Article

Science, Technology, & Human Values
2015, Vol. 40(3) 389-420

DOI: 10.1177/0162243914547645
sthv.sagepub.com

Upon Opening the Black Box and Finding It Full: Exploring the Ethics in Design Practices

Marc Steen[1]

Abstract

Contemporary design practices, such as participatory design (PD), human-centered design (HCD), and codesign, have inherent ethical qualities, which often remain implicit and unexamined. Three design projects in the high-tech industry were studied using three ethical traditions as lenses. Virtue ethics helped to understand cooperation, curiosity, creativity, and empowerment as virtues that people in PD need to cultivate, so that they can engage, for example, in mutual learning and collaborative prototyping. Ethics of alterity (Levinas and Derrida) helped to understand human-centered design as a fragile encounter between project team members and prospective users, and foregrounds the ethics in these encounters: our tendencies to "grasp the other" and to "program invention." And pragmatist ethics (Dewey) helped to understand codesign as a process of joint inquiry and imagination, involving the organization of iterative processes of problem setting and solution finding, with moral qualities. When we open the "black boxes" of design practices, we find them filled with ethics. Moreover, it is proposed that design practitioners need to make explicit their practices' inherent ethical qualities and that they can do that by embracing reflexivity.

[1]TNO, Delft, The Netherlands

Corresponding Author:
Marc Steen, TNO, Delft, The Netherlands.
Email: marc.steen@tno.nl

Keywords
design, ethics, reflexivity

Introduction

What do we need to know about design?[1] What kind of knowledge do we need to have about the practices of designers, developers, and engineers, who help to shape our world? In everyday life, we usually focus on the *output* of design processes; for example, when we interact with the digital devices or online services that were designed by these people—our smart phones, tablet computers, or social networking services, for example. Or sometimes, we focus on the *input* of design processes and are interested in the resources, time, and budget that are needed in a design project. In this essay, however, I will focus on design *processes*, rather than on their output or input.

Subsequently, I will propose that contemporary design practices, such as participatory design (PD), human-centered design (HCD), and codesign, have inherent ethical qualities, which often remain implicit and unexamined. Furthermore, I will advocate making these ethics explicit so that the people involved can become more aware of these ethical qualities and can incorporate them consciously and reflexively in their practices. This can help them to realize more fully the transformative potential of design.

Finally, this essay also aims to further our understanding of design processes and their ethical qualities, enabling us—the people who use the products and services that result from them—to criticize and to participate more actively in these processes.

Design and Ethics

In "Upon opening the black box and finding it empty" Langdon Winner (1993) expressed discontent with the lack of attention to moral questions in studies of the development or application of technology. He argued that, although these studies "have opened the black box and shown us a colorful array of social actors, processes and images therein, the box they reveal is still a remarkably hollow one" (1993, 374–75). At that time, many scholars were neglecting, ignoring, or steering away from moral questions. In the twenty years since, there has been a growing interest in ethics in the field of science, technology, and society (STS), for example, in studies of the ethics of various design practices (e.g., Garrety and Badham 2004; Keulartz

et al. 2004; Mitcham 1995; Shilton 2012; Van de Poel and Verbeek 2006; Verbeek 2005, 2006).

One way to approach the relationship between design and ethics is value sensitive design (VSD; Friedman and Kahn 2003; cf. Albrechtslund 2007; Cummings 2006; Flanagan, Howe, and Nissenbaum 2008; Van de Poel 2009; Manders-Huits 2010). This approach argues that those involved in a design process attempt—intentionally or unintentionally—to embed specific values in the products or services that they develop (similar to the notion of *scripts*, Akrich 1992, 1995; cf. Allhutter 2012; Van der Velden and Mörtberg 2012). VSD advocates organizing a process in which different stakeholders can express and negotiate their perspectives on these values in order to integrate these productively.

Another way to approach the relationship between design and ethics focuses on design as a social process (Bucciarelli 1994). Devon and Van de Poel (2004, 461), for example, argued that design is inherently a social activity and quintessentially an ethical process—"Ethics is not an appendage to design but an integral part of it"—and advocated making these ethical qualities more explicit, for example, by examining "the social arrangements for making decisions" and the "iterative social process for making technical and social decisions." It is this approach that I aim to contribute to with this essay.

Subsequently, I will study specific design projects and the social processes in these projects. The reason for focusing on the specific and the social follows from the character of design practices. They are always specific, in that they are concerned with developing specific solutions for specific problems, and always social, in that communication and cooperation are at the heart of design (Bucciarelli 1994; Devon 2004). This focus is in line with Van de Poel and Verbeek's (2006) proposal to "perform a context-sensitive form of ethics," that is, to study people's social practices within specific projects.

My studies are of project teams involving ten to thirty people, and their cooperation with each other and with prospective users, and stretch over the two- to three-year duration of the project. As a consequence, the "black boxes" that I opened were much smaller than the larger systems, such as urban infrastructures, and their larger political and societal dimensions that concerned Winner (1988, 1993).

Design Practices

Understanding people's daily life experiences and involving potential users in innovation or design projects are ways to increase the success of these projects (Cooper 1999; Van der Panne, Van Beers, and Kleinknecht 2003). Such

approaches are especially relevant in developing of information and communication technology (ICT). They help to counter the risks of *technology push*, that is, the risk of starting with technology, rather than with people, which can easily lead to developing products or services that people cannot or do not want to use (Nielsen 1993; Norman 1988), which is typical for the ICT industry (Thackara 1999, 2006). The industry is therefore increasingly embracing approaches like PD, HCD, or codesign.

These terms—*PD*, *HCD*, and *codesign*—are often used loosely or interchangeably. These approaches involve potential or prospective users or customers (Kujala 2003; Rohracher 2005; Edvardsson et al. 2006) in product or service design processes, organize collaborative, creative and iterative processes (Cross 2006; Lawson 2006; Steen 2011b), and create products or services that match people's needs and preferences (Kujala 2003; Steen, Manschot, and de Koning 2011).

