Design for the Value of Presence

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Abstract

This chapter elaborates on design for the value of presence. As digital technologies have made it possible for us to connect to each other at a speed and scale that is unprecedented, presence is acquiring many new stances. The distinctions between being there (in virtual worlds), being here (making the being there available here), and the merging realities of these two are essential to the notion of presence. Understanding the essence of presence is the focus of current

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presence research to which many disciplines contribute, including computer science, artificial intelligence, artistic research, social science, and neurobiology.

The definition of presence used in this chapter is "steering towards well-being and survival," and this definition introduces a neurobiological perspective on presence fundamental to the approach on which this chapter focuses. This perspective recognizes the choices and trade-offs involved in presence design. Presence design is a meta-design, which creates the context for human experience to emerge. Presence as a value for design can be a design requirement, a factor of analysis, and a key value in a process of Design for Values.

This chapter discusses a number of analytical and design frameworks for constructing and deconstructing presence design. Acknowledging that presence is a fuzzy concept and that a variety of open issues can be identified, presence as a value for design is fundamental for human beings to accept responsibility in complex environments. Further research will need to address how we, as human beings, change and how our sense of presence changes, as a result of living in a network society with ubiquitous technology and all pervasive media being part of our day-to-day lives.

Keywords

Presence • Value • Design • Trust • Experience • Networks

Introduction

Presence is a word that appears in many social, political, religious, and economic contexts and refers to an array of meanings. In the era of ubiquitous media, networks, and many complex infrastructures on which society depends, presence is no longer solely coupled to physical reality. Presence has acquired new virtual stances, with completely new dynamics. We, as human beings, connect to each other in many different ways. We meet virtually and participate in many different types of networks in merging on- and offline realities. We also participate in new types of communities such as energy communities in which participants organize their own exchange of energy. Energy communities rely on communication and visualization technology, but also on technology needed to provide data, for example, on usage, pricing, availability, accounting, and expected market developments mandating distributed data aggregation and service level agreements between participants.

To take responsibility we, as participants in such communities, need to have some form of presence for each other, both in on- and offline context as well as in information and communication trajectories. The design of presence is a prerequisite to participation: understanding the value of presence is a prerequisite to the design of large distributed complex participatory systems.

Human kind has been mediating presence since the beginning of times: leaving traces, making maps and drawings, telling stories, and performing rituals, music, and play. These are all ways with which we communicate presence from one time

or place to another, from one human being to another. Technology has made it possible for us to mediate our presence in new ways facilitating communication, interaction, and transactions over distance, often simultaneously. With the introduction of every new medium, new ways of establishing connection, and being able to say "hello," for example, is the first achievement and source of surprise and curiosity. Soon after, when many people start to use a new medium, this is integrated in day-to-day practices of millions of people and new habits, customs, and understanding emerge (Wyatt 2004). While new technologies produce increasingly better ways to produce mediated presence, natural presence is still distinct from mediated presence.

We, as human beings, are creative and find unexpected ways to survive and serve our own well-being. New technologies, new systems, are emerging continuously, connecting people across the world, creating connections between family friends and total strangers. These connections can be beneficial or detrimental for those involved. Facebook, for example, is designed to anticipate specific types of behavior with participatory scripts to build on this human potential of connecting with others. The outcomes of human behavior, however, cannot be predicted, and unintended side effects happen. The real-time connection between dozens, hundreds, and thousands of people Facebook provides has shown to be powerful for gathering people both for the good and for the bad. Social networks were instrumental to the rising of the Arab Spring between 2010 and 2012, to the hooligan gathering in London in 2011, and to Project X in Haren in the Netherlands in 2012.[1] In all of these events, the behavior of many individuals together creates a different situation and experience than any individual alone could have anticipated. In social networks individual behavior is contextualized and inspired, and this leads to new formation of (historical) experience, which is focus of further research in a variety of domains (Castells 2012).

This chapter elaborates on the notion that presence is essentially the strive for well-being and survival. Designing for the value of presence is not designing for a specific behavior. It is designing for experience, as argued in this chapter. Presence as a value for complex systems design has great societal relevance. Research into this value is timely.

Explication of the Value of Presence

In today's ever changing network society, the amount of multimedia information we can access within seconds is unprecedented: we are, in fact, experiencing a tsunami of information at a speed that society has not experienced in the past. Our experience of time, place, and authenticity is changing (Benjamin 1936; McLuhan 1964; Baudrillard 1983; Postman 1985; Virilio 1989; Lovink 2012).

[1]Project X started off with a birthday invitation via Facebook and resulted in riots in which thousands of young people participated.

Some argue there are possibilities as never before; others claim that in the tsunami of copies at grand scale and speed, the concept of "meaning" implodes. In these times of fast transformation into the network society, place and time are still distinct factors in human lives and the social structures that are built. It is often, however, unclear how the "space of places" in the physical world relates to the "space of flows" in the many networks in which we participate (Giddens 1984; Castells 1996). In the collective experience of the emerging society, a new culture and a "next nature" is emerging in which we redefine, design, and establish how we want to live our lives (Mensvoort and Grievink 2012; Lunenfeld 2003). In the flow of images, text, and audiovisual communication, a new sense of authenticity is emerging creating media auras as a result (van der Meulen 2011). Key to this new culture and next nature is how we perform presence and participate in the complex networks that constitute our day-to-day reality (Brazier and Nevejan 2014).

The many online experiences and representations of selves mandate a new perspective on design of social, technical, and ecological networks and infrastructures, including consideration of related values such as privacy, integrity, and trust. The ethical dimension of presence design, including augmented reality design, is acknowledged as a value for the design of larger social technical and ecological infrastructures in a variety of public debates around privacy, integrity, and trust (Hamelink 2000).

As mentioned above, different notions of presence function in a variety of social, political, religious, spiritual, and ideological contexts. The focus of this chapter is on our natural presence qualified by breathing and a heart that ticks. It grounds presence in our physical nature.

Existing Conceptualizations of Presence

Even though it was not labeled as such in a wide variety of scientific domains, presence research has been conducted over the last few centuries: in Philosophy, in Architecture, in Psychology, in scientific technology development, and in Communications and Media Studies. The distinction between being present in the here and now and being present elsewhere, by voice or by imagination (e.g., when reading a book), has been a topic of scientific interest for many years. The current large-scale spread of digital and distributed technologies has positioned the design of presence center stage.[2] With the ever developing technology, spreading Internet, evolving game culture, augmented reality, wearables, smart textiles, avatars, and more, new presence designs and configurations are continually influencing the possible

[2]With the rise of the network society, since the 1990s, notions of presence, tele-presence, mediated presence, and network participation were explored in many conferences like SIGGRAPH, CHI, Doors of Perception, ISEA, and Presence Conferences of the ISPR. The International Society of Presence research (ISPR) was founded in 2002 as a platform for international exchange.

stances of presence. The five key notions that have and still guide presence design during the last two decades are (1) being there, (2) being here, (3) merging realities, (4) presence as the strive towards well-being and survival, and (5) copresence, social presence, and witnessed presence. These notions and their historical context are discussed below in more detail.

