

Ethics and good design: Herbert Simon and Dieter Rams

Abstract

Ethics is central to the evaluation of design. That is, good design is both a physical and a moral achievement, which raises a variety of questions. What qualities make a design ethically acceptable or not? How is an ethically acceptable design attainable by its designers? Recognizable to others? Different scholars offer different perspectives on the nature and role of good design from an ethical standpoint. The purpose of this paper is to elucidate and compare two influential responses to some of these questions, namely those of Herbert Simon and Dieter Rams. As a theorist, Simon's approach is based on abstract and general principles, which are then applied to concrete and specific examples. As a practitioner, Rams's approach is based on his experience as an industrial designer of specific goods, which is then generalized to design as a whole. From this comparison, we can learn about the range of perspectives on ethics and good design.

Introduction

Good design is an important concern. As the industrial designer Dieter Rams observed, as time goes on, the world becomes more and more an artifact of our own design (1984, p. 26). Indeed, few of us can claim much acquaintance with a substantially undesigned world, that is, a wilderness. Today, we are creatures of the built environment. As a result, design profoundly affects all our lives. So, it is no surprise that people want good design.

Though easily mentioned, the idea of *good design* is difficult to grasp. One difficulty is that the idea is ambiguous. In one sense, good design refers to designs that accomplish their purpose in a physically superior way. For example, the AK-47 assault rifle, developed by Mikhail Kalashnikov in 1947, is considered as perhaps the best such design in history so far. In physical terms, it is cheap, robust, and effective. To this day, it remains the assault rifle of choice in many modern armies and armed groups.

In another sense, good design refers to designs that accomplish purposes that are well worth accomplishing. For example, vaccines for diseases such as polio, mumps, and smallpox are regarded by public health experts as good designs (Andre, et al., 2008). This is not simply because these vaccine designs are effective, etc. but because accomplishing the prevention of these diseases is a good thing in itself.

The first sense of good design described above might be called the *instrumental* sense. It refers to how designs may be considered good as instruments for effecting change. The second sense of good design described above might be called the *ethical* sense. It refers to the moral evaluation of the change effected by a design.

It is worth noting that these two senses are distinct. For example, a design that is good in the instrumental sense may not be good in the ethical sense. Bemused by the use of his design by terrorists and other armed gangs, Anton Kalashnikov is reported to have wished, sometimes, that he had invented a better lawnmower instead of an assault rifle (Connolly, 2002). I take it

that Kalashnikov would agree that the AK-47 remains a good design in the instrumental sense but had become dubious that it was a good design in the ethical sense.

Having distinguished the ethical sense of good design, the question arises: What qualities make a design ethically acceptable or not? How are ethically acceptable designs attainable?

Different commentators have provided different answers. These differences are exemplified by the views of Herbert Simon and Dieter Rams.

As is well-known, Simon characterized a design as a way of adapting the world to people's preferences. In the main, Simon approached good design in its instrumental sense. However, he also discussed good design in the ethical sense, a discussion much informed by his interests in economic theory.

Dieter Rams is one of the most eminent industrial designers of the 20th century, and his ideas about design remain influential today. Rams approached good design in light of his experience as a successful designer, much informed by his views about the social mission he saw as intrinsic to the modernist movement.

The purpose of this paper is to characterize and compare the views of Herbert Simon and Dieter Rams on good design in the ethical sense described above. In spite of their different backgrounds, there are considerable areas of overlap in their views. Nevertheless, fundamental differences remain, especially with regard to the importance of satisfying people's preferences in the achievement of ethically good design. Simon regards this goal as constitutive of good design in every respect, whereas Rams remains skeptical that all preferences are equally worthy of fulfillment.

Herbert Simon

As is well known, Simon (1981, p. 129) defined design initially in strictly instrumental terms:

Everyone designs who devises courses of action aimed at changing existing situations into preferred ones.