Subsequently, however, I will bring their differences to the fore to argue that design practices have inherent ethical qualities. Moreover, I will propose three ethical traditions as perspectives to look at these ethical qualities.[2]

I did not discover these ethical qualities. These ethical qualities were put into these design approaches by the people who pioneered and developed them. PD emerged from political/collective motives to empower people and to let them participate in the design process and has gradually moved toward ethical/individual motives. HCD attempts to focus on people in the high-tech industry, to facilitate user involvement and multidisciplinary teamwork. And codesign is concerned with organizing processes of collective creativity and with various practical methods to do that. This essay is an attempt to uncover—not discover—some of the ethics inherent in design practices.

Participatory design

Participatory design refers to a "Scandinavian" approach to information systems design (Bjerknes, Ehn, and Kyng 1989; Bjerknes and Bratteteig 1995; Ehn 1990; Greenbaum and Kyng 1991; Kyng and Mathiassen 1997). PD has its roots in projects in the 1970s and 1980s in which researchers and developers cooperated with workers to promote workplace democracy and workers' empowerment, so that "the people destined to *use* the system play a critical role in *designing* it" (Schuler and Namioka 1993, xi). These roots still resonate, for example, in a sensitivity to power differences and agency, but its political motives and collective action (carrying out an action program to give the weak parties knowledge they can use to increase their power), have shifted toward ethical motives and individual

action (“the quest for democracy was left to the individual system developer” and his or her “individual ethical codex”; Bjerknes and Bratteteig 1995).

Therefore, I propose that studying the ethical qualities of contemporary PD will require a perspective that focuses on the thoughts, feelings, and actions of individuals. The tradition of *virtue ethics* provides such a perspective. Subsequently, I will explore and discuss virtues related to collaboration, curiosity, creativity, and empowerment that are needed by people who work in PD projects.

Human-Centred Design

Various approaches can be grouped under the heading of *human-centred design* (HCD);[3] what they share are four principles (International Organization for Standardization [ISO] 1999; cf. Steen 2011b): the active involvement of potential “users” throughout the project; the search for an appropriate balance of functions between people and technology; the organization of an iterative process of research, design, and evaluation; and the organization of multidisciplinary teamwork. HCD typically involves interviews or workshops in which project team members and “users” interact. HCD can vary in its level of human centeredness; for example, a superficial type of HCD would invite “users” near the end of a project to evaluate prototypes that were developed with a minimum of input from “users,” whereas a more thorough type of HCD would involve “users” early on, for example, in creative workshops, in which project team members and users jointly articulate a problem and explore solutions.

My discussion of HCD will focus on the encounters between project team members and “users,” and on project team members’ attempts to combine their own ideas with the ideas of “users,” and to make progress, to draw conclusions and deliver results. I will look at these attempts through the perspective of ethics of alterity and discuss the difficulties of these fragile, face-to-face encounters and their inherent ethical qualities.

Codesign

The term *codesign*[4] refers to “collective creativity as it is applied across the whole span of a design process” (Sanders and Stappers 2008, 6). One might argue that all design is codesign, since design practices are always *social* practices (Bucciarelli 1994). Codesign typically refers to the organizing of collaborative creativity and is sometimes used synonymously with PD.

In comparison to HCD, codesign can tend more toward creative and generative activities, inviting, for example, "users" to participate in workshops for joint brainstorming and fantasizing, sketching and storytelling or tinkering with all sorts of mock-ups or prototypes (Sanders 2000; Sanders and Stappers 2008). For example, *context mapping* (Sleeswijk Visser et al. 2005; Sleeswijk Visser 2009) is associated with codesign; in this method, researchers and designers conduct observations and interviews in the daily life contexts of "users" and use their findings to inform and inspire their design process.

Codesign is typically seen as a pragmatic approach to facilitate collaboration and creativity. I will therefore look at codesign through the perspective of philosophical pragmatism, which similarly aims to bring together people so that they can jointly effect positive change. I will focus my discussion of codesign on organizing collaborative and creative processes—on organizing a project's iterative cycles of problem setting and solution finding.

Applications in the ICT Industry

Although the three approaches discussed have their origins in the ICT industry, they are not (yet) widely applied there. Many innovation projects in the ICT industry focus on technology, rarely involve users, and often have a rather homogeneous project team, representing, for example, technology and business concerns, and a rather linear process, going from specification to development to implementation. Studies in the ICT industry revealed that "usability and user involvement [have] low priority" (Gulliksen et al. 2004, 207), that user involvement "is often difficult and rare" (Iivari 2006), that only "less than one percent" (Venturi and Troost 2004) of employees interact with "users," and that efforts are needed to make such approaches "part of the business strategy and endorsed by higher management" (Venturi, Troost, and Jokela 2006, 232).

Some of the elements from PD, HCD, or codesign are, however, applied in the ICT industry, for example, in the form of usability engineering (Nielsen 1993), contextual design (Beyer and Holzblatt 1998), or agile software development.

Methodology

This essay is based on studies of design practices in three projects: WeCare, Freeband User eXperience (FRUX), and TA2 (see details subsequently).

These projects share a concern for developing and evaluating ICT applications and services, and an approach that organized multidisciplinary teamwork and interactions with potential users, for example, in observations, interviews, creative workshops, and user tests and trials.

This research approach can be positioned in the tradition of laboratory studies (Latour and Woolgar 1986; Knorr Cetina 1995; Rip 2000; Woolgar 1991). My role can be described as *participant observer*—or maybe better, as *observant practitioner*, because of my intimate involvement in the practices studied (cf. Woolgar 1988; Ashmore 1989; Ellis and Bochner 2000). My primary role was to work in these projects as a team member in research, design, and coordination roles. My secondary role was to study these projects. This combination of practice and analysis can be traced back to Bijker's (1993) advocacy for practitioners to reflect on their practices: to start from practices, to embark on an "academic detour," and then to "turn to practice" to make the research findings practically applicable.

