Chapter 10
Aesthetic Well-Being and Ethical Design of Technology

Jaana Leikas

Abstract Aesthetics is a central quality attribute of a product. Research into the relationship between aesthetics in human–technology interaction and the well-being of older people is still in its infancy. In care homes, aesthetics can play a major role in creating a 'feeling of home', which is important when the transition to assisted living may involve multiple changes and losses that affect an older person's well-being. This chapter discusses the potential of aesthetic design to address older people's emotional well-being. Aesthetics in technology and technological environments provides a new ethical way of looking at valuable problems in design—meaningfulness in terms of personal and individual symbolic values and the harmonizing potential of artefacts to create a 'feeling of home'. Promoting the aesthetic well-being of older people in care homes (and in general) deserves further attention.

10.1 Introduction

One of the biggest challenges of modern societies is how to respond to the needs, preferences and lifestyles of an ageing population. Expectations of technology are high: it is seen as a means to enhance the quality of older people's everyday lives whether they live at home or in an assisted living facility. Several studies have recently examined older people's capabilities as technology users, including the difficulties they face when trying to adopt new technologies. Yet improving older people's *experience* of using technologies has been largely overlooked. Senior citizens often find modern technology to be complex, obscure, confusing and not aesthetically pleasing. At the extreme, it is stigmatizing and does not meet their emotional needs.

'Home' is a value-laden concept (Hayward 1975; Moloney 1997; Sixsmith 1986; Madden 1999) that is usually taken for granted (Buttimer 1980) even though it is often the most central place in one's life (O'Bryant 1983; Rioux 2005; Swenson 1998; Williams 2002, 2004). Home involves a place or space, but for many people,

J. Leikas (✉)
VTT, Tampere, Finland
e-mail: jaana.leikas@vtt.fi

© Springer Nature Switzerland AG 2020

R. Rousi et al. (eds.), *Emotions in Technology Design: From Experience to Ethics*, Human–Computer Interaction Series,
https://doi.org/10.1007/978-3-030-53483-7_10

it also entails feelings, practices and/or an active state of being in the world (Mallet 2004). For most people, home is a safe haven that is experienced not only by people in it but also from meanings and memories associated with the look and form of its artefacts. Carefully acquired furniture, paintings and textiles make a house or apartment 'home'. Over time, these artefacts can be thought of as a part of one's identity.

Many elderly people have lived in the same home for decades. Furniture passed down through generations, crafts created by loved ones and wedding and anniversary gifts trace an individual's life history and values and create a sense of rootedness and belonging. Their home is thus an integral and intimate part of their being. The passage of time and the memories embedded in the home tend to deepen the older adult's sense of rootedness (Dahlin-Ivanoff et al. 2007; Saunders 1989); when they lose their home, they also lose the place closest to their heart (Gillsjö et al. 2011). It is difficult for them to decide what to bring with them in this final move to a care home.

Aesthetic aspects of objects in the home can represent older people's personalities and lives and help them recall the past. A product's appearance has worth not only because it sends social and symbolic signals about the person but also because it creates happiness—well-being and harmony, belonging and identity. This is extremely important when an individual's memory starts to fail: artefacts can help encourage a harmonious and cosy feeling.

When various impairments force an elderly person to move to a barrier-free and sheltered (and often quite small) flat, decisions about the 'placement' and even its furnishings are often made by someone else—in the worst case, by a total stranger. Without the comfort of the familiar objects at home, an elderly person easily feels lost, as illustrated by the fictional case study below:

> Anna has lived in the same neighbourhood all her life, and in her current house for more than 40 years. Her birthplace is only 1 km away. These rooms and furniture carry the marks of her life. The chest of drawers and chairs tell stories about what has happened along her life's journey. They represent her family and inheritance and identity. Many generations have had the pleasure of using the sofa and armchair set, leaving their ornamented armrests shiny from years of use. And that kitchen cabinet Anna varnished with her husband. But now the time has come for Anna to move out of this home. Moving away is difficult. It involves being torn away from a bigger house to move into a smaller place, from the familiar to the unknown, from one's own peace and quiet into a care home or sheltered housing and life under the eyes of others. It requires letting go of one's own will and dear belongings, under the authority of others. Yet, living at home alone is taxing both physically and mentally, because loneliness is overpowering. The visits of the home care nurse for 'securing maximum support'—even if they take place three times a day—have not been enough to ease the need to chat with someone, to have a coffee together and recount memories. Sharing things around one's own coffee table would lift up one's spirits.