Being There

To create digital technologies for mediating presence, psychologists and computer scientists have been exploring mediation by the senses and the brain in relation to mediation by technology, in "(tele-)presence." Hundreds of experiments have been carried out to create and analyze the sense of presence in virtual environments. Different soft- and hardware applications have been created and studied to better understand how virtual experiences become real experiences for people involved. The target is to create the sense of "being there" (Lombard and Jones 2007). A typical experiment concerns the breakout of a fire in a virtual environment such as Starlab in Barcelona orchestrated. When people start to run away from a virtual fire, the sense of presence is high: these people are convincingly engaged in a situation of "being there" (Spanlang et al. 2007). As technology improves, VR is becoming a consumer product entering our homes and lives (Slater 2014).

Most studies on facilitating the sense of presence in virtual worlds explore our capacity of perception, attribution, imagination, and cognitive capacities when triggered or seduced by specific configurations of technology. Reliability, validity, sensitivity, robustness, non-intrusiveness, and convenience are criteria to which the literature refers (IJsselsteijn 2004; Hendrix and Barfield 1999). Both objective and subjective methodologies for measuring results have been developed (van Baren and IJsselsteijn 2004). Objective corroborative methodologies include psychophysiological measures, neural correlates, behavioral measures, and task performance measures. Subjective methodologies include (many) presence questionnaires, continuous assessment, qualitative measure, psychophysical measures, and subjective corroborative measures.

Being Here

In the 1990s, the "being-here" perspective on presence design is initially overshadowed by the many commercial promises of technology to create time- and place-independent connections and communities. The possibilities of the new technologies are also, however, explored in less commercial settings aimed to contribute to local communities. Felsenstein's Community Memory project in San Francisco, the Domesday project in the UK, Geocities in the USA, and, for example, the Digital City of Amsterdam facilitate thousands of people to explore and co-design online experiences in the emerging digital culture at the time (Castells 2001). The quest in these initiatives was to create added value by using ICT technologies for local community involvement. The challenge was and is to make the "being there" of relevance to the "being here."

This is also the perspective taken by Gullstrom in which the influence of framing in architecture leads to the basis for new architectures for presence in which other

places through elaborate visual perspectives, with or without the use of technology, are made present as "being here" (Gullstrom 2010).[3]

In 2007, Nevejan claims there is a direct relation between design for presence and design for trust in the emerging network society in which on- and offline realities merge in which ultimately the "being here" is distinct (Nevejan 2007). Mediated presence contributes to language and concepts we as people share, but natural presence, the being here, is distinct because it holds the ethical dimension of an individual life. The physical steering towards well-being and survival is distinct for our individual lives and is distinct from how we touch each other's lives, as discussed below. In pain we respond different to our environment than when we are healthy and fit. When being in each other's physical presence, we can literally care for each other. When in conflict, physical presence allows for more expression in both aggression and compassion. Communication with others, who have other perceptions and convictions, has more bandwidth in natural presence than in mediated presence. This is a reason why project teams at the beginning and at the end of a project often come together in real life. Then they can ask "What is good to do?" and "Is it good what we do?"

Merging Realities

In communication trajectories we incorporate on- and offline interaction into one experience over time. Buying an airplane ticket, checking in online, and boarding the plane physically offer an integral experience with a particular carrier. The easyJet experience, for example, is different from the Jet Airways experience. In personal relationships on- and offline moments create a specific communication trajectory that characterizes the experience of that particular relationship.

In 2005, Floridi proposes that local and remote spaces of observation and different levels of analysis define presence, given the complex dynamics between presence and absence (Floridi 2005).

Gamberini and Spagnoli extend the notion of tele-presence into a day-to-day experience of different simultaneous information and communication flows (Spagnoli and Gamberini 2004).

Since 2010, (tele-) presence in "traditional" virtual reality is studied in the context of cyber therapy. Focusing primarily on cognitive behavioral therapy, a deliberate

[3]Architect Gullstrom eloquently described 500 years of architecture history as a history of presence research in which elaborate processes of framing in different media format human presence and suggest other people, religious entities or other worlds, are being present here. Perspective and gaze, interaction, and attribution trigger the sense of presence. After analyzing buildings and paintings since the early 1600s, she describes in detail how since the 1970s in Palo Alto, in cybernetic circles, in the work of artists, and in many cultural events technology is used to create new architectures for presence in which other places are made present as "being here." As a result Gullstrom created an architectural "presence design toolbox" consisting of shared mediated gaze, spatial montage, framing and transparency, lateral and peripheral awareness, active spectatorship, and offscreen space.

bridge between the virtual and the real is created to synthesize in human experience events that are healing (Wiederhold 2006; Riva 2008).

In augmented reality the "being here" and the "being there" are presented in one interface. Virtual data are spatially overlaid on top of physical reality, providing the flexibility of virtual reality grounded in physical reality (Azuma 1997). Mediated reality refers to the ability to add to, subtract information from, or otherwise manipulate our perception of reality through the use of a wearable computer or handheld device (Mann and Barfield 2003). Current technology providing stereoscopic vision in shared augmented space, coupled to data repositories, merges these two realities. Recent results (Poelman et al. 2012) show the need to explicitly design mediated and witnessed presence for awareness and trust.

Some recent research on the affects of social networks can be described in terms of presence research into merging realities. For example, Danah Boyd studies how social networks affect teenagers' day-to-day life, actually revealing how what she calls "network publics" affect the performance of presence of these teens (Boyd 2014).

In the design of participatory systems, the concept of merging realities is embraced as a starting point of design. Focusing on the performance of presence in network contexts, in which on- and offline communication merge in our individual experience, new spaces for design unfold (Nevejan and Brazier 2010).

The Strive for Survival and Well-being

Having identified that the sense of "being here" and the sense of "being there" are merging, the notion of presence needs to be (re-)considered. How can the essence of presence be formulated to include being there and being here in merging realities?

In 2004, inspired by the work of Antonio Damasio, Riva with Waterworth and Waterworth introduce a neurobiological perspective on presence (Riva et al. 2004) that does not depend on technology and allows for understanding presence in the context of merging realities. This neurobiological perspective on "presence" claims that the strive for well-being and survival, or what Spinoza referred to as "the conatus," is the essence of presence (Damasio 2004). Sensations, emotions, and feelings inform us of the direction in which well-being and survival can be found. We steer towards sensory sensations, emotions, and more complex feelings of solidarity, compassion, and love, and we steer away from pain, hate, and unpleasantness (Damasio 2000). We "perform" presence (Butler 1993). When touching a burning stove, we retreat immediately. When entering a place with a bad smell, we walk away. When meeting a big angry-looking man in a dark alley, we run. When an atmosphere suddenly turns into dispute and fights, we prefer to leave. And vice versa, when we see other people do good and nourish the sense of solidarity, we are inspired to do so as well.