Subsequently, I will discuss various design practices, looking through the lenses of different ethical traditions and drawing from the studies of these three projects: I will discuss PD through the lens of virtue ethics and focus on several *virtues* that people need in PD, drawing from the WeCare project; I will discuss HCD through the lens of ethics of alterity and focus on *face-to-face encounters*, drawing from the FRUX project; and I will discuss codesign through the lens of pragmatist ethics and focus on organizing collaborative and creative *processes*, drawing from the TA2 project.[5]

I select these three ethical traditions because they are typically focused on specific and social practices, as do design practices. Virtue ethics focuses on people in specific, concrete, and social contexts and their personal thoughts, feelings, and actions in these situations. Ethics of alterity views people as inherently social beings, arguing that one always finds oneself in specific and concrete relationships. And pragmatist ethics takes people's practices and experiences as a starting point for analysis and aims to deliver practical results. The lens through which we look thus matches the phenomena we observe.

Another argument for this selection is that these three ethical traditions are more suitable than the more mainstream deontological or consequentialist traditions, which focus on finding or applying general rules, based on one's moral duties or on the consequences of one's actions, respectively. Moreover, deontological or consequentialist approaches would typically focus on the inputs (duties) or on the outputs (consequence) of design processes, whereas we are currently interested in the processes themselves.

Participatory Design and the Virtues of Cooperation, Curiosity, Creativity, and Empowerment

The project studied as an example of PD was the WeCare project (part of the European Ambient Assisted Living research program). This project focused on improving older people's well-being by enabling them to engage in online social networking, thereby promoting social interaction and participation in social networks, both online and "in real life." The project consortium included industry partners (e.g., a supplier of high-quality online video communication), care or service providers (e.g., a provider of telecare services for people in rural areas), organizations that represent older people and their interests, and research organizations in four countries: Finland, Spain, Ireland, and The Netherlands. For each country, a PD process was organized that involved older people and people in their social networks—such as family and friends—in the design and evaluation of four online social networking services, one for each country. This approach enabled the project team members to match the services to the needs and usage contexts of different groups of older people.

The services were developed as prototypes and evaluated in user trials, and included applications for social communication, such as video communication and discussion forums, and for coordinating social activities, such as shared calendars and ways to request or offer support between participants.

Virtue Ethics

For my discussion of PD, I draw from virtue ethics; an ethical tradition that focuses on cultivating virtues and enabling people to flourish (*eudaimonia*). Virtue ethics is teleological in that it starts with an ultimate goal (*telos*): the goal for people to flourish, to live the good life. Virtues are "dispositions not only to act in particular ways, but also to feel in particular ways. To act virtuously . . . is to act from inclination formed by the cultivation of virtues" (MacIntyre 2007, 149).

In virtue ethics, one aims for an appropriate *middle* between deficiency and excess, given the specific circumstances. For example, the virtue of courage would be an appropriate middle between cowardice and recklessness, and would play out differently for different people in different circumstances. Finding this middle "requires therefore a capacity to judge and to do the right thing in the right place at the right time in the right way" (MacIntyre 2007, 150). It must be noted that finding this middle is concerned with

striving for excellence (*arete*), with doing something very well, not with mediocrity or moderation, and with cultivating well-formed types of natural desires (MacIntyre 2007, 160), not with countering desires. One can learn to think, feel, and act virtuously by trying out virtuous behaviors or by looking at people who behave virtuously.

I would like to propose that *promoting cooperation, collaborative curiosity, collaborative creativity, and empowerment* can be understood as key virtues that are needed in PD. In the spirit of virtue ethics—which is concerned with specific people in concrete situations (Pritchard 1998)—these virtues will be illustrated with examples from the WeCare project (for details, see Steen 2013b; Steen et al. 2015).

Promoting Cooperation

Cooperation is at the core of PD (Bjerknes and Bratteteig 1995; Bratteteig and Stolterman 1997; Kensing and Blomberg 1998). In PD, cooperation is promoted with care, patience, and attention for group dynamics, so that the people involved can engage in *cooperative curiosity* and *cooperative creativity* (see subsequently). One will aim for a middle between the *deficiency of neglecting* the subtleties of group dynamics and cooperation, and the *excess of controlling* people and forcing them to cooperate. This virtue is especially needed in people in management or leadership roles.

The interventions of the project manager of the WeCare project, Sharon, illustrate the virtue of promoting cooperation. Every couple of months, she organized project team meetings, with people from different countries and different organizations. Usually, in such meetings, people left their laptop computers open and combine attending the meeting with working on their laptop, such as answering e-mail. She, being aware of what is needed to promote cooperation, asked people to close their laptops and to pay full attention to the meeting and to the other people. In addition, she organized relatively long lunch breaks, with a walk in a nearby park or a visit to a restaurant, to encourage project team members to socialize and relax. She understood that one needs to invest in such activities in order to promote cooperation. Such interventions helped project team members to collaborate effectively throughout the project.

Cooperative Curiosity

The virtue of *cooperative curiosity* is a disposition of being open and receptive toward other people and their experiences, and toward one's own

experiences and learning. Typical methods to promote curiosity in PD are mutual learning (Bødker et al. 1987; Bjerknes and Bratteteig 1987) or ethnography (Blomberg et al. 1993; Button 2000).

Mutual learning was pioneered in the Utopia project, in which system developers cooperated with graphic workers to develop and evaluate information systems to support workers (Bødker et al. 1987). The developers and the workers had diverse meetings in which the developers learned about the workers' ways of working, their skills, and their usage of tools, and in which the workers learned about (at that time) new technologies, such as computer displays and printers. Based on this mutual learning, they were able to jointly develop mock-ups and prototypes (see subsequently). Another approach to foster curiosity is to draw from the tradition of ethnography, for example, by conducting all sorts of fieldwork to inform or inspire the design process. Ethnography can help one to focus on other people, rather than on one's own ideas about these people (Blomberg et al. 1993).