That is, this definition makes mention only of changing the world from how it actually is to how it is desired to be. No ethical aspect is brought out here. Simon does point out that the definition is extremely broad: It applies not only to technological design problems of the familiar sort, such as designing buildings and gadgets, but also to designing business strategies, medical therapies, laws, etc. In brief, Simon's view of design is grounded in a characterization of it as fundamentally instrumental.

This characterization of design is reinforced by Simon's discussion of rationality in design. His claim is that good design, in a strictly instrumental sense, is rational design. This claim is laid out in his description of design problems and their solutions. A design problem is characterized in terms of command variables, fixed parameters, and goals, or means, laws, and ends in more colloquial English (Simon, 1981, pp. 134–135). The command variables are the means available from which solutions to a design problem may be fashioned. The fixed parameters are facts, or laws, about the environment in which solutions to a design problem must operate. These are distinguished from the command variables because they are beyond the designer's ability to change. The goals, or ends, define what counts as a solution to the design problem and how good potential solutions are.

Simon provides a solution to a diet problem as an example (1981, pp. 135–136). The job of a diet is for people who follow it to gain the nutrients they need to thrive and avoid eating in

ways that will make them ill. In this example, the means are the foods available, which might be thought of as the contents of a grocery store. The laws include the prices of foods and their nutritional values. Clearly, these things are not laws of nature but rather things that dieticians are not normally in a position to change. The ends include constraints such as the nutritional requirements of the diet's followers and a utility function that allows for the best solution to be chosen from among the potential candidates. Simon suggests that cost might be the utility function. In other words, the best diet is the one that does the job at the least expense. Of course, other utility functions might be applied as well, such as enjoyment. Inclusion of a utility function marks the point where rationality enters into the picture. Simon (1981, p. 135) defines the solution to a design problem as follows:

Given the constraints and fixed parameters, find values of the command variables that maximize utility.

By definition, rationality in behavior is the adoption of utility maximization (Simon, 1981, p. 11). In other words, a rational being is one that seeks to maximize the utility of the designs that it selects. So, on this perspective, good design in the instrumental sense is also rational design. This model presents an attractive picture of good design in an instrumental sense. However, it is not workable, as Simon admits. It makes a number of crucial idealizations, that is, false assumptions about design problems, that undermine it as a model of what design problems are like. First, it assumes that designer evaluators are able to work out all the implications of design choices. In real life, no designer has adequate computing power to do this. As an example, Simon (1981, pp. 138–139) refers to the *travelling salesman* problem. In this scenario, the problem is to work out the shortest route amongst a group of cities so that a salesman can visit them all without using the same route twice. Mathematically, the time needed to compute optimal solutions to this problem increases exponentially with the number of cities. So, for any non-trivial version of the problem, there is not enough time or computing power available to work out the optimal solution.

Second, Simon's model assumes that design evaluators have perfect knowledge about the design situation itself. A chess player has perfect knowledge of a game of chess in the sense that the exact position of each piece in play is known to all, as are their potential behaviors. In real life, perfect knowledge of a design problem is unusual. Simon (1981, p. 37) mentions the case of highway planning, noting that traffic simulations used to design roadways rely on statistical models of driver behavior. This is because it is impossible to know how every individual driver will respond to a given design. Driver behavior is predictable only in aggregate and to a certain degree. As a result, good roadway designs may be selected most of time but there will always be occasions when the choice most supported by simulations will prove to be the wrong one.

Third, Simon's model assumes that all methods for comparing design alternatives would arrive at the same answer. Given unlimited computing resources and perfect knowledge, this assumption would be satisfied. However, different methods for generating and comparing design alternatives would affect the final conclusion in real life. As Simon (1981, p. 150) says:

An architect who designs buildings from the outside in will arrive at quite different buildings from one who designs from the inside out, even though both of them might agree on the characteristics that a satisfactory building should possess.

Under such circumstances, it would be difficult to say which solution is the best one.

These idealizations undercut any prospect that rational design can be realized in real life. Acknowledging this conclusion, Simon argues that good design, in the instrumental sense, can still be realized by approximating the model of rational design as well as limitations allow. In brief, although we cannot identify one design as optimal, we can identify a design as optimal so far as limitations of knowledge and resources permit. Such a design may be said to be *satisfactory* instead of optimal and the rationality involved is not absolute but *bounded* by the limitations present (Simon, 1981, p. 46). So, good design comes down to satisfactory solutions to design problems rather than optimal ones.

