talk freely about any topic they thought relevant for the faculty under investigation. For each faculty a minimum of three topics was discussed in detail, so that the interviewer obtained a clear description of the reasons why a person considered a topic pleasant as well as a description of the experience that had produced it. This approach bears similarity to the laddering technique (Reynolds & Gutman, 1988). For example, when asking a secretarial worker what comes to her mind when thinking about pleasantness for Sight, she mentioned a wedding that she had witnessed. The reason why she considered this a pleasant experience is that she saw people feeling happy, which made her happy as well. When asking about what she actually saw that produced this pleasantness, she mentioned seeing tears of joy and smiling faces. The transcribed interviews resulted in 227 A4 pages of written text.

Data Analysis

The analysis of the interview data followed five distinct steps. The first four involved the steps of a phenomenological reduction performed on the written transcripts (Moustakas, 1994). First, topics were extracted from each written transcript. To include a topic within the analysis, a clear relationship had to be observed between the concerns and features of a topic's pleasantness. A total of 423 topics were identified. In step 2 these topics were grouped across participants for each of the seven bodily faculties. This grouping was based upon observed commonalities in topic's concerns and resulted in a total of 137 groups. In step 3 these groups were clustered across faculties, resulting in a total of 34 clusters. In step 4 of the phenomenological reduction, these clusters were combined into overall themes resulting in seven themes of pleasantness. While the researchers carried out the grouping of topics independently, the clustering of groups and forming of overall themes was a shared process that involved discussion and negotiation amongst the researchers. The guiding principle of forming themes was to attain the smallest number of themes harboring the largest number of clusters. By having researchers work together to follow a phenomenological reduction process increased the *intersubjectivity* i.e., the agreement among researchers on the results. Step 5 involved re-classifying all 423 topics according to a closed coding scheme based upon the seven themes. To attain some flexibility, each topic could be classified as a combination of two themes. Three researchers were involved in

conducting and analyzing the interview results (step one to four) and one researcher was involved in recoding the topics (step five).

Results

Results are presented as follows: First, the seven pleasantness themes are described according to their prominent clusters (see Table 1). Hereafter, topic distribution across themes is presented as well as topic distribution across faculties for each pleasantness theme separately. Finally, common theme combinations are presented.

Descriptions of the Seven Pleasantness Themes

(1) The Sociality theme is concerned with pleasantness experienced through social interactions. Participants described this pleasantness as experiencing empathic contact, social connectedness and benevolence. Empathic contact was described as having real and emotional contact with other individuals when "receiving a handshake", "given a hug" or "given a pat on the shoulder". Empathic contact was also experienced during conversations when you notice by what is said and how it is said that others are "sensitive to your feelings and concerns". Social connectedness was experienced when hearing people "chatting at a party", but it was also experienced when people "sing in a choir" or "shout during a protest march". Benevolence was experienced when "helping elderly into a train", "being considerate to other people's concerns" and "showing tolerance for their mistakes." Given that our society is based upon interdependent individuals, sociality may be considered pleasant in itself, as well as pleasant in the interactions that contribute to it.

(2) The Aesthetics theme is concerned with pleasantness experienced in sensorial stimulation. Participants described this pleasantness as experiencing variety, simplicity and harmony. Variety was mentioned in relation to intricate blends of flavors; "with a wonderful dish, for instance, there is something to experience in your mouth." Also, variety was experienced in the taste of wine when it "addressed multiple tones that evolved over time". Harmony was experienced when different elements were integrated into a whole, It was mentioned in relation to flavors in apple-pie "apple, butter, cinnamon and sugar in perfect amounts", visual elements of the façades of old Amsterdam canal houses and the melodies of musical compositions. Simplicity involved a feeling of lightness, elegance and essence when "seeing a desert" or seeing a chair that was made with the "smallest amount of

Table 1. List of pleasantness themes in relation to their prominent clusters.