Damasio also suggests that it is likely that the steering towards one's own survival and well-being includes the well-being and survival of others as well (Damasio 2004). Seeing pain of others hurts, aggressive behavior leads to unsafe situations and people will turn away. When transposing this suggestion to a network reality, new questions arise. Is it likely that when we think of mediated presence in which one does not have to confront physically the consequences of one's actions that an individual would

develop feelings of compassion or solidarity? How can consequences of our actions be felt in mediated presence? This is, for example, a major issue in training pilots using a flight simulator. Most of today's pilots have played with flight simulators in games in which the notion of "crashing" implies restarting the game.[4] Such considerations are related to the notion of presence as a value for design.

Copresence, Social Presence, and Witnessed Presence

Individual performance of presence is affected and inspired by other people's presence. In 1963 Goffman introduced the notion of copresence, to refer to the situation in which we perceive others and in which we can sense that they perceive us (Goffman 1963). This research continues today. Researchers are still studying and measuring under what conditions copresence emerges in virtual environments and augmented reality applications and is accepted by people acting in these environments (Nowak and Biocca 2003).

In communications theory, social presence in social interaction using media and telecommunications refers to the differences in spheres of intimacy that a phone call or a face-to-face meeting, for example, generates (Short et al. 1976). Social presence is one of the pillars for educational design in blended learning contexts (Whiteside and Garret Dikkers 2012).

Copresence and social presence do not address the issue of the establishment of truth and trust, both fundamental to understanding what happens next in any social situation. Being and bearing witness to each other is historically the social structure in which truth and trust are negotiated. Nevejan argues that witnessed presence is fundamental for establishing trust both in the online and the offline world (Nevejan 2007; Nevejan and Gill 2012). An action that is witnessed becomes a deed. The witness can intervene in the course of events and can bear witness and testify which may change the understanding of the deed. Witnessing, as a way of having presence that includes the acceptance of responsibility for words and deeds, includes notions as addressability, response-ability, and clarity of subject positions (Oliver 2001). It also appears that to be witness includes to self-witness. The artistic research project Witnessing You concludes that "self-witnessing" is fundamental both to the process of being witness and the process of bearing witness (Nevejan 2012). The same conclusion is drawn in VR research into being there (Slater 2014).

Main Issues of Controversy on the Notion of Presence as a Value for Design

A first issue of controversy is that presence is a fuzzy concept. Most measurements in the "being there" approach to presence design are concerned with effects of certain media configurations focusing on a reported sense of presence. Where does presence as a phenomenon start and where does it end? What is the opposite of

[4]Personal communication with military staff at Thales office in Delft in 2007.

presence? Not having presence may not be the same as being absent or having/performing absence. How can presence be defined to make distinctions possible between more or less, better or worse, real or false presence? The notion of witnessing sheds light on these issues, but does not make hard distinctions possible.

A second issue is the controversy of how presence is considered – as a result of human consciousness or as part of human consciousness. The notion of presence differs between the variety of social sciences and natural sciences, between deterministic and more holistic approaches. Also the role of emotions and the role of imaginations in processes of presence are approached differently. This regularly leads to misunderstandings.

A third issue concerns design trajectories of presence in complex systems. Inducing and deducing dynamics in virtual simulations and serious games require rigorous analytical skills and an associative/creative capacity at the same time. Results often only shed light on a specific dynamic given a set of predefined rules and variables. Nevertheless, these simulations and serious games inform real-life processes in which real people participate. The gap between simulations and serious games and real-life situations is considerable and has to be taken into account. In cyber therapy this gap is used to induce healing processes in individuals. When complex systems assist in matters of life and death, as in crisis management systems, or more mundane applications as in railway systems, unintended side effects can have dramatic effects. Virtual simulations and serious games are unable to anticipate how individuals will act and be witnessed in extreme situations in their strive for survival and well-being. Such unexpected side effects are matters of concern.

What Does It Mean to Design for Presence?

Designing presence in complex systems in the context of the functionality and nonfunctional requirements on which a system is based should target specific functionality, such as to facilitate social interaction, to facilitate collaboration, to facilitate exchange, to facilitate a marketplace, and to facilitate distributed structures of governance. As the design of presence is not often explicitly addressed as an explicit requirement, it is often neglected. Developments in the outsourcing industry in India, for example, indicate that neglect for presence design is detrimental for the workers involved (Ilavarasan 2008; Upadhya 2008). Presence as a value for design, as a requirement, facilitates designs that make it possible for us to be able to have agency, accept responsibility, and be able to engage with others in meaningful interaction, making it possible for us to steer towards our own well-being and survival.

Meta-design for Choices and Trade-Offs

Presence research is a science of trade-offs (IJsselsteijn 2004). We, as individuals, make these choices and trade-offs on the basis of what we know: we decide on how,

when, and where we perform our own presence in which situations. Collective experience with a medium affects how we, as a society, understand and respond to media realities. When film was just invented, and a train was approaching, the whole cinema audience would dive under the chairs. For many years email was ignored as a legitimate form of communication – it took up until a decade ago for the Courts of Law to accept email as proof. (Note that the concerns with respect to legitimacy of email are well founded.) The implication of understanding presence as a choice and trade-off, on both the individual and collective level, is that presence can be designed, and this opens up new fields for research and design.

There is a direct relation between design for presence and design for trust in the emerging network society in which on- and offline realities merge. Arguing that witnessed presence is fundamental for establishing trust, Nevejan (2007) introduces the YUTPA framework[5] in which four dimensions of time, place, action, and relation define potential trust in different presence configurations of these dimensions. Interdisciplinary research with artists, academics, and experts elaborated this framework and identified factors of significance in human experience in each dimension (Nevejan and Brazier 2012), providing a frame of reference for the analysis of choices and trade-offs in presence design.[6]

Designing for the making of choices and trade-offs, designing a context in which people can steer towards well-being and survival, needs to conceptualize presence design as meta-design (Fischer 2013). It is not designing for a specific behavior; it is designing for the choice of behavior or the creation of new behavior. Social networks, Internet platforms, and participatory systems aim to offer such meta-design upon which we can perform our own presence in our own way. Presence as value for design is mandatory in these systems of participation (Brazier and Nevejan 2014).

Design for Experience

Design for presence needs to include the complex notion of design for experience. We make choices for our own behavior, for the performance of our presence, not only out of habit of previous behavior. Such choices are more complex and include outcomes of reflection on our previous action and outcomes, understanding of contexts, and imagination and anticipation of possibilities. Different levels of consciousness (proto, core, and extended) influence performance of presence (Damasio 2004).

In the English language, the word experience reflects different kinds of experience in one word only. In the German language, the word “erfahrung” is distinct

[5]YUTPA is acronym of “to be with You in Unity of Time, Place and Action”.