Familiar artefacts help individuals remember their past and hold onto their identity (Baddeley 1990; Schacter et al. 1993; Smith and Vela 2001). *Context-dependent memory* indicates that the more familiar a context, the better the human memory functions. This is important to keep in mind when a person is moving to an elderly home or service home. The old person is more capable of remembering things that

are related to their life and activities when the reminiscing takes place in a familiar environment, and they are surrounded by familiar artefacts.

Part of the emotional value of, for instance, a piece of furniture, is the memories that are associated with it. Sentimental value may constitute a stronger argument for holding onto an artefact than its aesthetic value. In his 1990 novel *Fields of Glory*, Jean Rouaud writes about his grandmother moving from a large house in the south of France to a small flat. He illustrates how sentimental value is more important to his grandmother than the beauty of artefacts:

> The move from thirteen rooms to two meant parting not only with the accumulation of a lifetime but also with the bequests of earlier generations. More than asceticism, it was a sweeping away of memory. Still, it was grandmother's recollection of this past that drove her to keep two or three heirlooms, in particular a cumbersome, poorly designed work table, when she could have kept the attractive mahogany bookcase with the oval glass panes in the same space and to better advantage. But this work table was her mother, her grandmother, herself and every industrious woman in the family—it was a stele.

10.1.1 Values and Subjective Well-Being

Values have an aesthetic dimension—in addition to social, philosophical and practical ones—that help explicate individual conceptions of beauty. What is valuable to some people, even in terms of the acceptance of technology, is not necessarily important or valuable to all people. Individual values reflect societal demands and psychological needs. Values are learned and determined by culture as well as personal experiences and life situations. The life of an individual itself helps determine what is considered 'worth' in artefacts.

Values determine attitudes and the preferences of activities and are tightly linked to other concepts such as life satisfaction, morale, subjective well-being (SWB) and happiness (Amann et al. 2006; Diener and Eunkook 2000) Studies of SWB have explored what constitutes a good life and made it scientifically interesting. SWB represents the degree to which people are living their lives according to the values they hold dear and they want to follow in their life (Diener and Eunkook 2000). Subjective quality of life is an individual's assessment of the general positive or negative qualities of their life experiences. Many attempts have been made to label this phenomenon, including personal expressiveness and optimal experience, but the most easily understood term is 'happiness'.

Aristotle believed that happiness is the only goal that is an end in itself (Aristotle ND[1984], 1097b20). Happiness can be based on two kinds of dichotomies: 'life as a whole' and 'life aspects'. Overall happiness is the degree to which an individual favourably assesses the overall quality of her own life as a whole (Veenhoven 2012). Enjoyment of certain aspects of life—such as aesthetics—will contribute to overall life satisfaction (bottom-up effect) (Veenhoven 2012). Senior homes and care homes can enhance the happiness and subjective well-being of their inhabitants. Yet how many of them reflect older people's values and conceptions of beauty? How many inspire the elderly aesthetically?

10.1.2 Aesthetics in Relation to Technology

Can technology play a role in nurturing people's aesthetic well-being? In the field of human–technology interaction (HTI) design, Redström (2001) discusses three forms of use (originally introduced by Paulsson and Paulsson (1957)) that designers must acknowledge—practical, social and aesthetic. *Practical use* is involved, for example, when we use a saw to cut timber or a boat to cross a lake. Depending on the model, the boat can also have a strong symbolic value in social use, especially a motor or sailing boat. *Social use* concerns the symbolic values that different artefacts have in social contexts, in other words, the roles that things play in our social life. An example of this might be wearing a tie on different occasions. For some people, it is a symbol of respect for the occasion, whereas, for others, it might be a negative sign of a social class. *Aesthetic use* concerns reflective use such as choosing a product because of its beauty. In a way, aesthetic use goes beyond practical and social use, as it concerns our immediate perceptions of things in terms of likes and dislikes of products that we choose.