Theme	Main clusters
1. Sociality	(a) Empathy, (b) Social connectedness, (c) Benevolence
2. Aesthetics	(a) Variety, (b) Simplicity, (c) Harmony
3. Comfort	(a) Cherishment, (b) Freshness, (c) Satiation, (d) Tranquility
4. Agency	(a) Competence, (b) Autonomy, (c) Discipline
5. Association	(a) Fantasy, (b) Nostalgia, (c) Recognition
6. Vitality	(a) Whole, (b) Firm, (c) Energetic, (d) Sentimental
7. Progression	(a) Learning, (b) Insight, (c) Challenge, (d) Discovery

material" but also in relation to hearing minimalist music. These examples illustrate that pleasant sensorial stimulation relates to the ability to experience primary sensory qualities as well as their interrelations in complex formations. Situations in which these qualities are best experienced include the balance of a variety of elements (harmony) or focusing on single qualities (simplicity).

(3) The Comfort theme is concerned with pleasantness experienced in bodily nourishment. Participants described this pleasantness in experiencing cherishment, freshness, satiation and tranquility. Cherishment was mentioned in relation to fabrics such as furs, duvets and clothes that "feel soft to the touch and allow the body to be warm". Freshness was experienced as a bodily awakening and joy when sensing "moisture and sunlight on the skin" and smelling "flowery odors". Satiation was experienced when hunger and thirst are stilled after consuming a "highly nutritious meal." Tranquility was described as feeling inner peace and serenity when hearing "natural sounds such as birds, wind and rain." These examples all refer to environmental conditions satisfying bodily needs, leading to a calming and relaxing type of pleasantness.

(4) The Agency theme is concerned with pleasantness experienced in personal effectiveness. Participants described this pleasantness as experiencing efficacy, autonomy and discipline. Efficacy was experienced when goals can be attained successfully, for instance "when parking your car in a tight space and noticing that you are succeeding." Efficacy was experienced when the "absence of bodily pain enables you to function without obstruction." Autonomy was experienced as personal freedom, for instance "when one does not encounter red traffic lights while driving", but also "when you have the time to think about personally interesting things." Discipline was mentioned in relation to goals that need perseverance to attain: "Motivating yourself to repaint your room" or to "go out for a jog". These examples illustrate that pleasantness in agency relates to conditions promoting personal effectiveness, which can involve individual factors (skill, discipline and capabilities) as well as external ones (artifacts and circumstances).

(5) The Association theme is concerned with pleasantness experienced in meaning. Participants described this type of pleasantness as experiencing fantasy, nostalgia and recognition. Fantasy allows you to experience things that are not possible in reality, for instance "when freely associating and philosophizing" or "listening to music on which you can drift away". Nostalgia was described as remembering pleasant experiences from the past. Seeing natural landscapes can stir memories of holidays, smelling traditional dishes can stir memories of "mother's home cooking", and "hearing a song" can transport you back to the first time you heard it. Recognition was described as a feeling of familiarity or congruence, for instance when you can identify styles of artistic objects as "clearly stemming from a certain time period", when "the style of the interior design matches with the style of the exterior" but also when hearing a sound "of which you can identify its source." The examples illustrate that pleasantness in associations depends on understanding, predicting and even escaping from reality, by relying on previous experiences and imagination.

(6) The Vitality theme is concerned with the pleasantness experienced in bodily liveliness. Participants described this pleasantness in a variety of terms such as feeling whole, firm, energetic and sentimental. Wholeness was experienced when "feeling heavy limbs", when "blood circulates through the body", and when "breathing is abdominal." Firmness was described as feeling strong and stable when your body feels "neither too thick nor too thin", or when "feeling one's feet firmly on the ground." Energetic was described as having an "adrenaline rush while taking off in an airplane", but also when hearing "strong rhythms in dance music." In music, sentiment is described as experiencing "chills and goose bumps" when resonating with the emotional qualities expressed in music. These examples illustrate that pleasantness in vitality involves the feeling of 'being alive' in both a visceral and emotional sense.