[6]This framework is fundamental to the analyses of human network interaction in the emerging participatory systems design paradigm that is studied and developed at Delft University of Technology (Brazier 2011).

from "erlebnis." A distinction is made between "erlebnis," referring to sensations and happenings, which are foundational to behavior, and "erfahrung" which refers to experience, as being the reflexive context in which we, as human beings, reflect upon our own actions and understand our own situation to inform new actions. Design for presence not only includes design for sensations and behavior ("erlebnis") as discussed above. Design for presence is distinct because it necessarily includes design for experience ("erfahrung") in which a larger context allows for individual reflection and choices. Performance of presence emerges from experience.

Experience design is a relatively young discipline in certain design schools in Europe, the USA, and India. Its theoretical foundation is diverse including media and cultural studies, marketing and business, philosophy, and interaction design.

Not often used today, but very clear in their intention, is the work of the Frankfurter Schule on experience design in the previous century (Habermas 1983; Negt and Kluge 1972). This group of German philosophers and social scientists posed the question of design for experience, as the ground for human's autonomous choice, in the early 1960s. Confronted with the fact that millions of people had followed Hitler in the 1930s and into WOII, they were determined to understand how individual people could keep their autonomy and independent perception in mass media and propaganda contexts. As result the Frankfurter Schule introduced a specific idea about experience design in which sensations and happenings need to be historically contextualized in both personal and collective ways to nurture reflection and inspire people to steer towards their own, and others, well-being and survival. Artists and artistic research play a role of significance in this approach. In the era of ubiquitous computing and all pervasive media, the thinking of the Frankfurter Schule is acquiring new attention.

Artistic Research

Presence research uses many methodologies from the medical and natural sciences as well as methodologies from the social and design sciences. Artists, who have challenged the imagination of presence design with elaborate use of technology for several decades now, make specific contributions to presence research.

Every new technology is an inspiration for artists. They run with it, push its limits, and focus on exploring experiences that the new medium facilitates. For over 50 years now, technology artists have experimented with different presence designs. Using radio and television, video, audio, and digital media in many ways, artists have explored how human beings can perform presence in different media configurations. Marcel Duchamp, John Cage, Nam June Paik, Bill Viola, Char Davies, David Rokeby, Shu Lea Cheang, and Lisa Autogena, just to name a few, have altered the way in which people experience the merging realities around them.

Artists are experts in creating experiences for others offering perception and reflection in unanticipated ways and affect the aesthetic experience that is part of everyday life (Dewey 1934). Artistic research, including the making of work and methodologies for research, offers radical realism, non-conceptualism, and contingency (Schwab and Borgdorff 2014).[7] Distinct from art history, and distinct form art practice, artistic research aims to contribute to larger research questions (Biggs and Karlsson 2011; Borgdorff 2012; Zijlmans 2013). Presence design in the era of ubiquitous computing and pervasive media is definitely such a question.

Different Analytical Frameworks for Constructing and Deconstructing Presence as Value for Design in Larger Social, Ecological, and Technological Structures

In a variety of disciplines, scholars are concerned with understanding requirements for designing structures in which we, as human beings, can steer towards our own well-being and survival for establishing sustainable social structures. None of these approaches are currently considered part of presence theory or design. However, when accepting that presence is essentially the strive for well-being and survival, these approaches contribute to presence design for larger social, ecological, and technological structures. Fundamental to all of these approaches is that we participate with our own strive for well-being and survival while participating in a larger process of collective evolution or change. Each of these approaches is concerned with design processes or analyses as meta-design for the value of presence.

Business Studies: Presencing and the U-Turn

Senge[8] introduced the concept of "presencing" as a means to guide organizations to go through collective change (Senge et al. 2004). Presencing is defined as being aware of the here and now and imagining and anticipating what could happen next. In other words, "presencing" explores potential steering towards well-being and survival. With his colleagues Senge developed the concept of the U-Turn, in which an organization go through seven phases in which the "presencing" of its members is crucial in the dynamic to unfold change. The seven phases are expose, reorientate, letting go, emerge, crystalize, prototype, and institutionalize. Presencing is used as design requirement for organizational change.

[7]Currently the Society for Artistic Research hosts the Research Catalogue in which several journals on artistic research are published and debates are orchestrated.

[8]MIT Sloan School of Management, founder of the Society for Organizational Learning.

Design Thinking: Collaborative Authoring of Outcomes

In complex design trajectories, in which business and political dynamics are at stake, the need to incorporate individuals strive for well-being and survival is acknowledged and has been studied in depth. To this end, Humphries and Jones[9] formulate the concept of "collaborative authoring of outcomes" (Humphries and Jones 2006). Through an iterative process of design in which different scenarios are explored by participants (stakeholders) in the to be designed new system/structure, the individual strive for well-being and survival drives the process of design. Because individuals participate from out their own strive for survival and well-being, and contribute from this perspective, they become authors of the collective process and therefore accept responsibility for its outcomes. This approach is distinct from many other "participatory design" processes in which participant's contributions to the design process do not demand a collaborative authoring of its outcomes. Collaborative authoring of outcomes is a value-based design process in which presence as value is key.

Science and Technology Studies: Actor Network Theory

Science and Technology Studies (STS) studies how science and technological innovation affect society (Hackett et al. 2007). A variety of disciplines and methodologies contribute to STS. The Actor Network Theory, ANT (Latour 2005), is of specific interest for presence as a value for design in a ubiquitous technology and media landscape. ANT argues that causality of what happens next is seldom the result of a direct causal relation. An extensive network, with a variety of cultural, economic, and political dynamics, exists, in which things (material) and concepts (semiotic) contribute to the state of affairs at a certain moment in time. Individuals execute their strive for survival and well-being within such networks. Analyses with ANT shed light on how individuals in the network (consisting of things and concepts) strive for well-being and survival and from this perspective offers insightful presence design analyses mainly focusing on presence as a factor of analysis.

Political Economy: Poly-centricity

For over 40 years, Elinor Ostrom studied how rural communities in different places in the world become successful and sustainable. Ostrom specifically studied what rules are necessary to create sustainable communities in which individuals have autonomy and in which ecology is balanced. In other words, she studied how communities in which individuals strive for their own well-being and survival can be sustainable with respect for, and in balance with, natural resources. In her research Ostrom concludes there is a limit to how many people can participate in such a community for it to be successful and sustainable. Successful communities meet 8 design

[9]Garrick Jones and Patrick Humphries studied processes of change at the London School of Economics, building upon academic research and business consulting practices.

requirements (Ostrom 1990; Ostrom 2009).[10] When a community becomes too large, it should be split. To this end she developed the notion of poly-centricity, allowing different centers to be autonomous and collaborate at the same time in a network with other communities. Today's network society offers a range of new possibilities for creating such poly-centricity between successful and sustainable communities in which presence functions as key value in Design for Values.

Participatory Distributed Systems Design: Local Coordination for Global Management

Fundamental to participatory distributed systems design is the notion of local coordination. Every participant moves and acts according to its own interest, steering towards well-being and survival. By accumulating outcomes of all participants steering towards well-being and survival according to certain rules, a participatory system executes its mission (Brazier and Nevejan 2014). For example, a traffic navigation system such as TomTom not only indicates itineraries for car drivers; it also includes real-time data about traffic jams and possible alternative routes to support participants in TomTom's distributed participatory system to adapt their own itineraries for their own well-being. As a result, traffic jams dissolve.