In PD, one needs to find a middle between the deficiency of too little sensitivity to other people's or one's own experiences, and the excess of too much receptiveness to other people's or one's own experiences.

Jannie's actions may exemplify the virtue of cooperative curiosity. Jannie worked for an organization that represents older people and their interests, and her role in the project was to promote a better understanding of older people's behaviors and needs. In several meetings, she noticed that people tend to use stereotypes when talking about older people. An unsubstantiated utterance like "older people find it hard to use computers" makes it easy to stay within one's own frame of reference. In order to counter that tendency, Jannie invited others to find out what older people actually *do* with computers, for example, by organizing codesign workshops in which project team members and older people met and exchanged knowledge and ideas, which helped to promote empathy and cooperative curiosity.

Cooperative Creativity

The virtue of *cooperative creativity* is a disposition of jointly generating ideas, combining ideas of different people, and practically realizing products or services. Typical methods to promote creativity in PD are *Future Workshops*—in which people engage in three collaborative and creative phases: *Critique*, of the current situation; *Fantasy*, about more desirable alternatives; and *Implementation*, articulating short-term actions (Kensing and Madsen 1991)—or cooperative prototyping (Bødker et al. 1987; Ehn and Kyng 1991).

Cooperative prototyping—the hands-on creation and evaluation of mock-ups and prototypes—was also pioneered in the Utopia project (Ehn and Kyng 1991; Bødker et al. 1987). In that project, mock-ups were sometimes as simple as an empty cardboard box with the text "laser printer" written on it. Using such mock-ups encouraged "user involvement beyond the detached reflection that traditional systems descriptions allow;" "everybody has the competence to modify them; they are cheap, hence many experiments can be conducted without big investments in equipment, commitment, time, and other resources" (Ehn and Kyng 1991, 172-73).

In PD, one needs to find a middle between the deficiency of too little attention for other people's or one's own ideas, and the excess of too much realization of other people's or one's own ideas.

Stefan's role illustrates the virtue of collaborative creativity. Stefan was responsible for coordinating technology development; he coordinated different project partners' activities of developing and combining software modules into working prototypes. Technology development became critical when organizing user trials, in which these prototypes were going to be used by people in their daily lives. In one meeting, it became clear that specific modules were not delivered on schedule and did not meet the "user requirements." Often, such a situation makes people focus on their own role and on looking backward, making up excuses and trying to blame others—which is not very productive for finding a solution. Instead, Stefan stayed calm and invited people to talk constructively with each other, to look ahead and to explore and develop practical solutions, which helped to promote cooperative creativity.

Empowerment

In PD, one also needs the virtue of *empowerment*: the disposition to share power and agency with others,[6] also with people outside the project, for example, the people who are supposed to be going to benefit from the project's results. One can do that by aiming for a middle between the deficiency of being passive and hesitant, for example, assuming that people will cope and thrive without help, and the excess of being patronizing and directive, for example, assuming that people will prosper if only they follow your advice. In the PD tradition, the *tool perspective* has been key to empower workers, "The idea is that new computer-based tools should be designed as an extension of the traditional practical understanding of tools and materials used within a given craft or profession" (Ehn 1993, 57). The tool perspective respects people's tacit knowledge and skills, and enables them to

contribute to the development of the tools which they will be using. Moreover, it advocates developing tools that people can use actively and creatively, thus empowering them, rather than developing finished products that can only be used in predetermined and fixed ways, with the risk of making their users passive and disempowering them.

The virtue of empowerment can be illustrated with an example of John Thackara (1999), at that time project manager of the Presence project, which aimed to develop user-friendly Internet services for older people (similar to the WeCare project). This is what he wrote about the project team members' first encounter with their "target group":

> Someone said, "There are a lot of older people out there; let's see if we can find some and help them by giving them this Internet stuff in an easy-to-use format". So we went and found some older people and told them how we had come to help them with the Internet, and they said, "Piss off! [. . .] We don't need your patronising help, you designers. If you've come here to help us, you're wasting your time; we don't want to be helped, thanks just the same. Yet we do have some interesting observations to make about our daily lives, about our lifestyles, about our communication, and about all of their attendant dysfunctions. If you could kindly change your attitude and help us explore how we will live, then perhaps we can do something together." (p. 8–9)

Rather than creating a product and then bringing it to "users," one needs to share power and agency with "users," so that they can become active participants and creative contributors, rather than passive receivers, so that they can jointly create tools that people can use actively and creatively.

In sum, we can understand PD as a *praxis* in which the people involved need to cultivate the virtues of promoting cooperation, of collaborative curiosity and collaborative creativity, and of empowerment, sharing power and agency with others.

Human-Centered Design as a Fragile Encounter

The project studied as an example of HCD was the FRUX project (part of the Dutch BSIK research program). This project aimed to develop two innovative mobile telecom services for two user groups and to organize the design process in close cooperation with them: one for and with police officers and another for and with informal caregivers. The projects combined technology push (to develop telecom services) and an HCD approach (to cooperate with prospective "users").

The project team members organized observations, interviews, workshops, and field trials with "users," and designed and evaluated two prototypes, one for each target group: a mobile telecom service that helps different types of police officers to share information and to collaborate while they are out on the street, and an online social networking service that helps people to communicate and coordinate informal care for people with dementia, for example, sharing care and other tasks between family members who jointly provide care for one of their parents or grandparents.

There were project team members with their experiences, knowledge, and ideas to develop telecom services. And there were "users," with their experiences, knowledge, and ideas about their daily lives. The project attempted to bring these people together in face-to-face interactions.

Ethics of Alterity

I looked at HCD through the lens of *ethics of alterity*,[7] a type of ethics that takes the other and the relationships between other and self as a starting point, with Emmanuel Levinas (1906–1995) and Jacques Derrida (1930–2004) as key proponents. Levinas wrote extensively about the encounter between other and self, and Derrida about *différance* and otherness.[8] In their *ethics of alterity*, one always finds oneself within other-self relationships, which are inherently ethical relationships.