Emotions are an essential part of aesthetic well-being, as they create satisfaction and awareness of the artefact (Desmet 2003; Desmet and Hekkert 2002; Hassenzahl 2001; Holman 1986; Montague 1999; O'Connor 1997; Schütte 2005). The positive or negative appearance of aesthetic artefacts can have a significant effect on our consciousness, as it generates different emotions and sensations. Objects that are beautiful and harmonious create inner satisfaction and contribute to well-being in everyday life.

Emotions are closely related to feelings, though the term 'feeling' is often used in colloquial language to describe a broader concept than emotions (Oatley and Jenkings 1996). The psychological literature historically used 'affect', which is closely associated with emotion (Tomkins 1984). Emotions are also related to needs and motives—the quality attributes that a person tunes into through emotions (Norman 2004; Oatley and Jenkins 1996; Solomon 1993). Emotions influence what value we place on objects as well as our decisions about them. For instance, consumers are being shown to be more interested in aesthetic pleasure than usability (Bertelsen et al. 2004; Hassenzahl 2004; Tractinsky et al. 2000); artefacts that are considered beautiful are experienced as easier to use compared with equivalent 'uglier' versions (Monk and Lelos 2007). Likewise, products with low usability are experienced as less beautiful than those with high levels of perceived usability (Tractinsky et al. 2000). Beauty has been associated with the willingness to own or purchase an object (Saariluoma et al. 2013). Jordan (2000) talks about *pleasure* as an important factor in HTI design (see also Green and Jordan 2002). Pleasure can be defined as the emotional, hedonic and practical benefits associated with a product. Jordan argues that instead of stressing usability, products should be designed to be a joy to own and use. Pleasurability is thus not simply a property of a product but of the *interaction* between a product and a person. This relates to the notion of aesthetics of interaction, which is gaining attention in product design (Colombo et al. 2015).

Understanding how people mentally represent their interactions with objects at home illustrates how beauty is experienced, which in turn helps design technology that supports and improves aesthetic well-being. *Mental representations* have mental content that can be in the form of sensations, images, memory, thoughts, propositions, beliefs and emotions (Saariluoma 2003). Representational content represents something outside the object itself (Saariluoma 2003). In the conceptual framework of mental content, experience can generally be seen as the conscious aspect of mental representations (Rousi et al. 2010). Thus, designing for aesthetic well-being should focus on experience as the feelings, thoughts and emotions that manifest during interactions with a product (McKay et al. 2006)—that is, on the holistic experience and how people feel (and what they would like to feel) when possessing and using technology (Hassenzahl and Tractinsky 2006; Jordan 1998). This experience is created through a sense-making process that includes anticipating, connecting, interpreting, reflecting, appropriating and recounting (Wright et al. 2004).

10.2 How to Design Aesthetic Well-Being for Older People?

Designing technology that enhances (or at least does not contradict) the aesthetic values of older people requires understanding their everyday lives and what they consider beautiful in terms of people's values and 'worths'. This involves considering not only just the physical aspects of artefacts but also how older people mentally experience them. Components involved in the mental side of aesthetic experience include cultural, social, psychological and linguistic. When developing new technical solutions for a particular form of life, it is important that the technology fits and improves the value climate of the form of life (Leikas 2009). A home should enable older people to maintain not only their identity, integrity and sense of belonging but also their way of living and *beauty welfare*. It should ensure that the aesthetic features of their homes are in harmony with their conceptualizations of beauty.

The theory of salutogenesis—which involves focusing on health, rather than the disease itself—provides evidence that space contributes to health and well-being (Chrysikou et al. 2018). An interesting successful example of designing for older people is the memory village of Hogeweyk, a Dutch design-oriented facility for people with dementia. In Hogeweyk, houses are differentiated by lifestyle. Residents can pick from houses decorated with a distinct and very residential feel designed to replicate a 'genre' of lifestyle and create a link to the life they enjoyed before. These genres have different types of interior design, music, food and table settings (Medaesthetics 2014).