(7) The Progression theme is concerned with pleasantness experienced in advancement. Participants described this pleasantness as experiencing learning, insight, challenge and discovery. Learning was mentioned in relation to "acquiring general knowledge" or "deepening your knowledge about a specific topic" allowing you to "understand the world in new ways." Insight was mentioned in relation to problem solving eventually "leading to a breakthrough" or "reaching the essence." Challenge was mentioned in the performance of physical feats that you could not do before; "seeing whether you can conquer the challenge or accept your defeat." Discovery was mentioned in relation to "encountering exotic fruits during a holiday", or "discovering new cooking recipes", which broadens your horizon. These examples illustrate that pleasantness experienced in progression involves conditions that allow for and actually result in learning both mentally as well as behaviorally.

Distribution of Topics across Faculties and Themes

The results of the classification of topics mentioned by the participants across the themes described above and across the bodily faculties are presented in Table 2. High variation was observed in topic distribution across the seven themes. The sociality theme included the most topics (65) while the progression theme involved the least (21). Further, the number of topics included in a theme combination varied considerably. The combination of comfort & association included the highest number of topics (19) while the combinations of comfort & agency and comfort & progression included the least number of topics (both 0). Less variance was found in the distribution of topics across Faculties, which is not surprising given that the aim was to explore three topics for each faculty during the interviews. Nonetheless, Sight resulted in the highest number of topics (69) while Taste resulted in the smallest number of topics (54).

Results also show that most themes involved multiple faculties, with typically a prominence of two or three specific faculties per theme (Table 2). The sociality theme involved all seven faculties with an emphasis on the faculties of touch, audition and action. This suggests high involvement of bodily contact, the human voice and social conduct for topics within this

theme. Different to sociality, the aesthetics theme involved taste and sight as prominent faculties, reflecting the distinct formal qualities in flavors of various cuisines and in visual elements in art, design and nature. Prominent faculties for the comfort theme are touch and smell, which relate to the soothing effect that the environment has on the body in terms of fabrics, climate and odors. Furthermore, the agency theme has action and thought as prominent faculties, which reflects topics related to intentionality and human performance. For the association theme, the prominent faculties of sight and smell probably reflect examples of visual recognition and the strong connection of memories to odors. The vitality theme has touch and audition as prominent faculties, which possibly reflects topics on internal bodily feelings and the power of the senses to affect these feelings directly. Just like the agency theme, the progression theme has thought and action as prominent faculties, which probably reflects topics related to developing knowledge and skills.

Common Theme Combinations

When investigating the distribution of topics across theme combinations, it can be observed that some combinations emerged more often than others. For instance, nineteen topics were observed involving both the comfort and the association theme. Here pleasantness related to comfort experienced in the past or comfort that might be experienced in the future. The smell of food, for instance, can result in strong mental imagery of the food that leads to bodily satiation when consumed. Similarly, the smell of beans and nutmeg, for instance, was associated with having "enjoyed mothers' home cooking in winter-season as a child." Furthermore, fourteen topics were identified addressing both agency and sociality, reflecting the combination of effective action in relation to others. One participant experienced admiration when he was "brilliantly playing the cello in front of an audience", while another participant experienced admiration when she listened to a performer who could "sing very well". Other participants addressed competition and cooperation, for

Table 2. The frequencies of topics across pleasantness themes and faculties.