In a HCD project, people attempt to communicate and cooperate—which Levinas and Derrida would conceive of as encounters between other and self and as ethical situations. Let me attempt to deconstruct (cf. Derrida 1991b) two key assumptions of HCD as a way to bring the ethical qualities of HCD to the fore, based on the readings of Levinas and Derrida (for details, see Steen 2008, 2012).

Developing Knowledge and the Tendency to Grasp the Other

A key assumption in HCD is that project team members can jointly learn new things—that they can gather and develop new knowledge, for example, about prospective users and their needs and preferences. It can be hard, however, for project team members, to be *open* toward *others* and to learn new things, for example, when they interact with prospective users in interviews or workshops.

Throughout his oeuvre, Levinas was concerned with the difficulties of encounters between people and with the violence that so often occurs in these encounters. Levinas (1987, 48, 50) argued that one tends to *not* see the *other*

as *other*, but as an object, and to reduce the other to concepts that one is already familiar with: "The foreign being . . . becomes a theme and an object. . . . It falls into the network of a priori ideas, which I bring to bear, as to capture it." He characterized this tendency as the making of a grasping gesture. One pulls the other into one's own way of thinking: "knowledge remains linked to . . . the grasp" (Levinas 1996b, 152). Levinas (1996a, 13) described the *self*, "the I of knowledge," as a "melting pot where every Other is transmuted into the Same." In an attempt to develop knowledge, the *self* grasps the *other*, which makes it very difficult to learn anything new.

HCD practitioners cannot escape this tendency. Their interests and ambitions, their knowledge and ideas—their *selves*—get in the way of their attempts to be open toward other people and their interests, ambitions, knowledge, and ideas.

In the FRUX project, for example, we conducted a series of four creative workshops with different groups of police officers. Based on the findings from each workshop, we gradually changed our project's focus and developed a mobile telecom application that promotes cooperation between police officers. It does so by automatically making suggestions to share "implicit knowledge" between police offices. In HCD, such learning, based on interactions with users, is considered good practice.

Nevertheless, we also missed several opportunities to learn from police officers and to let their ideas influence our project. In our interactions with police officers, we often privileged our own ideas. In the first workshop, for example, we jointly explored four areas that the police officers experienced as problematic. After the workshop, however, we chose to focus on the one area that was comfortably close to our ambition to develop an innovative telecom application. Consequently, we ignored other areas that were relevant to the police officers, such as their problems with their current systems for sharing and accessing information, or their struggles with their professional roles and with the police's organizational culture.

In order to counter this tendency to "grasp the other," Levinas (1987, 56) envisioned an attempt to escape the gesture of grasping via a form of desire that is not aimed at satisfying the self and is respectful of the otherness of the other: "This desire without satisfaction hence takes cognizance of the alterity of the other."

Making Decisions and the Tendency to Program Innovation

Another key assumption in HCD is that the people involved can organize iterative phases of divergence, of research and exploration, toward

openness, and of phases of convergence, of evaluation and drawing conclusions, that is, toward closure. Project team members not only need to be open toward others and to explore; they also need to draw conclusions and to deliver results—to create closure and to make progress.

Regarding the process of decision making, Derrida (2001, 29) remarked that genuine decisions are "exceptional": "a decision that does not make an exception, that does nothing but repeat or apply the rule, would not be a decision," and that a genuine decision cannot be made by merely applying knowledge or following rules. A decision that is based on knowledge is "an application, a programming" (Derrida 1995, 147-8). Similarly, Derrida (1989, 46, 55) observed that people often attempt to *program* innovation and argued that this can lead to "the invention of the same."

Because of this tendency to *program* innovation, one tends to stay within one's own comfort zone, which makes it hard to create anything new. In HCD, project team members cannot escape this tendency. They bring their own backgrounds and methods to the encounters with other people, and these influence the balance between openness and closure—typically more toward closure.

In the FRUX project, for example, we also cooperated with "primary" informal caregivers: people who provide "primary" informal care to people who suffer from dementia and who live at home, often their husband or wife. Different project team members followed different approaches to talk with them about their daily lives and their needs.

Some project team members, who were familiar with dementia and informal care and who had social science backgrounds, conducted a questionnaire-based survey with hundreds of people with dementia and their "primary" informal caregivers. In parallel, other project team members, for whom dementia and informal care were relatively new areas, and who worked in design roles, conducted informal interviews to inspire their creative process.

Both approaches were attempts to move toward openness, to learn from other people about their daily lives. However, they were also moves toward closure—to draw conclusions about other people's needs and creating products for them. The people doing the survey used a standardized questionnaire, so responses had to match its categories. The people doing the design interviews wanted to create an innovative telecom application and were looking for inspiration, which influenced their interviews. Both groups brought their methods to the encounters with others as a way to focus and to move toward closure.

To escape these tendencies toward *closure* and *programming*, Derrida (1989, 56) advocated welcoming the other, "To invent would then be to 'know' how to say 'come' and to answer the 'come' of the other." This would be an active form of passivity because it requires an effort to *not* make the other into a theme within one's own program.

In sum, we can see HCD as a fragile, face-to-face *encounter* between people, involving attempts to develop knowledge and being open toward others (and to counter the tendency to *grasp* the other), and attempts to make decisions and progress and to balance openness and closure (and to counter the tendency to *program* innovation).

Codesign as a Process of Joint Inquiry and Imagination

The project studied as an example of codesign was the TA2 project (part of the European 7th Framework Program). Approximately forty researchers, designers, and developers, with different backgrounds, such as technology, business, and social science, from fourteen organizations, ranging from international corporations and small enterprises to universities and research institutes, collaborated in this project. The project's goals were to develop and evaluate a series of innovative telecommunication, multimedia, and gaming applications, and to better understand how such technologies can help groups of people to engage in social communication when they are separated in space and in time, so that they can experience togetherness—"TA2" stands for Together Anywhere, Together Anytime.

