Chapter 9
Architecture and Value-Sensitive Design

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First we shape our houses and then our houses shape us

(Sir Winston Churchill)

9.1 Introduction: Politics Designed into Artifacts

The philosopher of technology Langdon Winner (1986) has drawn attention to the fact that artifacts can embody values and can be said "to have politics." The case study that he used to vividly drive this point home to the reader concerns the work of the famous New York architect and urban planner Robert Moses. In the 1920s, Moses designed large urban projects in New York. One of the projects that he was involved in was the design and construction of a series of overpasses on New York parkways. Caro's elaborate study of the life and work of Moses (Caro 1974) gives us reason to believe, according to Winner, that Moses designed some of the overpasses intentionally low so that buses taking the poor and (mainly) colored population to the beaches near New York could not drive under them (Winner 1986). Buses in the new design could no longer be routed to the recreational areas. Indirectly, the overpasses thus functioned as a mechanism and barrier separating black and white middle class. Although there is some controversy over whether Moses really intended his design to have the effect of racial segregation, these overpasses provide a clear-cut illustration of the political and morally relevant effects that designs, built structures, and artifacts may have. With his account of "The Politics of Artifacts," Winner was one of the first to point systematically to the value-ladenness of artifacts. According to Winner:

> The things we call "Technologies" are ways of building order in our world. Many technical devices and systems important in everyday life contain possibilities for many different ways

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> of ordering human activity. Consciously or unconsciously, deliberately or inadvertently, societies choose structures for technologies that influence how people are going to work, communicate, travel, consume, and so forth over a very long time. … In that sense technological innovations are similar to legislative acts or political foundings that establish a framework for public order that will endure over many generations. (Winner 1986, pp. 28–29)

There are many examples of architecture and civil engineering that Winner could have chosen to illustrate his claim "that artifacts have politics." The boulevards in Paris designed by Haussmann in the mid-nineteenth century express a certain grandeur and provided ample space to "flaneurs," but they were also convenient channels for military logistics and the rapid dispatching of soldiers and police. Rykwert (2000) draws attention in his book *The Seduction of Place* to the fact that the headquarters of the UN in New York and Geneva, the EU in Brussels, and the Unesco in Paris have all been designed in disharmony with their local urban environment so as to express a modicum of inaccessibility, universality, and impartiality.

The garden cities at the turn of the century that were built across Europe embodied the ideal that low-income families were also entitled to a green environment – in stark contrast to the unhealthy slums of the big cities of the late nineteenth century. A number of ideals were built into these designs: social cohesion, privacy, responsibility, solidarity, and hygiene.

Not only important ideas and central values may be embedded and expressed in the built environment, also everyday and mundane normative considerations may be shaped with constraints and affordances for the actions and thoughts of users. Anyone who has been to IKEA knows that visitors to IKEA stores are forced to progress through a carefully designed maze that has as its sole purpose to increase sales. It is one of the components of their business success. Fast-food restaurants use hard and uncomfortable chairs to encourage people to move on after they have finished their meal, the arrangement of seats at waiting areas of airports is not supposed to be conducive to conversation, and the numerals and displays in elevators are often positioned overhead so that people can look up and do not have to look each other in the eyes, which can be experienced as somewhat awkward in an elevator. The benches in parks may have an arm rest in the middle in order to prevent homeless to sleep on them. In Amsterdam, window sills of new houses at the beginning of the twentieth century were designed higher than in the old neighborhoods of the city so that people could not easily lean out. In this way the architects hoped to prevent the behavior of working class women who used to hang out of their windows. In the same houses the electricity plugs were not all located in the same places so that people would not all end up with the same arrangements of their dining tables and furniture.

Shah and Kesan (2007) provide many examples in their paper "How Architecture Regulates" of the normative function of architecture. According to Shah and Kesan, architecture can (i) communicate and express cultural values and have symbolic meaning. Banks are large, robust, and often made of marble and convey to the visitor that this institution is made to last. It expresses trust, reliability, and security. Good schools typically radiate accessibility and cleanliness. Furthermore,

(ii) architecture may constrain and facilitate certain types of behavior. New Urbanism, for example, has drawn upon social science research which has shown that design can either contribute or distract from civic engagement and thus may or may not lead to better quality of community life. Shah and Kesan provide more interesting examples of how architecture may shape interactions. Irwin Altman has studied design for privacy in the built environment. He concludes that privacy is not by default about isolation and seclusion but about the ability to control one's exposure to others. Design should therefore accommodate the control and freedom to choose the level of accessibility, instead of providing everyone with a separate space. Finally, (iii) our values and moral ideas may get expressed and embedded in the built environment. Fire safety has been built into houses and requirements, since the early Middle Ages, ideas about the presence of women in public building in the eighteenth and nineteenth centuries have led to a relatively small number of toilets for women, because they were previously outnumbered by men in prominent public buildings. Laws about equal accessibility of building to handicapped have led to better accessibility. Ideas of accessibility have been designed in.