Additional efforts need to be made to understand older adults' experience of beauty at home and to efficiently incorporate this data into designs in order to maximize their well-being (Leikas 2009; Saariluoma et al. 2016). The demand for beauty should concern all kinds of technologies, including low or standard technologies as well as high technology—the innovative emerging technologies based on ubiquitous technology and artificial intelligence. This is challenging in the era of smart

homes, where digitalization is taking place. When installing safety technology such as surveillance and monitoring devices in older people's homes, the home should remain 'a home' without the elderly person's flat turning into a 'virtual hospital' or 'monitoring command centre'. For example, a lacy doily placed on a computer in an elderly person's home may represent an attempt to reduce the conflict between her own concept of beauty and the external appearance of the modern device. This may be surprisingly important for how acceptable she considers technology.

As discussed above, for many people, the spirit of the home comes from the subjectively experienced beauty of the belongings inside. The designer should, therefore, consider how a new technology could maintain the memory-filled spirit of the old home and thus preserve or improve the aesthetic pleasure and well-being of its user. Co-design and narratives that illustrate the meanings and values embedded in objects help illustrate what kinds of artefacts older people want. Older people should be consulted directly. They should not just be invited to focus groups; their feedback should be carefully considered and incorporated into the design process.

10.2.1 Technology Generations

An interesting phenomenon in terms of beauty in technology is the rise of the analogue culture from the fringes of the digital mainstream. In some designs, analogue technologies have been 'rediscovered' in a new way such as installing new technology in old-fashioned covers. This approach could help older people enjoy new technology by exploiting context-dependent memory. For example, the Hulger Phone, designed by Nicolas Roope in 2005 (Fig. 10.1), can be adapted to a smartphone or computer. The name of the phone was inspired by the designer's grandfather, a lawyer who

Fig. 10.1 Hulger phone (www.mocoloco.com/archives/002896.php)

lived contentedly with the same phone, the same 1950 Opel car, and the same leather armchair for decades. He was of a generation and culture that resisted the wasteful churn of built objects becoming obsolete. He bought lasting products that improved with age. Roope wanted to create technological products with this integrity: not only to reduce the destructive demand on the world's resources but also to settle our souls, with products that genuinely make us feel contented and balanced.

The user interaction model of the Hulger phone relies on context-dependent memory and supports the idea of *technology generations*. The notion has become valuable in research into the effects of age in information and communication technology (ICT) use. Technology generations reflect the historical timing of computing innovations and their diffusion into the productive and cultural spheres, linked with the time period in which a cohort comes of age (McMullin et al. 2007). A technology generation is defined by the technology its members used when they were aged between 30 and 40. The understanding of how to use technologies (present and future) is built on the kind of knowledge that is typical of that cohort (Docampo Rama 2001). Accordingly, it could be assumed that the conceptions of beauty in technology can be linked to cohorts in the same way. Elderly people today belong to the technology generation that used rotary dial phones and typewriters. Do they consider these kinds of artefacts to have more aesthetic value than current ICT products?

10.2.2 Naturalness is Considered Beautiful

For many people, nature—as a part of everyday life—is a source of aesthetic experiences. Designers have attempted to copy the beauty of nature in their designs. Aesthetics and naturalness have often been considered related values, and homes have been decorated by respecting the naturalness and primal force of wood. The eminent Finnish architect Alvar Aalto (1898–1976) called nature a symbol of freedom and used the metaphor of nature's harmonious adaptability in his interior designs (Schildt 1997). As for so many Nordic people, nature was the essence of his personality and work. Aalto said that furnishings made from timber allow direct contact with the surrounding nature. Indeed, natural environments have been shown to promote good health (e.g. Maller et al. 2006) by reducing stress, speeding up the healing process and providing a distraction from discomfort. Environmental psychology has shown that aesthetic experience and environments are intimately linked (Steg et al. 2012). People enjoy better health and quality of life through contact with nature in their everyday living environment. This desire to enjoy the aesthetics and healing elements of nature does not disappear with age. Further research is needed to understand what nature-based interventions can and cannot do and how different mechanisms of 'nature as medicine' may be combined with our living environment.

The Finnish Lumo Video Security Phone (Fig. 10.2), developed for elderly people, is an example of a design that respects nature and adheres to the traditional Scandinavian values of interior design. Scandinavian design, found in the homes of many elderly people in the Nordic countries, has its origins in the characteristics of

Fig. 10.2 Lumo video carephone (https://www.oulumo.com/english.)

Nordic nature and includes organic forms, materials and natural patterns. The Lumo Phone, which combines personal security, welfare monitoring and social interaction, is designed in natural wooden covers that are appealingly simple.