The project delivered a series of prototypes for different target groups and usage contexts: *Space Explorers*, a game that combines TV-based video communication and a board game, which groups of friends can play from different locations; *Sixth Age*, a series of casual games for TV or tablet computer, which, for example, grandparents can play with their grandchildren, facilitating also social communication; *Jump Style*, a video communication and editing application, which, for example, teenagers can use to create and share video clips while practicing dance moves; *MyVideos*, an application for creating and sharing video compilations of an event, for example, a school concert, based on footage shot by various people; and *Connected Lobby*, a TV-based social networking service that helps people to initiate social communication by sharing status updates.

The project manager facilitated a codesign process in which diverse project team members collaborated with each other and with people from different target groups, involving various methods, such as interviews in people's homes at the start of the project, to learn about their daily lives;

creative workshops and discussions of ideas in iterative cycles throughout the project, to explore, discuss, and improve ideas; and evaluations of prototypes, further-on in the project, both in the lab and in people's daily lives (for details, see Steen 2013a; Steen, Buijs, and Williams 2014).

Pragmatist Ethics

I turned to philosophical pragmatism to discuss the process of codesign. Pragmatism emerged in the United States in the late nineteenth century, with key figures such as William James, C. S. Peirce, and John Dewey. Subsequently, I will focus on texts by Dewey (1859–1952) because his perspective is relevant indeed to discussions of technology (Hickman 1990), engineering (Emison 2004), and design (Melles 2008; Dalsgaard 2009). A key theme in his work was the productive combination of practice and theory, and his advocacy for an empirical method of moving back and forth between practices (primary experiences) and reflections (secondary experiences; Dewey 1965, 36). In contrast to mainstream views on science as a search for universal knowledge, Dewey (1920, 78) contended that knowledge is always provisional, particular, and contingent rather than universal and necessary). Another key theme in Dewey's (1920, 178) work was his meliorism: "the belief that the specific conditions which exist at one moment, be they comparatively bad or comparatively good, in any event may be bettered" and his advocacy for cooperation and empowerment. His concerns for practical experiences and for promoting positive change converged in his ideas concerning *inquiry* (Hickman 1998), which forms the basis for the current discussion.

Dewey (1938, 104-5) envisioned a process of joint inquiry and imagination in which people can better understand their current situations, imagine more desirable situations, and develop ways to cooperate in their realization, so that they move from a situation of "perplexity" toward a resolution: "Inquiry is the controlled or directed transformation of an indeterminate situation into . . . a unified whole."

Codesign can be understood as a very similar process, involving collaborative design thinking (Dorst 2011) and organizing collaborative problem setting and solution finding (Lawson 2006, 125; Cross 2006, 80).

Dewey saw inquiry and imagination as processes with inherent ethical qualities. Moral experiences were his starting point, and empowering people to cope with moral questions was his primary goal (Stuhr 1998, 85). Similarly, codesign can be understood as a process of "moral inquiry" which proceeds "by dialogue, visualization, imagining of motor responses,

and imagining how others might react to a deed done" (Hildebrand 2008, 77; cf. Lloyd 2008).

Dewey conceptualized this process of inquiry and imagination as consisting of different phases (Dewey 1938, 101-19), which are ideally organized as an iterative process, moving from problem exploration, and definition, via perceiving the problem and conceiving of possible solutions, to trying out and evaluating solutions.

Problem Exploration and Definition

At first, people experience a specific situation as problematic, without yet knowing what is precisely problematic about it. Dewey stressed that personal and subjective experiences are critical for the start of an inquiry process, to make the situation questionable. Expressing and sharing these experiences are critical: "inquiry is not a purely logical process—feeling is a useful and orienting presence throughout each phase" (Hildebrand 2008, 57). A provisional problem definition is formulated, which can later be restated and refined.

The ethics of codesign are enacted when participants express their experiences and empathize with others. In the TA2 project, for example, several codesign workshops were organized in order to facilitate problem exploration and definition. Three months into the project a Scenario Workshop was organized in which key team members were invited to empathize with specific groups of people and to take them, and their experiences, as starting points for developing five scenarios: short narratives of people using the TA2 applications. Another example was a Togetherness Workshop, in the tenth month of the project, in which team members were invited to engage more personally, and morally, with the theme of togetherness, and the project's goal to promote togetherness. Such workshops helped project team members to ground the project's problem definition in specific and moral experiences.

Perception of the Problem and Conception of Possible Solutions

In an iterative process, the problem and possible solutions are simultaneously explored and developed (Dewey 1938, 109). Dewey proposed that problems are best explored using *perception*, one's capacities to see, hear, touch, smell, and taste, and that solutions are best developed using *conception*, one's capacities to imagine and envision alternative situations.

The ethics of codesign occur, for example, when participants use their capacities for perception and engage with visualizations of the problem

(Sleeswijk Visser 2009), or when they use their capacities for conception and engage in creative activities (Sanders 2000). Ideally, codesign participants can imagine or rehearse current (problematic) situations or alternative (desirable) situations (cf. "moral imagination" or "dramatic rehearsal" in Fesmire 2003, 55-91).

In TA2, this process was facilitated by creating and discussing five storyboards: for each of the TA2 applications, a series of five to ten drawings with accompanying narratives. These storyboards were developed, based on the findings from the Scenario Workshop, in an iterative process between key project team members and a professional illustrator. Creating these storyboards helped the people involved to discuss how the project's overall goal and ideas for specific solutions relate to each other. Moreover, the storyboards were discussed in a series of focus groups with different groups of people, which helped the project team members to improve their ideas, based on a better understanding of different people's daily lives, needs, expectations, and preferences.