Self-organization and emergence are key to the notion of "local coordination for global management," which is fundamental to complex systems design. Participatory systems design – integrating social, ecological, and technological systems – builds upon principles of complex systems design and specifically adds the value of presence for allowing people to accept responsibility in complex environments (Brazier and Nevejan 2014). In this approach presence as a value for design functions as a design requirement, as a factor of analysis, and as a key value in Design for Values.

Comparison and Critical Evaluation

Presence design requires the involvement of different scientific and design disciplines. This in itself is a major issue. Connecting psychological, sociological, economic, technological, and cultural designs, such interdisciplinary approaches

[10]Elinor Ostrom's design principles for sustainable communities (stable local pool resource management) are:

1. Clearly defined boundaries (effective exclusion of external unentitled parties)
2. Rules regarding the appropriation and provision of common resources that are adapted to local conditions
3. Collective-choice arrangements that allow most resource appropriators to participate in the decisionmaking process
4. Effective monitoring by monitors who are part of or accountable to the appropriators
5. A scale of graduated sanctions for resource appropriators who violate community rules
6. Mechanisms of conflict resolution that are cheap and of easy access
7. Self-determination of the community recognized by higher-level authorities
8. In the case of larger common-pool resources, organization in the form of multiple layers of nested enterprises, with small local CPRs at the base level

require multilingual capacity between different communities of practice (Kuhn 2000). Even when this multilingual capacity is available, there is no best solution, no ultimate system to be designed. As history shows, we, as human beings, with our ability to strive for well-being and survival continually find new ways to adapt, invent, and move on. Nevertheless, in today's world we are dependent on complex systems that define basic utilities, transport, food and water, finance culture, politics, and more. Presence as a value for design is fundamental to all of these systems, in particular to support emergence as the outcome of the accumulation of many participants' strive for well-being and survival is most often characterized by processes of self-organization and emergence. This in itself is a challenge, as the process of self-organization is, by definition, unpredictable.

The need to integrate our strive for survival and well-being in the design process from the start is implicit in each of the approaches discussed above. Note, however, that we, as human beings, are changing due to our networked societies, with ubiquitous technology in pervasive media landscapes. Such changes pertain not only to our own psychological and physiological being but also to how social structures emerge and function with increasing complexity.

Three Examples of Presence as Value for (Meta-)design

There are three ways in which values can play a role in a design process: as design requirement, as factor of analysis, and as the value driving a value-sensitive design process (Vermaas et al. 2011; van den Hoven 2005). To shed light on each of these roles, the YUTPA framework is used to analyze and design presence as value for (meta) design (see section "What Does It Mean to Design for Presence?" under "meta design for choices and trade-offs") (see Fig. 1).

Interdisciplinary research has identified 4 dimensions of significance for making choices and trade-offs for the performance of presence. The YUTPA framework, acronym for being with You in Unity of Time, Place and Action, sheds light on specific presence configurations in which a person performs presence with YOU, in the NOW, being HERE, with a specific potential to DO certain things.

Each of the dimensions of relation, time, place, and action is defined by a number of factors, which affect how a person judges the presence configuration in which one finds oneself. As a result specific trust is established, which affects how a person performs presence.

In the dimension of relation, identified factors are role, reputation, engagement, and communion (shared meaning). In the dimension of time, the factors are duration of engagement, integrating rhythm, synchronizing performance, and making moments to signify. In the dimension of place, the factors are body sense, environmental impact, emotional space, and situated agency. In the dimension of action, the factors are tuning, reciprocity, negotiation, and quality of deeds (actions and activities).

The YUTPA framework facilitates discussion about presence configurations. In a YUTPA analysis, appointed levels to each factor are subjective indicators, and

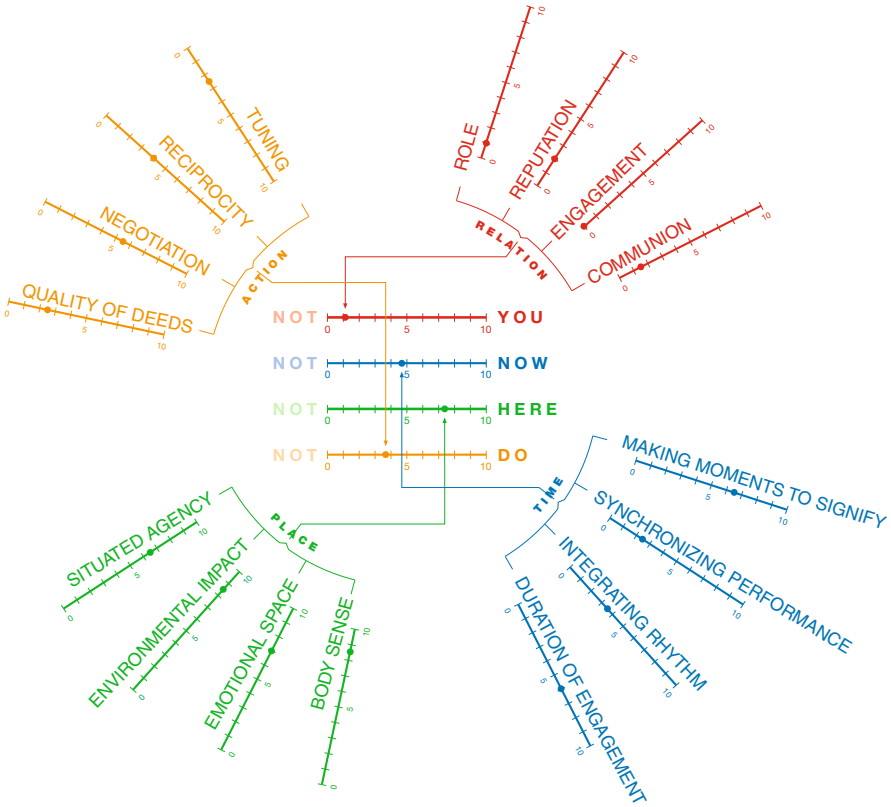

Fig. 1 The YUTPA framework (design: office of CC, Amsterdam)

not objective calculated outcomes, for facilitating conversation about a specific presence design.

Example 1: Presence as a Design Requirement – Augmented Reality for Expert Collaboration

When translating presence into design requirements, an application should facilitate a participant's capacity to steer towards his/her own and others' well-being and survival. A participant's possibilities to act have to be real in the sense that they can be aware of the situation they are in and act upon it. This is one of the great challenges in the design of augmented reality applications in which experts have to collaborate.