Theme name	Sight	Audition	Smell	Touch	Taste	Action	Thought	Total
Sociality	**9**	**14**	**5**	**17**	**2**	**14**	**4**	**65**
Soc. & Aes.	3	4	0	1	1	0	0	9
Soc. & Comf.	0	3	2	3	0	0	0	8
Soc. & Ag.	0	2	0	0	0	8	4	14
Soc. & Ass,	0	0	5	0	1	0	2	8
Soc. & Vit.	2	1	0	0	0	1	2	6
Soc. & Prog.	0	0	0	0	0	1	4	5
Aesthetics	**14**	**7**	**4**	**1**	**20**	**0**	**0**	**46**
Aes. & Comf.	3	0	2	4	4	0	0	13
Aes. & Ag.	0	3	0	1	3	3	0	10
Aes. & Ass.	7	3	0	1	1	0	0	12
Aes. & Vit.	0	1	0	0	3	0	0	4
Aes. & Prog.	0	0	1	0	1	0	0	2
Comfort	**4**	**6**	**14**	**14**	**5**	**1**	**0**	**44**
Comf. & Ag,	0	0	0	0	0	0	0	0
Comf. & Ass.	3	0	11	1	3	0	1	19
Comf. & Vit.	0	0	0	1	1	0	0	2
Comf. & Prog.	0	0	0	0	0	0	0	0
Agency	**4**	**3**	**1**	**3**	**3**	**18**	**7**	**39**
Ag. & Ass.	0	0	0	0	0	2	6	8
Ag. & Vit.	1	1	0	3	0	0	1	6
Ag. & Prog.	0	0	1	0	2	1	3	7
Associations	**12**	**5**	**10**	**1**	**2**	**0**	**7**	**37**
Ass. & Vit.	1	3	1	0	1	1	1	8
Ass. & Prog.	0	0	0	0	0	0	2	2
Vitality	**3**	**7**	**2**	**8**	**0**	**2**	**4**	**26**
Vit. & Prog.	0	0	0	0	0	1	1	2
Progression	**3**	**0**	**0**	**1**	**1**	**7**	**9**	**21**
Total	**69**	**63**	**59**	**60**	**54**	**60**	**58**	**423**

instance: while discussing the pride experienced when you win from others or, in contrast, the pleasure you experience when your skills support others' effectiveness. Also, knowing how to negotiate with others can lead to "win-win situations".

Thirteen topics were identified in relation to aesthetics and comfort. Food, for instance can both be experienced as wholesome and sensory interesting. Another example is woolen sweaters, for which synergy can occur when the fabric is warm and woven into interesting patterns. Bathing products offer a sense of comfort and offer an aesthetically pleasing whole by being luxurious and also providing the necessary grooming. Further, twelve topics were related to aesthetics and association, reflecting the meshing of sensory experience and meaning. Natural landscapes such as the ocean and sky involved the visual effects of ever-changing clouds, the rhythm of rolling waves, and at the same time highlighted the symbolism of nature in its romanticism and grandeur. Similarly, classical music can move you in terms of its harmonics and dynamics, and at the same time transport you back into the 17th century. Thus, these results show that in everyday experience pleasantness can be experienced on multiple levels simultaneously.

Discussion

Many topics mentioned by the participants could not be classified under a single theme and each theme often involved multiple bodily faculties. Thus, everyday experiences of pleasantness can be considered complex phenomena rooted in bodily functioning. However, given a prominence of certain pleasantness themes for certain bodily faculties, it should be possible to determine the conditions that produce certain types of pleasantness. In Figure 1, the themes are mapped in relation to four bodily functions: sensing, feeling, thinking and doing. In this new simplified categorization, the sensing faculty provides a combination of the sensations perceived by vision, audition, smell and taste, whereas the feeling faculty mainly refers to the sense of touch. For example, the comfort and vitality themes were often mentioned in relation to touch and are, therefore, placed near feeling and the sociality theme is placed in the center of this schema since many faculties were addressed for this theme. Below, each pleasantness theme is described according to its prominent bodily faculties and it is discussed in relation to the literature in various scientific disciplines, with particular interest for the design research discipline.

Many topics that were addressed during the interviews involved pleasantness that had a social origin. This pleasantness included feelings of respect, helpfulness, pride, admiration, etc. in which many bodily faculties played a role. Social interactions involved touch, as was mentioned in many social encounters (handshake) as well as affective interaction (pat on the shoulder), while action captures the inherent moral dimension of behavior (helping others). This indicates that in everyday life sociality has a strong bodily impact, and has a dominant influence on perceived pleasantness and personal well being. Gaver (1996) and Hassenzahl (2004) addressed sociality in relation to design. Gaver (1996) highlighted the importance of sociality through the concept of social affordances (opportunities for social interaction), while

Hassenzahl (2004) investigated sociality as a determinant of a product's appeal.