Simon's account of design has been the subject of much criticism. The two main criticisms are summarized and addressed by Meng (2009). The first is due to Schön (1983) and attacks Simon's model for being too rigidly fixed on optimization, thus putting it out of touch with design in real life where matters are too ill-defined for Simon's model to apply. As Meng notes, this critique overlooks Simon's acknowledgement of these issues and his development of satisfactory design as a way of addressing them.

The second criticism, epitomized by Cross (2001) and Coyne (2005), is that Simon's model leaves out any account of the knowledge and skills of professional designers. That is, Simon presents design as merely the application of science to the satisfaction of preferences, leaving out the fact that designers may have knowledge and skills that are relevant and valuable but not contained within the sciences, like physics, needed to solve any given design problem. As Meng points out, Simon does leave room in his account for such knowledge, though he does not fill in many details.

The point of this paper is not to pursue these criticisms but to explore a third, that is, the apparent lack of any role for ethics in Simon's account of good design. As noted above, Simon's account concentrates on good design in its instrumental sense, that is, on design as a way of satisfying preferences. It says nothing explicitly about good design in its ethical sense, which could involve questioning whether or not the preferences involved are worthy of being satisfied. As Kalashnikov wondered, the AK-47 may work well but it is something we ought to have?

In fact, Simon does enter into an explicit discussion of ethics and design when discussing the location of preferences satisfied by designs. Recall that Simon's definition of design defines a design as something that changes the world in accordance with a set of preferences. Whose preferences are at issue the definition does not venture to identify. Yet, it is a crucial issue for good design in the ethical sense.

Simon addresses the question in his discussion of social planning, that is, the planning of designs that affect many people. At a "microsocial" level, the preferences are assumed to be simply those of the client, that is, the recipient of the design (Simon, 1981, p. 173). The wishes of the client determine the goals of the design. From this standpoint, no one else's wishes are relevant:

The architect need not decide if the funds his client wants to spend for a house would be better spent, from society's standpoint, on housing for low-income families. The physician need not ask whether or not society would be better off if his patient were dead.

In this case, instrumental considerations dominate: whatever design best satisfies the problem conditions is the best design.

Yet, this perspective will not do in the general case. As Simon points out, our technological prowess means that designs often affect many people other than design clients in profound ways. Simply ignoring their preferences is not acceptable. Yet, when the preferences of many people are considered, conflicts arise. That is, designs that well satisfy the preferences of some people do not well satisfy the preferences of others.

For example, as Simon pointed out, doctors are expected to consider only the interests of their patients. This is usually taken to mean that doctors should do whatever possible to heal people in their care who are sick. Yet, the resources available to any medical delivery system are limited, so that not everyone's needs can be met all the time. Resources directed to one group of patients means directing resources away from another group. As Simon points out, who gets what under such circumstances is a critical, ethical choice.

Similarly, engineers have to consider the externalities generated by their designs (Simon, 1981, p. 176). For example, many industrial processes create byproducts that may be leaked, or dumped, into the outside environment where they impact people other than the producers and consumers of the designs so produced. The combustion of fossil fuels in engines causes emissions that may profoundly change the climate and, thus, the fortunes of people worldwide and far into the future (Simon, 1981, p. 181). An engineer's employer may prefer to ignore such externalities because cleaning them up would increase the cost of business. However, an engineer's professional code may demand that such emissions be avoided or mitigated without offloading costs onto third parties. Again, this dilemma raises a critical, ethical choice.

If ethical dilemmas arise when designs affect conflicting preferences, then how are they to be resolved? Simon (1981, pp. 183–184) provides some ideas in his discussion of progress. Here, he notes three criteria that might be applied for arranging the technological world to improve the human condition generally. The first is to meet basic human needs, such as food, shelter and health. In Simon's view, technological development has seen major progress on this measure, so much so that it hardly seems distinct from purely instrumental progress.