YUTPA Analysis CSI the Hague

The research project CSI The Hague explores the potential of mediated and augmented reality for future crime scene investigation. Using special VR glasses

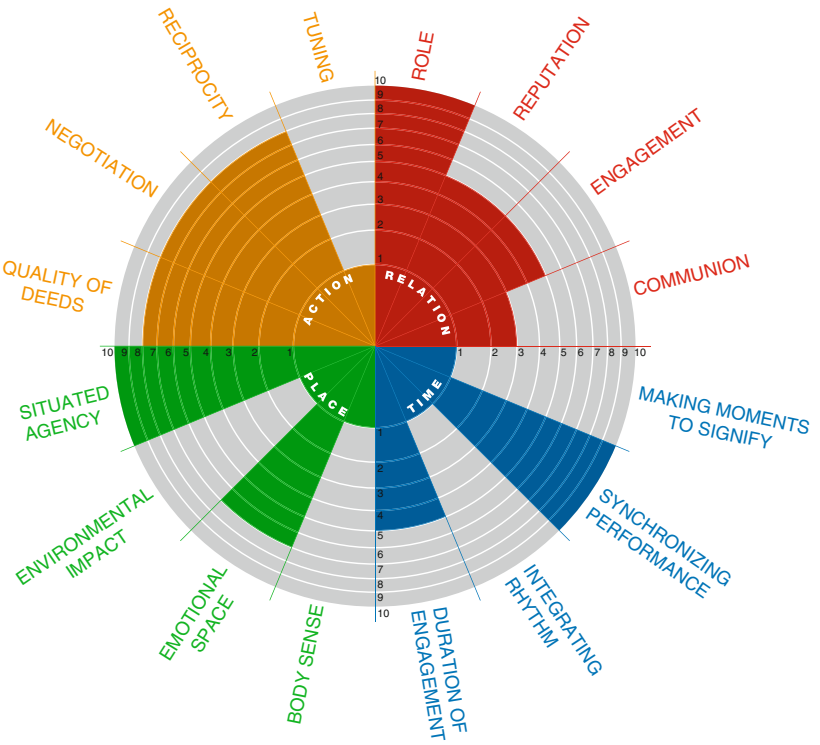

Fig. 2 This YUTPA analysis shows possible design spaces for CSI The Hague, an augmented reality application for expert collaboration in forensic crime scenes (Design: office of CC, Amsterdam)

through which experts see a real crime scene as well as augmented indicators that colleagues have placed, the application needs to facilitate experts to investigate together (see Fig. 2).

Relation: Experts in the Crime Scene Investigation of the CSI The Hague project meet each other in professional roles. This defines their engagement and affects their reputation. Interestingly, the experts in this case need to create a shared meaning, not the same type of shared meaning as the shared meaning we make with family or friends but a shared meaning to contextualize and understand a crime scene investigation that also includes ethical positions in the process.

Time: Experts work together for the limited amount of time that is needed to do the investigation. They are trained in their professional roles to synchronize performance. This is not often possible as their rhythms will often not be integrated as they have different professional environments and may even live in different time zones. Because they work online in mediated presence, it is almost impossible to share moments that signify. It is almost impossible to share celebration when successful or share the mourning that comes with atrocity or defeat. On the time dimension, the performance of presence is defined by the lack of trust caused by a low integration of rhythms and not sharing of moments to signify.

Place: The body sense and environmental impact between an expert on the crime scene and an expert elsewhere is very different and therefore contribute very little to the collaborative performance of presence. The emotional space experts share depends significantly on the compassion and experience of the remote expert. This emotional space is defined by professional roles, expert knowledge of the task at hand, but also by the gravity of the situation with which both experts have to deal. Situated agency, the fourth factor in the place dimension, is clearly defined as a requirement. The purpose of the application is to give agency to the remote expert to make remote collaboration effective, which, if successful, will significantly contribute to experts trust in the situation.

Action: Reciprocity in signs and negotiation of conditions are performed in professional settings and can be executed in remote situations as well. However, these are hindered by the lack of tuning possibilities. No body movements or breath space can be shared. Trust in the expert collaboration may be created by a series of activities for contextualizing the actions experts may exchange at distinct moments in time.

Overall the YUTPA analysis shows that the degree of trust in the expert in augmented collaboration is a challenge. Of the 16 factors that have been identified so far, only 7 contribute significantly to trust affecting choices and trade-offs for presence in the current design. Synchronizing performance, situated agency, reciprocity, negotiation, quality of deeds, and role are requirements on which the design of the system it is based. Depending on the experts that engage with each other, emotional space and communion may contribute to the degree of trust in augmented collaboration in which case the balance flips to more than half of the factors contributing to trusting mediated collaboration. But these are highly individual factors. From a presence design perspective, the system could benefit from the time dimension by enhancing, for example, "integrating rhythm." In the place dimension, situated agency and emotional space could benefit from explicit functionality designed to this purpose. In the action dimension, there are options to improve tuning of presence and quality of deeds. In the relation dimension, a reputation system may contribute to the sense of presence.

Example 2: Presence as a Factor of Analysis – Facebook

Presence as a factor of analysis judges the choices that are made in a design process giving agency to participants to steer towards their own and others well-being and survival. Such agency needs to be in balance with attention, intention, and expectation of participants in the to be designed participatory scripts.

YUTPA Analysis Facebook

In this example a YUTPA analysis is carried out to understand how Facebook's presence design generates trust for its participants (see Fig. 3).

Relation: Depending on personal style, all identified factors in the dimension "relation" play a role of significance in networks of friends. Some people use

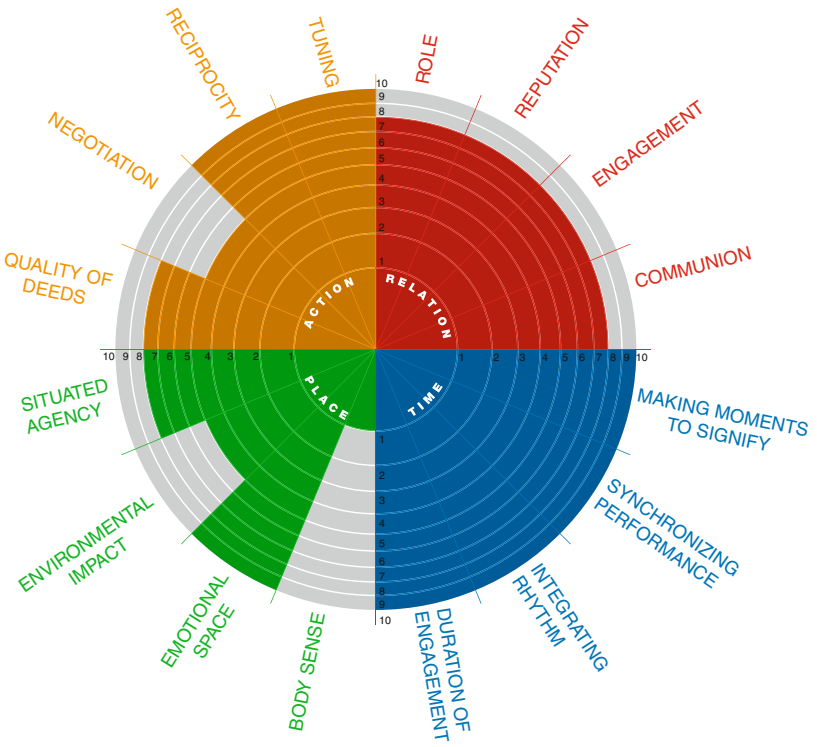

Fig. 3 This YUTPA analysis focuses on analyzing Facebook from the perspective of presence as value for design (Design: office of CC, Amsterdam)

Facebook mostly professionally for which Facebook scores high with respect to its role. Facebook functions as a reputation system; for example, employers look up possible new applicants to learn more about them. Engagement can be very high, up to the point of addiction. In specific contexts, Facebook is part of creating shared meaning. Family and friends use Facebook to stay in touch. The dimension of relation in Facebook's design contributes significantly to why people trust Facebook.