Sensory experience was found to be another main source of pleasantness and was labeled as the aesthetics theme. Pleasantness included feelings of harmony, rhythm and elegance based upon the sensory experiences of taste and sight and audition. In the field of empirical aesthetics, researchers investigate how formal qualities in visual perception such as symmetry and complexity relate to hedonic experience (Berlyne, 1971) and how qualities of music perception such as harmonics, repetition and melody evoke emotional responses (Juslin & Västfjäll, 2008). Now that experience is a valued design goal, it is important to know how to create unified sensory experiences and therefore a multisensory approach is highly valued (Schifferstein & Desmet, 2008). For instance, designing a 'dining experience' is an example where different senses are combined to create a unified aesthetic experience including taste, vision and sound (Ruigrok & Sheridan, 2006).

The association theme captures pleasantness experienced in meanings and, from a psychological perspective, relates to theories on cognitive schemata (Piaget, 1953) and imagination (Markman, Suhr, & Klein, 2008). Cognitive schemata are knowledge structures that have been accumulating through a person's life. The activation of a schema based upon environmental circumstances can also be pleasant in itself, because it makes them easier for the mind to process (Winkielman, Halberstadt, Fazendeiro, & Catty, 2006). Also, environmental circumstances can trigger pleasant memories allowing the 'old' pleasantness to be re-experienced, as with nostalgia (Holaka & Havlena, 1998). Imagination involves the ability to visualize alternate realities vividly. Fantasy, as a form of imagination, can be a source of motivation (Malone, 1981) and can be attained when a product is designed to allow for different interpretations (Sengers & Gaver, 2006).

The role of the body in pleasantness is addressed in both the comfort and vitality theme. This involved feeling cherished and tranquil for the comfort theme and feeling alive and sentimental for the vitality theme. From a psychological perspective, the comfort theme relates to pleasantness experienced on a visceral level caused by environmental factors. Examples are indoor climate (Paul & Taylor, 2008; van Hoof, Mazej, & Hensen, 2010) or flavor and appetite (Rolls, 2006). It may involve mechanical artifact-body connections (Kuijt-Evers, Groenesteijn, de Looze, & Vink, 2004). The vitality theme involves experienced pleasantness of visceral sensations in relation to the 'self' and has both physiological and psychological constituents (Ryan & Deci, 2008). Thus, while comfort refers to bodily feelings allowing for relaxation, vitality can be seen as a means for activation. In design, Sonneveld (2007) explored tactual experience in relation to the aesthetic experience. Physically based tactile properties experienced as product expressions could lead to pleasant emotions during interaction, which could either have a soothing or exhilarating character.

Pleasantness in agency and progression both involve action and thought as prominent faculties. In the psychological literature pleasantness in agency is addressed as pleasantness in experienced

control (Skinner, 1996) and self-efficacy (Bandura, 1982), but also as feelings of wellbeing resulting from experiencing competence and autonomy (Deci & Ryan, 2000). In design, agency is captured in Hassenzahl's (2004) pragmatic quality, i.e. the perceived aspects of a product that either support or obstruct goal attainment, but also covers personalization issues (e.g., Mugge, Schoormans, & Schifferstein, 2009) in design through freedom (Wensveen, Overbeeke, Djajadiningrat, & Kyffin, 2004) and adaptability (Hengeveld, Hummels, Voort, van Balkom, & de Moor, 2007). Pleasantness for the progression theme involves situations in which individual potentials can be – or have been - actualized. It is, therefore, closely related to theories on learning (Vygotsky, 1978) and self-actualization (Rogers, 1951). Furthermore, 'enskillment' (Kilbourn & Buur, 2007) i.e. designing artifacts that facilitate skill development, and movement (Dajadiningrat et al., 2007) are related to this theme.