The second criterion is an average increase in human happiness. Here, Simon is referring to the utilitarian doctrine of Bentham and Mill that happiness, grounded in hedonic pleasure, is the ultimate good for human living and its overall maximization is the foundational, ethical principle. On this view, good design would mean adoption of designs that maximize pleasure overall. Simon is skeptical of this approach, pointing to the law of diminishing returns, which states that the happier people are, the harder it is to increase their happiness further.

The third criterion requires the application of what Simon calls "universal values" to design improvement, "to grant equal weight to the needs and claims of all mankind, present and future." He says little about what he means by this criterion except to point out that it is not the same thing as instrumental progress, as demonstrated by recent history:

The present [20th] century is not lacking in horrible examples of man's inhumanity to man. We must be alert also to the possibility that rationality applied to a broader domain will simply be a more calculatedly rational selfishness than the impulsive selfishness of the past.

He is perhaps thinking of the two world wars, in which advanced technology was applied to produce great suffering and depravity. So, universal values stand in opposition to selfishness or the merely parochial satisfaction of preferences.

With some idea of ethical criteria at hand, the issue of their methodical application to ethical assessment of good design remains. One method that Simon (1981, pp. 167–169) discusses at some length is cost-benefit analysis (CBA). In a CBA, the impact of each design alternative on the preferences of people affected by it are calculated in terms of the likelihood of the impact and its severity or magnitude. Each impact can be thought of as positive or negative, that is, increasing or decreasing the satisfaction of an individual’s preferences. Then, the overall impact of each design alternative on everyone is computed by summing its impacts on each individual. The design alternative with the best total score is the best design. This idea is illustrated in Table 1.

Table 1: CBA of a set of design alternatives d for individuals i . Each cell is the product of the likelihood L and severity S of the impact of the design on the individual in question. Total impacts of each design T , captured in the bottom row, are the sum of all individual impacts for each design. The best design is the one with the highest, positive, total impact.

		Design alternatives		
		d_1	d_2	...
Individuals	i_1	$L_{1,1} \times S_{1,1}$	$L_{1,2} \times S_{1,2}$...
	i_2	$L_{2,1} \times S_{2,1}$	$L_{2,2} \times S_{2,2}$...

Totals		T_1	T_2	...

Simon points out that this method does not work in the general case because impacts of designs on individuals often cannot be quantified precisely or at all. For example, a government committee attempted to apply this method to set automobile emissions standards resulted in only approximate estimates for car production costs and outright refusal to give estimates for medical impacts. As a result, identifying an optimal design was out of the question.

Nevertheless, Simon argues that the exercise was valuable in ethical terms:

If optimizing was out of the question, the framework allowed the committee to arrive at a satisficing decision that was not outrageous or indefensible.

Here, the concept *defensible* seems to be an ethical assessment analogous but additional to the instrumental concept *satisficing* or satisfactory.

The concept of defensibility as an ethical evaluation has the qualities of universal values that Simon says are appropriate for ethical assessment. First, the CBA is universal in the sense that it applies to everybody who has an interest affected by some choice of design. In Table 1, every individual d who may be impacted by a design selection is considered in the overall calculation. Second, the CBA is impartial in the sense that it grants equal weight to the interests of all persons affected. In Table 1, every individual’s interest is given the same weight. No individual’s interest is multiplied or divided by any third figure so that their interests count for more or less than anyone else’s interest.

As with the instrumental concept of satisfactory design, the ethical concept of defensible design is open to criticism. Designs that are defensible may turn out not to be ethical, just as designs that are satisfactory may turn out not to be optimal, simply due to uncertainty about the consequences of their adoption.

Furthermore, a design that is defensible may still be ethically questionable. For example, an app that directs arterial traffic through a quiet, residential street may deliver shorter commuting times for the overall city population but create an extraordinary burden in terms of

noise, pollution, and danger for residents of that street. Such an outcome could be considered inequitable or unfair.