9.2 Value-Sensitive Design

All the examples given above are examples of incorporating or embedding particular values and world views in the built environment. This central idea of expressing and embedding values in artifacts is the subject of study that started in computer science and is now usually referred to as *value-sensitive design (VSD).* One can design for inclusion, for privacy, for trust, for accountability, and for sustainability, in computer systems. In value-sensitive design, the focus is on incorporating moral values into the design of technical artifacts and systems by looking at design from an ethical perspective. It is concerned with the way our acting in accordance with moral values (e.g., freedom, equality, trust, autonomy, privacy, and justice) is facilitated or constrained by technology (Friedman 1997; Friedman and Freier 2005). Value-sensitive design focuses *primarily* and *specifically* on values and requirements of *moral* import. Other frameworks tend to focus more on functional requirements such as speed, efficiency, storage capacity, and usability. Although building a user-friendly technology might have the side effect of increasing a user's trust or sense of autonomy and freedom, in value-sensitive design, the incorporation of moral values into the design is a primary goal instead of a by-product. Value-sensitive design is at the same time, as I have argued (Van den Hoven 2005), a way of doing ethics that aims at making moral values part of technological design, research, and development. VSD can only be used if we manage to be explicit about the variety of moral reasons for desirable features of systems and can formulate them as "non-functional requirements" and have a transparent way of decomposing them into more detailed functional requirements. If we cannot do this, we will only replace the obscure by something which is more obscure.

VSD helps us to look more specifically at ways of reconciling different and opposing values in engineering design or innovations (Van den Hoven and Weckert 2008). This idea (see Van den Hoven et al. 2012a) can be illustrated as follows. As a society, we value privacy, but at the same time we value security and the availability of information about citizens. The pursuit of these values creates a tension which is exemplified in the debates about ubiquity of closed-circuit TV (CCTV) cameras in public places. We either hang cameras everywhere, and thereby create the desired level of security in that area, but give up on our privacy, or we respect privacy and refuse to hang cameras everywhere but settle for less security. Ideally we want both privacy *and* security. Smart camera systems may allow us to have our cake and eat it, in the sense that their smart architectures may allow us to enjoy the functionality the technology can offer and at the same time respect the moral constraints on the flow and availability of personal data that privacy requires. The police may use software tools to prevent operators of CCTV cameras to look inside houses. The smart technology underlying the relevant innovations allows us to configure the system in such a fine-grained manner that the systems allows one to use the advantages and functionality the technology offers without actually compromising data protection norms. Instead of an all-or-nothing matter, smart privacy-enhancing technology (this is also called "privacy by design") may allow us to stipulate who gets access to which recordings, on which conditions, how long the images are stored, and how they may be used and merged with other databases. Innovations of "smart" technologies often manage to reconcile previously irreconcilable values or preferences by design.

I have dubbed this notable shift in perspective in moral matters "The Design Turn in Applied Ethics" (Van den Hoven and Weckert 2008; Van den Hoven et al. 2012). The basic idea here is that design is a respectable ethical category. Instead of taking human character or a person's actions as the unit of analysis and the object of moral evaluation, it seems sometimes highly relevant to be able to ask questions about the moral quality of a *design*. We need to be able to evaluate proposals to change the world and undertake this evaluation from the point of view of moral values. In the last decades, the work of John Rawls gave rise to talk about design in ethics. Thinking about social justice can, in the context of Rawls' theory, be described as formulating and justifying the principles of justice in accordance with which we should design the basic institutions in society. Thomas Pogge, Russell Hardin, Cass Sunstein, Robert Goodin, Dennis Thompson, and others (Van den Hoven and Weckert 2008) have taken moral theory and applied ethics a step further down this path of semantic descent and practicality. Not only do they want to offer applied ethical analyses, they also want to think about the economic incentive structures and technological conditions and institutional and legal frameworks that need to be realized, if our applied analyses are to stand a chance in their implementation and contribute to bringing about real and desirable moral changes in the real world. Design in the work of these authors

is primarily focused on institutional design, but the design turn clearly brings into view the design of socio-technical systems, technological artifacts, urban planning, and architecture.