Time: For Facebook the duration of engagement is endless and 24/7. Its design supports integration of posts of friends minute by minute in individuals' own rhythms and activities of the day. Synchronizing with friends, for example, by entering a chat, or issuing likes is instantaneous. Facebook communication is also designed to support significant moments in peoples' lives, for example, when friends celebrate a shared meaning as in protest or a party. The time dimension of Facebook's design generates a high level of trust.

Place: Facebook does not directly affect our body sense. It also does not have or create direct environmental impact, but many friends may live in the same environment and therefore Facebook may have environmental impact. The emotional space Facebook offers is immense and elaborate for many. It offers "situated

agency" allowing participants to post, like, and comment on anything they notice. So the dimension of place contributes significantly to the emergence of trust.

Action: Depending on personal style and choice, Facebook is able to support intense tuning with others as well as reciprocity between friends. Negotiation is not really one of its features, although some people may invent ways to acquire this functionality within Facebook. Concerning the quality of deeds, it seems that most people use Facebook as part of their daily activities. At some moments in time in specific context, a post may be considered a deed. It is clear though that the dimension of action contributes significantly to the emergence of trust.

From this short analysis, it may be concluded that Facebook generates trust from its participants by its presence design. In this presence design, the dimension of time is crucial. Followed by action and relation, but also the dimension of place contributes significantly. However, a YUTPA analysis does not shed light on political opinions on how Facebook as a company behaves and can be trusted or not. Quite many people do not participate in Facebook because of Facebook's data policy. This policy includes giving details of Facebook users to both to business and intelligence corporations. This YUTPA analysis sheds light on how people make choices for presence and trust but does not incorporate judgments on larger issues of trust as Facebook's behavior as a company, for example.

When judging increase or decrease in presence in a specific design trajectory, arguments need to incorporate social, economic, political, and ecological consequences of the intended participatory scripts for presence. From one perspective it may seem that a participant acquires agency, while, for example, from another perspective actual economic or political circumstances deeply affect the situation in such a way that presence for other participants decreases. The analytical frameworks discussed in section "Meta-design for Choices and Trade-Offs" address the social, political, and economical issues of presence as a value for design. An ANT analysis (Actor Network Theory), for example, identifies relations of Facebook with the world of finance, intelligence, and

Example 3: Presence in Design for Values – Smart Grid

Presence as a value in Design for Values positions our "strive for well-being and survival" center stage in all phases of the design process. However, systems necessarily have multiple actors each with their own strive for well-being and survival. Their needs may collide. Where in nature's design, according to Darwin, in the strive for well-being and survival the fittest will survive, in designs for human society, more complex and more balanced presence design is possible. Colliding, interdependent needs of multiple actors need to be taken into account, as the context for design.

For social structures, including businesses, to be sustainable, a balance between individual and collective strive for well-being and survival has to be met. To this end design choices have to be made for modes of participation, modes of communication and decision-making, and modes of influence and authority in the context of network, networked, networking, and network-making powers (Castells 2012). Also this presence design is effectively a

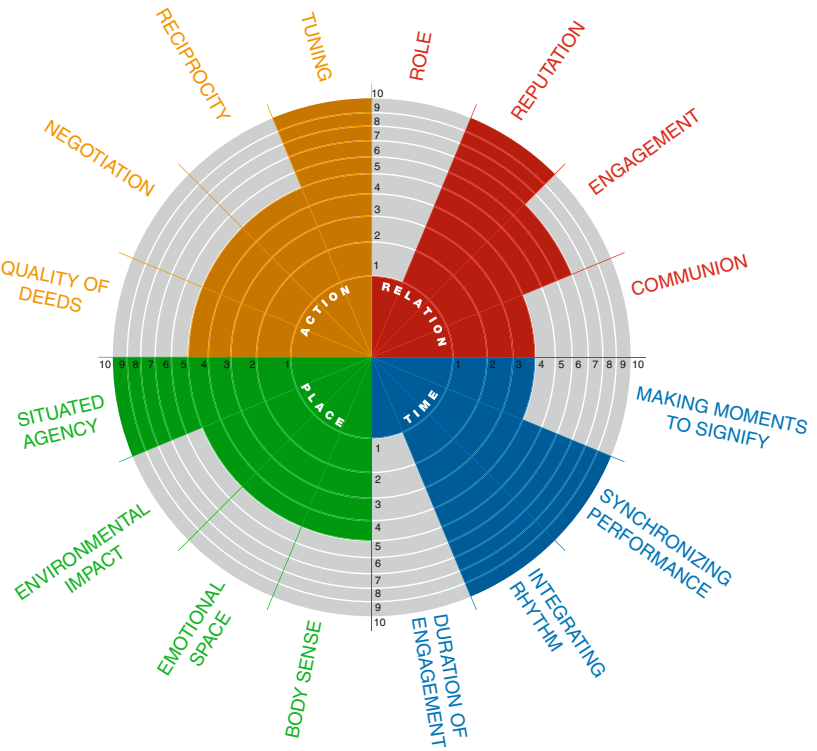

Fig. 4 This YUTPA analysis unfolds design solution spaces for presence as key value in a value sensitive design process for smart grids (Design: office of CC, Amsterdam)

meta-design in which structures of governance and structures of participation are designed to be amended over time.

The different analytical frameworks, as discussed in section "Meta-design for Choices and Trade-Offs," are all of relevance to Design for Values: presencing, collaborative authoring of outcomes, simulations and emulations for paying tribute to the diverse links in the actor network system, poly-centricity, and distributed systems design. Presence as a value in Design for Values needs to address agency of participants and the potential for trust between participants including the system itself. Being and bearing witness have to be scripted in (Nevejan and Brazier 2014).

YUTPA Analysis Smart Grid

Currently smart grid technology is developed worldwide. Boulder Colorado, for example, the first smart grid city in the USA, provided two-way connectivity to the city. Citizens can be both consumers and producers of energy and the grid negotiates and divides according to the needs and possibilities of each household (see Fig. 4).

In Western Europe energy is available 24/7. In current energy market "supply" follows "demand." With the expectation that over time, as energy resources and needs change (e.g., with the introduction of electric vehicles), future smart grids have to be designed in such a way that "demand" will follow "supply."