Conceptions of beauty and the mental representations of design objects can be explored by exposing latent user experience factors by applying the concept of *semantic differential* to the design process. The study by Osgood et al. (1975) serves as a classical example of research on how people use a semantic differential scale consisting of affective word pairs, such as 'good–bad', to respond to different stimuli when products are introduced to them. A similar methodology was applied in Kansei engineering, in which the researcher aims to understand a product's semantic space, i.e. the relationships between its different expressions (Nagamashi 1995). The word 'Kansei' refers to simultaneous feelings and images, i.e. the emotional and cognitive levels of an experience.

Many older people would reject a product if it looks ugly or signals that it is meant for the elderly. Traditional assistive technology is often quite stigmatizing in this respect. For instance, 'senior apartments', 'senior phones' and 'senior packages' suggest that they are meant for older—and somehow disabled—people (e.g., Ziefle and Schaar 2017).

10.3 Discussion

This chapter is based on the hypothesis that the aesthetics of a care home or senior community can enhance the subjective well-being of older people. Aesthetics should, therefore, be considered when designing for the everyday lives of older people in

care homes. Further research is needed on how older adults can feel more 'at home' in care homes and the implications for aesthetic well-being. In order to understand which aspects to stress in the design, it is crucial to understand how older people mentally represent home and their favourite artefacts at home and what kinds of values they have followed in their life. Designers need to learn what kinds of attributes are associated with older people's conceptions of beauty at home and what meanings these attributes have. This information can be acquired with the help of various co-design methods and, for instance, content-based analysis of narratives.

Research is also needed on how the elderly value aesthetics in relation to other design attributes, such as usability, and how these would cohere with the design practices of new technologies. This points to the need to rethink technology design processes and to include older people as co-designers.

Older people's aesthetic well-being is interwoven with the idea of a good life. In the 1950s, beauty was considered one aspect of a good life, together with truth, character and fellowship (Fung and Lehmberg 2016). The concept of quality of life (QoL) reflects the philosophy of what is considered a good life (Nussbaum and Sen 1993). QoL refers to an individual's perception of her position in life, in the context of the culture and value system where she lives, and in relation to her goals, expectations, standards and concerns (WHO 1994). From a subjective perspective, QoL can be sorted between the outer and inner qualities—external and internal features—of life (Veenhoven 2012) and thus be regarded as a person's reaction with respect to these resources, according to her own values, goals and expectations.

The question of what makes a person's life better in terms of QoL arises in the course of a moral argument about our duties and obligations to make people's lives better or at least prevent them from being made worse (Scanlon 1993). Thus, in an ethical sense, technology designers have a duty to make the lives of older people better, for example, by creating an aesthetically emotional impact.

References

Amann A, Reiterer B, Risser R (2006) Life quality of senior citizens in relation to mobility conditions. Final Report. University of Vienna, Institute of Sociology

Aristotle (n.d., trans. 1984). Nicomachean ethics. In: Barnes J (ed) The complete works of Aristotle. The revised Oxford translation, vol 2. Princeton University Press, Princeton, NJ

Baddeley AD (1990) Human memory: theory and practice. Allyn & Bacon, Needham Heights, MA

Bertelsen OW, Petersen MG, Pold S (eds) (2004) Aesthetic approaches to human-computer interaction. In: Proceedings of the NordiCHI 2004 workshop, tampere, Finland, 24 October. University of Aarhus, Aarhus

Buttimer A (1980) Home, reach and the sense of place. In: Buttimer A, Seamon D (eds) The human experience of space and place. Croom Helm Ltd., London, pp 166–187

Chrysikou E, Tziraki C, Buhalis D (2018) Architectural hybrids for living across the lifespan: lessons from dementia. Serv Ind J 38(1–2):4–26

Colombo S, Djajadiningrat T, Rampino L (2015) Tangible, smart and dynamic objects. In: Chen L et al (eds) Design and semantics of form and movement. Eindhoven University of Technology, Eindhoven