In any event, although Herbert Simon's discussion of good design is best known for his presentation of optimal and satisfactory fulfillment of preferences, it presented a substantial sketch of ethical assessment of good design as well.

Dieter Rams

While Herbert Simon was a theorist of design, Dieter Rams was a practitioner. His approach to good design is framed as guidance for designers, distilled from his years of experience in commercial practice. Unlike Simon, he makes no attempt to define design or to distinguish it from science. If anything, his main concern in this regard is distinguishing design from art. Instead, he assumes that his audience is design professionals (or aspiring ones) and attempts to describe good professional practice. Naturally, this discussion has significant implications for the designs that designers create and the clients and others affected by them. It is primarily in these implications that Rams's account of good design is comparable to the account given by Simon, which is the focus here.

Rams's account begins with the epistemology of designers, that is, the knowledge characteristic of designers as such. Rams assumes that designers are familiar with distinct sets of product categories, such as hair dryers, radios, chairs, etc. Crucial to solving a given design problem is relating the design to be produced to the correct category. Intimate knowledge of these categories helps designers to produce good designs.

Each product category is defined in terms of the functions that are identified with it (Rams, 1984, p. 24):

Every industrial product serves a specific purpose ... Its design must conform in the best possible way to the expectations that result from the function the product fulfills.

Here, Rams commits to a distinction between *function* and *utility*. That is, a function of a design is the work that it should be able to perform. Its utility is *any* work that the design is able to perform. For example, the function of a hammer is to drive nails. However, a hammer may also be used as a piece of exercise equipment or a doorstop. The former describes the function of a hammer whereas the latter describes its utility.

This distinction between function and utility enables Rams to frame the perspective for which he is best known, that is, his minimalism. Rams describes good design in terms of "weniger aber besser" ("less but better") (Lovell, 2011, p. 256). For Rams, it describes an imperative that good design leaves out features that are inessential, that is, that do not serve the function proper to the design in question. For example, it is possible to put a telescoping handle on a hammer so that it can also serve as a backscratcher. However, serving as a backscratcher is not a function proper to the category of hammer. Therefore, no hammer should have such a telescoping handle.

The point is further elaborated by Rams's (1984) advice to "omit the unimportant." By this expression, Rams says that emphasis accorded to features in designs should be in proportion to their importance in use. For example, the Braun Atelier, an all-in-one stereo system, features a large and prominent volume knob, placed on the front of the unit. Wires that connect the unit to speakers are hidden away in behind. This arrangement is justified because users will need to change the volume frequently, whereas they will need to change the wire connections only

infrequently. Such an arrangement helps the design to “express its function” to users in a manner appropriate to its category.

Rams allows that this functionalism has problematic aspects. For example, different designers may understand the functions proper to a given product category in different ways (1984, p. 24):

Rigid functionalism of the past has been somewhat discredited in recent years. Perhaps justly so because the functions a product had to fulfill were often seen too narrowly and with too much puritanism. The spectrum of people’s needs is often greater than designers are willing, or sometimes able, to admit.

Here, Rams puts disagreements over function down to puritanism or myopia of some designers. Yet, it could also be the case that design categories, and thus functions, are simply contingent and unfixed (Shelley, 2015). If so, then disputes over function may have less to do with the puritanism or myopia of some designers than with differences in their personal or cultural backgrounds.

In any event, Rams’s epistemology of design relates directly to the good design in the instrumental sense. Designs that clearly provide the functions proper to their category, and omit features that pertain to any other functions, are good designs in the sense that they should well serve their given purpose.

For Rams, minimalism in design speaks not only to good design in the instrumental sense but also in an ethical sense (2001, p. 132):

The task of design has an ethical dimension. Good design is value. The better world we have to build must be done with moral values in mind.

Here, Rams expresses the ultimate goal of design as the realization of a better world. If this expression sounds somewhat idealistic, it is. Rams describes the ethical dimension of good design in terms of the human world as it should be, ideally.