Creating and discussing these storyboards brought to the fore the ethics of codesign in that project team members and users were able to jointly perceive a problem, for example, the current lack of togetherness, to jointly conceive of possible solutions, for example, a specific feature in one of the TA2 applications, and to move between perception and conception, for example, when project team members listened to users talking about their problems and modified their prototypes accordingly.

Trying-out and Evaluating Solutions

In order to find out which solutions "work," different possible solutions are tried out and evaluated, for example, in practical experiments. The project becomes more real and the stakes get higher. It may become clear, for example, that different participants or stakeholders have different interests. In such cases, the people involved need to negotiate carefully in order to bring the project to successful completion. They will need to find ways to combine their interests productively, in order to deal with even "deep-seated and fundamental value conflicts" (Keulartz et al. 2004) and develop solutions that "work" for all of them.

The ethics of codesign occur when the people involved are able to jointly achieve concrete results and critically evaluate these results, and when they are able to productively negotiate and combine their different interests.

In TA2, this process involved the development and evaluation of several prototypes, in cooperation with potential users, in laboratory experiments,

and in field trials in people's homes. The project team members working on MyVideos, for example, cooperated with two groups of parents with children in two high schools. One group of (Dutch) parents made video recordings of a school concert in which their children performed, and evaluated a first prototype of MyVideos while viewing and editing the video material of that concert. They also participated in discussions about options for further development, which helped to steer the development of a second prototype. Another group of (British) parents made video recordings of a school concert and participated in user tests with this second prototype.

In sum, we can understand codesign as a process of *joint inquiry and imagination*, involving perception in problem setting and conception in solution finding—a process in which people are enabled to use "the power of intelligence to imagine a future which is the projection of the desirable in the present, and to invent the instrumentalities of its realization" (Dewey 1917, 69).

Summary

I explored the ethical qualities of PD, HCD, and codesign practices, using different ethical perspectives to look at different aspects of the design process:

Virtue ethics helped to understand the dispositions of people who work in PD projects and to argue that they need virtues related to cooperation, curiosity, creativity, and empowerment. Ideally, they can cultivate these virtues, so that their thoughts, feelings, and actions develop in a way that helps them to engage in, for example, mutual learning or collaborative prototyping.

Ethics of alterity helped to understand the ethical qualities of face-to-face encounters between people in HCD, for example, between team members and "users," in interviews or workshops. Ideally, they become aware of these ethics, so that they can interact more consciously and are able to better find balances between other and self, and between openness and closure.

A pragmatist perspective helped to look at the ethics of organizing a codesign process: a collaborative and creative process of problem setting and solution finding. Ideally, the project is managed in such a manner that the people involved can engage in a process of joint inquiry and imagination, for example, by organizing the project in iterative cycles of research, design, and evaluation.

Table 1. Ethical Qualities Inherent in Design Practices.

Perspective	Virtue ethics	Ethics of alterity	Pragmatist ethics
Focus	Participants' feelings, thoughts, and actions	Face-to-face encounters and interactions	Managing a project and its iterative cycles
Cooperation as the basis	Promoting cooperation and empowerment	Encounters between other and self	Process of collaborative design thinking
An inward-directed move	Cooperative curiosity: openness, empathy, and joint learning	Developing knowledge: being open to the other (not grasp the other)	Joint inquiry: perception, empathy, and problem-setting
An outward-directed move	Cooperative creativity: developing, realizing, and trying-out ideas	Making decisions: balancing openness and closure (not program)	Joint imagination: conception, creativity, and solution finding

One may notice several recurring themes in these discussions of design practices: they are based on cooperation between diverse people, and they involve inward-directed moves and outward-directed moves in the people involved (see Table 1).

Design practices are based on cooperation between different people on the virtue of promoting cooperation and the virtue of empowerment, of sharing power and agency with others; on face-to-face encounters between diverse people, for example, between project team members and potential "users"; and on organizing collaborative problem setting and solution finding.

Participants need to allow for an inward-directed move, from other people and the world outside toward themselves: when they engage in cooperative curiosity, involving openness, empathy, and joint learning; when they develop knowledge and attempt to be open to other people; and when they engage in *joint inquiry* and use their capacities for perception and empathy in problem setting.

Additionally, they need to allow for an outward-directed move, from themselves toward other people and the world outside: when they engage in cooperative creativity, involving the development, realization and trying-out of ideas, and possible solutions; when they make decisions and attempt to balance *openness* and *closure*; and when they engage in *joint imagination* and use their capacities for conception and creativity in solution finding.

Moreover, these ethical perspectives complement one another and highlight different elements of design practices: individual participants' feelings, thoughts, and actions; face-to-face encounters and interactions; and management of a project and its iterative cycles. Taken together, they constitute a proposal—a middle range theory (Wyatt 2007)—to understand the ethics that are inherent in contemporary design practices.

Reflexivity in Design

Finally, I would like to propose that people in PD, HCD or codesign projects need to make these ethical qualities (more) explicit. These ethical qualities are there anyway and influence their practices anyway, either negatively (for instance, when they experience misunderstandings, frictions, or conflicts) or positively (for instance, when they experience the joy of interacting and cooperating with others, of learning and creating.) In both cases, it would be productive when participants can cope with these inherent ethics more explicitly and consciously. Making these ethics explicit can help them to more fully realize the transformative potential of design.

Design—and especially approaches like PD, HCD, or codesign—can help to cope with various societal challenges, ranging from health and education to safety and sustainability (Papanek 1991; Nelson and Stolterman 2003; Thackara 2006; Burns et al. 2006), to propose and develop practical solutions, and to create products and services that help people to live meaningful and fulfilling lives (Nieusma 2004; Oosterlaken 2009; Van de Poel 2012; Desmet 2013). The potential of design is to make innovation projects more participatory, more human-centered, and more cocreative. Design may thus help to solve some of the problems that it has in the past contributed to—such as creating a world that is focused on consumption and on gadgets: "If we can design our way into difficulty, we can design our way out" (Thackara 2006, 1).