Dahlin-Ivanoff S, Haak M, Fänge A, Iwarsson S (2007) The multiple meaning of home as experienced by very old Swedish people. Scand J Occup Ther 14(1)25:32
Desmet PMA (2003) Measuring emotion; development and application of an instrument to measure emotional responses to products. In: Blythe MA, Monk FA, Overbeeke K, Wright PC (eds) Funology: from usability to enjoyment. Kluwer Academic Publishers, Dordrecht, pp 111–123
Desmet PMA, Hekkert P (2002) The basis of product emotions. In: Green W, Jordan P (eds) Pleasure with products, beyond usability. Taylor & Francis, London, pp 60–68
Diener E, Eunkook MS (eds) (2000) Culture and subjective well-being. MIT Press, Cambridge, MA
Docampo Rama M (2001) Technology generations—handling complex user interfaces. University of Eindhoven, Eindhoven
Fung V, Lehmberg LJ (2016) Music for life: music participation and quality of life of senior citizens. Oxford University Press, New York
Gillsjö C, Schwartz-Barcott D, von Post I (2011) Home: the place the older adult cannot imagine living without. BMC Geriatr 11:10
Green WS, Jordan PW (eds) (2002) Pleasure with products: beyond usability. Taylor & Francis, London
Hassenzahl M (2001) The effect of perceived hedonic quality on product appealing-ness. Int J Hum-Comput-Interact 13(4):481–499
Hassenzahl M (2004) The interplay of beauty, goodness and usability in interactive products. Hum-Comput Interact 19:319–349
Hassenzahl M, Tractinsky N (2006) User experience—a research agenda. Behav Inf Technol 25(2):91–97
Hayward DG (1975) Home as an environmental and psychological concept. Landscape 20:2–9
Holman RH (1986) Advertising and emotionality. In: Peterson RA, Hoyer WD, Wilson WR (eds) The role of affect in consumer behaviour. Lexington Books, Lexington, MA, pp 119–140
Jordan PW (1998) An introduction to usability. Taylor & Francis, London
Jordan PW (2000) Designing pleasurable products: an introduction to the new human factors. Taylor & Francis, London
Leikas J (2009) Life-based design—a holistic approach to designing human-technology interaction. VTT Publications 726
Madden R (1999) Home-town anthropology . Aust J Anthropol 10(3):259–270
Maller C, Townsend M, Pryor A, Brown P, St Leger L (2006) Healthy nature healthy people: 'contact with nature' as an upstream health promotion intervention for populations. Health Promotion Int 21(1):45–54
Mallet S (2004) Understanding home: a critical review of the literature. Sociol Rev 52(1):62–89
McKay D, Cunningham SJ, Thomson K (2006) Exploring the user experience through collage. In: Proceedings of the 7th ACM SIGCHI New Zealand chapter's international conference on computer-human interaction: design centered HCI, pp 109–115
McMullin JA, Duerden Comeau T, Jovic E (2007) Generational affinities and discourses of difference: a case study of highly skilled information technology workers. Brit J Sociol 58(2)297:316
Medaesthetics. (2014) Creative ideas for art and design remedies in modern health care environments. Dementia village De Hogeweyk. 23 Feb. https://medaesthetics.wordpress.com/2014/02/23/dementia-village-de-hogeweyk/
Moloney MF (1997) The meanings of home in the stories of older women. West J Nurs Res 19(2):166–176
Monk AF, Lelos K (2007) Changing only the aesthetic features of a domestic product can affect its apparent usability. In: Venkatesh A, Gonzalvez T, Monk A, Buckner B (eds) Home informatics and telematics: ICT for the next billion. In: Proceedings of HOIT 2007, Chennai, India. Springer, New York, pp 221–234
Montague M (1999) Integrating the PRODUCT+BRAND experience. Des Manage J 17–23