How can these results build further onto existing frameworks of on aesthetic interaction? As described earlier in the paper, the frameworks provided by Locher et al. (2010) and Peterson et al. (2004) provide a processing model and a pragmatic view on aesthetic interaction, respectively. Given the range of themes, our results support the assumption that aesthetics in interaction can manifest itself bodily and symbolically, socially and individually, and experientially as well as behaviorally. In addition, our results may provide content to the structure of aesthetic experiences as described in Locher et al.'s (2010) framework. In this light, it would be interesting to examine how the individual and physical factors (the authors' 'person context' and 'artifact context') might influence the experienced pleasantness. For example, given the physical characteristics of a chair, how would its comfort be experienced by different people sitting on it, and how would this comfort be experienced by the same person in different occasions? Expanding our studies is also desirable for strengthening the interpretations of our findings, given the limited sample of participants we were able to include in the current study.

Given that the seven pleasantness themes identified in this study can advance the aesthetics of interaction paradigm conceptually, the question remains whether these themes can be useful in the design activity itself. As described by both Cross (2001) and Stolterman (2008), design involves 'ill-defined' real-world problems, in which one cannot isolate a set of parameters that predict appropriate (i.e., desired) outcomes beforehand. An iterative design process, in which design is validated in actual contexts with real users, allows one to find appropriateness 'along the way'. Thus, the results of this study can be used as a guidance tool in the early phases of the design process. Acknowledging the varieties in pleasant experience, as well as how the body is involved in shaping them, allows designers to explore the opportunities promoting positive subjective experiences and can help them to produce positive experiences through their designs.

Conclusion

In everyday activities, pleasantness can be experienced on different levels of bodily functioning and may involve multiple
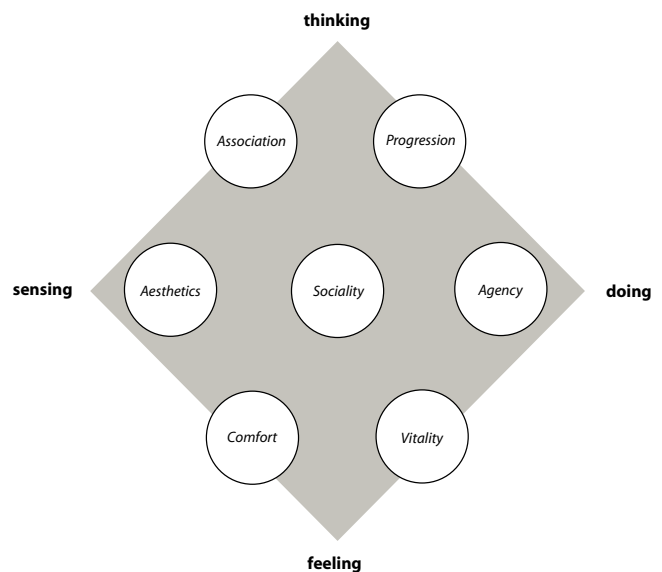

Figure 1. Figure showing the seven pleasantness themes mapped in relation to four bodily functions.

bodily faculties. The (designed) environment provides many cues that may evoke pleasantness through our active bodies. The results of our study support the discourse on aesthetics of interaction by explicating the varieties in which interaction is considered positive (i.e., the seven pleasantness themes) and how our bodily sensitivities are involved in this pleasantness (i.e. the prominence of bodily functions for certain pleasantness themes). This facilitates discussion about the nature of the aesthetics of interaction and allows conceptualizing its different manifestations. Future research could be focused on the interrelationships between pleasantness themes and the bodily faculties and their application in design education. Based upon these results, designer's awareness of the varieties of pleasant experience can increase, as well as the ways in which they are evoked during interaction. This will allow designers to make strategic choices concerning their designs.

Acknowledgements

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