Moreover, I propose that people involved in innovation and design projects can make these ethics explicit by embracing reflexivity. Reflexivity can help them to become more aware of their dispositions, their ways of thinking and feeling and acting (virtue ethics), of the moves they make between other and self, and between openness and closure (ethics of alterity), and of the ethical qualities of organizing collaboration and creativity (pragmatist ethics).

The term *reflexivity* refers here to a type of reflection on practices in which one is actively involved, and on one's own involvement in these practices (cf. Weick 2002; Steen 2011a).[9] Such reflexivity in the people

involved in design practices[10] would help them to reflect critically and creatively on their own practices and to modify their practices in more appropriate or desirable directions—to "redesign" design practices.

Similarly, Stovall (2011, 110) saw reflexivity, or "professional self-awareness," as "a sort of master virtue that fosters the reflective deliberation necessary for a professional to pursue their work in an aspirational frame of mind" (p. 125). Such reflexivity involves "examining critically the assumptions underlying our actions [and] the impact of those actions," which can help to "develop more collaborative, responsive, and ethical ways of managing organizations" (Cunliffe 2004, 407–8; cf. Hibbert, Coupland, and MacIntosh 2010; Orr and Bennett 2009). In a very similar vein, Rhodes (2009, 667) proposed an "ethical response to reflexivity . . . that asks questions rather than provides answers; that refuses the hubris of generalizations; that provokes thinking rather than provides answers; that generates possibilities rather than prescriptions; that seeks openness rather than closure."

Those involved in innovation and design projects—such as myself—could, for example, ask questions like the following: what is happening here and now? How am I moving between other and self, between openness and closure? How are we using our capacities for perception, our capacities for conception? How is the cooperation process evolving? Am I promoting curiosity or creativity? Are we sharing power and agency? What do I think and feel? What do I want to do? What can I do differently?[11]

Acknowledgments

The studies on which this article is based were conducted in three projects: FRUX, which received funding from the Dutch Ministry of Economic Affairs under contract BSIK 03025; TA2, which received funding from the European Community's Seventh Framework Program (FP7/2007-2013) under grant no. ICT-2007-214793; and WeCare, which received funding in the European Ambient Assisted Living Joint Programme (AAL-2009-2-026). I would like to thank my employer TNO and the managers of these projects for facilitating me to conduct these studies: Edward Faber of FRUX, Doug Williams of TA2, and Sharon Prins of WeCare. Furthermore, I would like to thank my fellow project team members for their kind permission to study and write about our projects. Moreover, I would like to thank the people who helped me in earlier works on which this article is based: Hugo Letiche and Jan Buijs (for Steen 2008), Pieter Jan Stappers and Ilpo Koskinen (for Steen 2012), Larry Hickman (for Steen 2013a), and Paul van Tongeren (for Steen 2013b).

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Notes

1. This first sentence and the title allude, of course, to Langdon Winner's (1993) article.
2. This mapping—of three design approaches onto ethical perspectives—is somewhat arbitrary. One could have made other choices. Moreover, my argument will focus on the differences between design approaches and between ethical traditions, rather than on the many similarities and overlaps. Nevertheless, I will agree, for example, that people in human-centered design or codesign also need to cultivate specific virtues (probably virtues similar to the ones discussed in the context participatory design, subsequently) or that encounters between people can also be studied via virtue ethics or pragmatist ethics (and not only via ethics of alterity, as will be done subsequently), and so on.
3. The term *human*-centered design is used here, rather than the term *user*-centered design, because the latter tends to focus on a person in her role of "user": "The problem with usability-based approaches is that they encourage a limited view of the person using the product. This is—by implication if not by intention—dehumanizing" (Jordan 2002, 12; cf. Buchanan 2001). This concern is expressed, in this essay, by adding quotation marks to the word "user."
4. The term *codesign* is used, rather than the broader term *cocreation*, which refers to "any act of collective creativity, i.e. creativity that is shared by two or more people" (Sanders and Stappers 2008, 6). Furthermore, the terms *codesign* and *cocreation* can also be used to refer to collaboration between organizations, for example, in open innovation (Chesbrough 2003).
5. This mapping—of ethical perspectives and onto specific projects—occurred for practical reasons at the time of conducting the studies on which the current essay is based. One could, of course, have used other projects as case studies and as examples of participatory design, human-centered design, and codesign.
6. Empowerment has been discussed more thoroughly in, for example, the capability approach, in the context of empowering people to expand their capabilities, so that they can effectively "lead the kind of lives they have reason to value" (Sen 1999, 10; cf. Oosterlaken and Van der Hoven 2012; Oosterlaken 2013).
7. This term, *ethics of alterity*, was proposed by Simon Critchley (1999) to refer to the philosophies of Levinas and Derrida, in an e-mail conversation (February 16, 2012).

8. For a discussion of Levinas's use of "autre/Autre" (other) and "autrui/Autrui" (Other), see Critchley (1999, 8). For a discussion of Derrida's use of "différance," see Derrida (1991a, 59-79).
9. This type of reflexivity, in which practitioners reflect on their own practices and their involvement in these practices, is similar to a type of reflexivity that researchers need when they are involved in the practices that they study (cf. Ashmore 1989; Woolgar 1988; Ellis and Bochner 2000).
10. This reflexivity in designers is different from a reflexivity in users that some designers aim to promote via "reflective design." In such a case, designers may create a product that encourages users to reflect on their values when interacting with this product (Sengers et al. 2005; Dunne and Raby 2001).
11. It is with such questions that I have returned back to the practice of innovation and design projects (cf. Bijker 1993).

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Author Biography

Marc Steen works as a senior research scientist at TNO, an independent research organization in The Netherlands. He earned MSc, PDEng, and PhD degrees in industrial design engineering at Delft University of Technology. His expertise is in human-centered design and innovation management, and his current interest is in organizing design and innovation projects to promote people's wellbeing.