9.3 Design Against Crime

An example in urban planning and architecture which forms a clear exemplification of the design for values perspective is design for security or design against crime. Human safety and security is now no longer seen as an add-on but construed as a value that needs to be accommodated in design and in the early stages of planning. No amount of policing will be able to deal with crime in public spaces that provide systematic and structural opportunities to thieves and criminals. Medieval castles and fortifications are examples of what is called "target hardening" to reduce vulnerability to attacks and invasion by the enemy. Another historical example is provided by the eighteenth-century philosopher Jeremy Bentham who thought about the ideal prison and exclaimed in his treatise on the subject: "Morals reformed — health preserved — industry invigorated — instruction diffused — public burthens lightened — Economy seated, as it were, upon a rock — the gordian knot of the poor-law not cut, but untied — all by a simple idea in Architecture!" The idea here is that security and control over prisoners is greatly enhanced by the design of a dome-shaped prison with a guard in the middle who can oversee everything. Essential here is that the inmates think that there is someone on guard. The design was appropriately named "Panopticon." The Bentham idea has come round in recent times in a field of research and architecture and planning referred to as design against crime, or "crime prevention through environmental design" (CPTED) (Poyner 1983). We will have a closer look at this evolving field to illustrate how VSD ideas may work in architecture and urban planning.

In an overview article (Katyal 2002), "Architecture as Crime Control," the author embraces the design for values perspective and applies it to security. The author correctly associates the focus on values for design with its origin in IT. The author quotes Larry Lessig who was one of the first to make the idea popular that software is a regulatory force in the twenty-first century, and that IT architectures in important ways help to shape and constrain our lives, actions, and experiences. The same applies in architecture and urban planning: "Some Architects have outlined mechanisms for crime prevention through principles of design" (Katyal 2002, p. 1048). "Architects influence in subtle ways the paths by which we live and think" (Katyal 2002, p. 1048). "The law uses architecture as an expressive tool to embody certain commitments" (Katyal 2002, p. 1048).

Jane Jacobs and Oscar Newman in the 1950s started to criticize the architecture of their time because of what they considered the withering away of the public sphere. This atrophy of community and social dimension of the public spaces made it vulnerable to crime and criminal behavior. Their writings formed an important inspiration to thinking about "design against crime."

Architects cannot but start from a social and moral requirement of well-being of future users. How could they start on the basis of some other value? Well-being however is a broad and vague value. It will only get a definite and meaningful content if it is decomposed in value components such as safety, security, health, freedom, and dignity. Safety, health, and security are fundamental and are preconditions for pretty much everything else in a human life that is worthwhile wanting. So the task for the architect seems straightforward, but what does it mean to build a *secure* environment? Different people may have quite different conceptions of security. Jane Jacobs in *The Death of the Modern City* focused on public space and the sense of community and social control that is associated with it, that is, *natural surveillance*. Others focused on *territoriality* and a sense of *property* and *responsibility* that typically goes with it. Some introduced the notion of *defensible space*.

Jacobs decomposed design for security in four subrequirements: (i) natural surveillability, (ii) territoriality, (iii) community building, and (iv) protection of targets of crime. This is markedly different from views that focus solely on "target hardening" and which take a much more technical approach. Target hardening points in the direction of better locks and thicker walls. Natural surveillability in turn is decomposed in three types of mechanisms: (i) diversity of building, (ii) building design, and (iii) lightening. Lightening, for example, can be decomposed in (i) intensity of lightening (empirical studies indicate that crime is more likely to take place under the five-lux level) and (ii) the spread and homogeneity of the lightening and the color of lightening. The often used yellow light, for example, is associated with crime, spookiness, and lack of security. An Illumination Engineering Society is dedicated to this area of research.

We can see how an initial value commitment of architects to well-being of future users – as a nonfunctional requirement – of their designs can be decomposed in natural surveillability, lightening, and the details of illumination technology.

9.4 Conclusions

Design is in important ways about moral values, and the study of moral values in the twenty-first century cannot do without design. The recent interest on both ethics and design for the ethics of design has given rise to a "design turn in ethics." Value-sensitive design or design for values is a growing field of research. We have illustrated how this manifests itself in architecture by means of a discussion of design for security or design against crime. We have seen how the concern in architecture for the well-being of future users of architecture and built environments takes us all the way to discussions of street lamps and lanterns. Architects and urban planners of the future need to be able to shuttle back and forth between lofty moral ideals and fundamental values and the details of their designs. They will have to be ready to defend the details of their designs in terms of their ideals and defend their ideals in light of the details of their design.

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