Nagamachi M (1995) Kansei engineering: a new ergonomic consumer-oriented technology for product development. Int J Ind Ergon 15(1):3–11
Norman D (2004) Emotional design: why we love or hate everyday things. Basic Books, New York
Nussbaum M, Sen A (eds) (1993) The quality of life. Oxford University Press, Oxford
Oatley K, Jenkins JM (1996) Understanding emotions. Blackwell Publishers, Oxford
O'Bryant S (1983) The subjective value of 'home' to older homeowners. J Hous Elderly 1(1):29–43
O'Connor IJ (1997) Using attitudinal segmentation to target the consumer. In: Kahle LR, Chiagouris L (eds) Values, lifestyles and psychographics. Lawrence Erlbaum, Hillsdale NJ, pp 231–246
Osgood C, May W, Miron M (1975) Cross-cultural universals of affective meaning. University of Illinois Press, Chicago
Paulsson G, Paulsson N (1957) Tingens bruk och prägel (Things for everyday use and life form). Kooperativa förbundets förlag, Stockholm
Redström J (2001) Designing everyday computational things. Doctoral dissertation. Göteborg University, Gothenburg
Rioux L (2005) The well-being of aging people living in their own homes. J Environ Psychol 25(2):231–243
Rouaud J (1990/1998) Fields of glory (Trans. Ralph Manheim). Harvill Press, London
Rousi R, Saariluoma P, Leikas J (2010) Mental contents in user experience. In: Proceedings of MSE2010 V.II 2010 international conference on management and engineering, 17–18 Oct, Wuhan, China. ETP Engineering Press, Hong Kong, pp 204–06
Saariluoma P (2003) Apperception, content-based psychology and design. In: Lindeman U (ed) Human behaviour in design. Springer, Berlin, pp 72–78
Saariluoma P, Cañas JJ, Leikas J (2016) Designing for life—a human perspective on technology development. Palgrave MacMillan, London
Saariluoma P, Jokinen JPP, Kuuva S, Leikas J (2013) User experience as mental contents. In: 10th European academy of design conference—crafting the future. Gothenburg, Sweden
Saunders P (1989) The meaning of 'home' in contemporary English culture. Hous Stud 4(3):177–192
Scanlon T (1993) Value, desire, and quality of life. In: Nussbaum M, Sen A (eds) The quality of life. Oxford University Press, Oxford, pp 185–200
Schacter DL, Chiu CYP, Ochsner KN (1993) Implicit memory: a selective review. Annu Rev Neurosci 16:159–182
Schildt G (ed) (1997) Alvar Aalto in his own words. Otava, Helsinki
Schütte S (2005) Engineering emotional values in product design—Kansei engineering in development. Dissertation No. 95. Institute of Technology, Linköping
Sixsmith JC (1986) The meaning of home: an exploratory study of environmental experience. J Environ Psychol 6(4):281–298
Smith SM, Vela E (2001) Environmental context-dependent memory: a review and meta-analysis. Psychnonomic Bull Rev 8(2):203–220
Solomon RC (1993) The philosophy of emotions. In: Lewis M, Haviland JM (eds) Handbook of emotions. The Guilford Press, New York, pp 3–15
Steg L, Van den Berg AE, De Groot JIM (2012) Environmental psychology: an introduction. Wiley-Blackwell, London
Swenson MM (1998) The meaning of home to five elderly women. Health Care Women Int 19(5):381–393
Tomkins SS (1984) Affect theory. In: Scherer KP, Ekman P (eds) Approaches to emotion. Lawrence Erlbaum, Hillsdale, NJ, pp 163–195
Tractinsky N, Katz AS, Ikar D (2000) What is beautiful is usable. Interact Comput 13(2):127–145
Veenhoven R (2012) Happiness: also known as 'life satisfaction' and 'subjective wellbeing.' In: Land KC, Michalos AC, Sirgy MJ (eds) Handbook of social indicators and quality of life research. Springer Publishers, Dordrecht, Netherlands, pp 63–77

World Health Organization (1994) Statement developed by WHO quality of life working group. In: WHO health promoting glossary 1998. WHO/HPR//HEP/98.1. World Health Organization, Geneva

Williams AM (2002) Changing geographies of care: employing the concept of therapeutic landscapes as a framework in examining home space. Soc Sci Med 55(1):141–154

Williams AM (2004) Shaping the practice of home care: critical case studies of the significance of the meaning of home. Int J Palliat Nurs 10(7):333–342

Wright P, McCarthy J, Meekison L (2004) Making sense of experience. In: Blythe MA, Overbeeke K, Monk AF, Wright PC (eds) Funology: from usability to enjoyment. Kluwer Academic Publishers, Norwell, MA, pp 43–53

Ziefle M, Schaar AK (2017) Technology acceptance by patients: empowerment and stigma. In: Van Hoost J, Demiris G, Wouters E (eds) Handbook of smart homes, health care and well-being. Springer, Berlin, pp 167–77