In this example the YUTPA framework is used to identify solution spaces for designing smart grid technology in West European cities.

Relation: Currently our role in energy nets is most often as a consumer. As more and more consumers become producers (prosumers), our roles change. Prosumers are more engaged with the energy they use. Critical solution space for designing smart grids is the facilitation of different forms of engagement allowing people and businesses to accept different roles in the production and consumption of energy. Smart reputation design is becoming a factor of significance, for example, related to the contribution prosumers make to societal sustainability. The shared meaning that may emerge as result of being involved with the smart grid offers a solution space for both designed and emerging cultural dynamics that affect communities' energy supply and demand.

Time: Personal duration of engagement with the electricity grid is characterized by moments of intense use and periods of nonuse. However, electrical current is available 24/7. Because of its "continual availability," there is no need to integrate our personal rhythms with nature (day and night, cold and warm) or with our neighbors for more efficient energy use.

When energy is less abundant, two factors in the time dimension offer solution spaces for design. Smart integration of rhythms between people, communities, businesses, and geographical regions offers new opportunities for efficient energy production and energy use.

Secondly, synchronization of performance between supply and demand creates a solution space that can be explored in which new developments in ICT (mobile networks, sensor technology, and agent-based platforms) can significantly contribute. Concerning "moments to signify," the current electricity net is seen as a utility that has to function 24/7. As consumers become prosumers, and actively both consume and produce energy, new moments to signify may emerge. Designing new moments for signifying the way individuals and communities handle their energy use may contribute to a new culture of energy and play a role in strategies for change.

Place: The experience of energy is bound to the place where the body resides. Body sense and environmental impact are fundamental to energy use. Energy keeps us warm, allows us to read at night, and makes ICT function. However, body sense and environmental impact are more a given than a solution space for design. Emotional space is not directly influenced, although the effect of no energy directly affects personal and relational spheres as indicated by the urban myth that a baby boom takes place 9 months after an energy black out. Situated agency is defined, for most, by turning on a switch anytime during the day and by paying (automatically) a bill once a month. The feedback to our "energy actions" is immediate; a light turns on. The expense of our "energy actions" is very remote; the bill comes weeks later. In a smart grid situation, local production of energy affects actions in day-to-day

life, "demand" follows "supply," and feedback is experienced in the here and now. Surplus energy is traded locally, regionally, or even globally, but all benefits are awarded locally. Design solution spaces in the place dimension for smart grids are mostly defined by the bandwidth for situated agency.

Action: The quality of deeds concerning energy are very diverse: cutting a tree for a fire, mining coal under the ground, executing operations in a nuclear plant, and placing a solar panel on the roof or turning the windmill towards the wind all have deep impact on day-to-day lives. Tuning human behavior and the production of energy is one of the possibilities that smart grid technology provides. Developments in ICT (sensors, Internet of things, big data, agent technology) support personal and local aggregation of data on the basis of which energy use can be tuned/aligned with human behavior.

Where today negotiation of energy resource provisioning (and prices) is mainly the domain of the electricity companies, communities of consumers are emerging in which energy production and consumption is negotiated. In such energy communities, reciprocity in exchanging energy resources between participants directly affects the lives of the participants. Each of these factors (tuning, negotiation, reciprocity, and quality of deeds) offers solution spaces for design of smart grids.

This short YUTPA analysis shows there are many design spaces for smart grid technologies in which individual presence and collective strive for survival and well-being are intertwined and where this interdependency can be fruitful.

Faced with different social and ecological crises, understanding the design space for presence is fundamental for social structures of the future. It should drive innovative solutions for next-generation infrastructures. Our participation in complex distributed architectures and infrastructures requires the taking of responsibility. Having the possibility to enact our own presence, to execute our own agency is fundamental to infrastructures, architectures, and governance structures that rely on us to take responsibility and accept accountability. Presence design as value-sensitive design emphasizes participation as a way to manifest presence of participants involved.

Open Issues and Further Work

Little is known about the embodiment of virtual and mediated experiences. Looking at data of users, it seems that millions of people engage daily in network activities. How such activities affect us human beings is unclear. Effects on human psychology, on how communities and societies function, on how markets adapt, and many more questions are open issues and subject of further research. How does network reality influences the mind maps we make? How does networked reality become embodied? How does network reality affect our feelings and emotions and are emotions and feelings also fundamental to steering in network realities, or are there other drivers in the online world? The relation between performance of presence and imagination needs to be explored much deeper for being able to answer question like this.

Network reality is part of our daily negotiation for performance of presence, but most psychological and sociological theories are based on a world in which network reality does not play a role. It is unclear whether psychological and sociological mechanisms can be transposed to network reality. In mass communication, in media studies and in net critique, these issues are being explored; a new paradigm for analysis and design is emerging but is not yet clearly defined.

A confusing issue is that we, as people, negotiate performance of presence based on how we trust a situation with which we are confronted. Trust may not be granted for appropriate reasons and performance of presence may not be beneficial in the end. As in the Facebook example above, it is easy to trust Facebook because its presence design supports us to significantly steer in each of the 4 dimensions of time, place, action, and relation. However, this trust may be misleading. Power relations in the network society are often opaque, but not less relevant. It is an open issue how distributed transparency can be designed. Also it is unclear how we, as individuals, are positioned in personal-global dynamics. Whistle-blowers like Edward Snowdon and Julian Assange show how technology in the hands of a few controls many. They reach a large audience via the media, but little political action happens as a result. These open issues have great societal impact and further research is timely.

Conclusions

This chapter focuses on the design of presence in merging realities as approached in the social and design sciences. Presence is a fuzzy concept. Many methodologies implicitly include or exclude presence as value for design.

Current presence research focuses on creating the sense of presence in being there, but it most often does not address larger issues of societal impact of presence design. In our day-to-day lives in social networks and pervasive ubiquitous technologies upon which fundamental processes of life depend in network societies, on- and offline realities merge. The being here and the being there are one in human experience.

Presence design is not design for specific behavior for presence; it is meta-design; it is designing for choice and trade-offs between choices. It is design for experience in which current and historical contexts are taken into account together with actual perceptions and understanding. Both scientific design and artistic research contribute to presence design.

Despite all of the current models of thinking, the current speed and scale of technological innovation is changing our lives profoundly. It is as if we are part of a global experiment in which dynamics of information, communication, and trans-action, all fundamental to society, are changing, dynamics that have existed for over a thousand of years of building up experience and social structures, markets, and structures of governance to be able to live together. Today systems of law and systems of value exchange are all under pressure. We, as human beings, are changing as result of the global network society.

The strive for well-being and survival is deep in our DNA and will keep on defining what will happen next. By incorporating presence as a value for design, and configuring design processes accordingly, "old" human experience will have a chance to resonate and inform future generations to come for designing and creating a social, technological, and ecological environment worth living in.

Cross-References

► Design for the Value of Trust

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