Rams frames this ideal world in succinct terms (1984, p. 26):

Of the many issues that confront designers, the increase in violence seems to be the most threatening. Destructive, aggressive tendencies are gaining momentum and counteract the idea on which design was founded. ... I work in the hope of designing objects that are useful and convincing enough to be accepted and lived with for a long time in a very obvious, natural way. But such objects do not fit into a world of vandalism, aggression, and cynicism.

The ideal world is one where people feel “at home,” where their treatment is “humane,” and where interactions are peaceful. This world is the opposite of the dystopia that Rams describes in such forceful terms.

It is incumbent on designers to create designs that move the world in the ideal direction rather than the dystopian one. Minimalism is the appropriate guide for this project. Consider the alternative. Designers who include extraneous features in their works often do so in order to sucker or overwhelm potential users into purchasing their wares. Rams (1983, p. 708) considers the case of a designer being asked to produce a hair dryer with a plastic case resembling mother-of-pearl. He would refuse: “A hairdryer with an imitation mother-of-pearl handle housing—what an utter nonsense!” Although such a design would not improve the product in terms of its function, it might help to stimulate sales: For a brief period, the hair

dryer becomes a must-have bathroom gimmick. After a time, people tire of the extraneous feature and throw away the gadget in favor of the next one that catches their fancy. There are many motivations for designers to produce gimmicks of this sort. If successful, they raise the profile of their designers and deliver monetary rewards. Their designers win promotions from employers. Investors in the producer's company are enthused because the value of their stocks increases. Economists and politicians salute the development because resulting sales increase economic activity and thus national GDP.

Yet, Rams views such design practice as problematic. First, he counts such designs as acts of aggression against people. Overwrought designs constitute attacks by designers on their clients, taking advantage of their psychological susceptibilities (Rams, 1984, p. 25):

I don't support dull or boring design but I do take a stand against the ruthless exploitation of people's weaknesses for visual and haptic signals The festival of colors and forms and the entertainment of form sensations enlarges the world's chaos.

Clearly, Rams takes quite seriously the view that gimmicky design is incompatible with a humane world and is therefore unethical.

Rams also objects to the consumerism implicit in gimmicky design. It not only needlessly stimulates sales of goods but also prompts the premature trashing of previous items. The result is a flood of garbage that is bad for the environment. Poor design constitutes a strain on resources needed for production and contributes to problems of pollution and trash. One solution is to cultivate durability: designs should be not only functional but also durable so that they can be "lived with for a long time" and reduce the annual volume of waste. A second solution is to design products to be readily repaired and re-circulated (Rams, 2001, p. 131):

One example could be the development of a 'closed circle' for consumer goods: products would not be bought, but would remain the property of the manufacturer. The user would pay not for the ownership, but for the use of the product and its maintenance. After use, the products would be returned to the manufacturer, serviced, repaired, recycled and put back into circulation.

Here, Rams has in mind what would be called the *circular economy* or *collaborative consumption* (Botsman & Rogers, 2010). As this arrangement involves providing people with services while using fewer material resources and lessening environmental impact, it is another example of "less but better."

Rams's characterization of the ethical sense of good design can be understood as an invocation of the concept of a *social contract*. The philosopher John Locke described a social contract as a set of rights and responsibilities that members of a society have towards each other, beginning with rights of life, liberty, and property (Locke, 1689/1988). The point of a social contract is to enhance the opportunities for people to thrive and flourish through cooperation enabled by such a contract. For example, a crosswalk is designed to enforce a social contract between drivers and pedestrians, one that allows both parties to share piece of roadway that is in contention between them. A crosswalk accomplishes this task by assigning a *right of way* exclusively to either party in turns (Shelley, 2017, pp. 96–97).

Although Rams does not explicitly mention rights or contracts, his account may be understood in these terms. Users can be understood as having a right to autonomy, one that is violated by exploitation of psychological weaknesses, and a right to personal safety, one that is violated by violent or aggressive designs. People also enjoy a right to collective integrity, one that is

undermined by designs that strain natural resources and create pollution problems. In Rams's view, it is the moral responsibility of designers to see that these rights are respected through the function of their products.

Discussion

In spite of obvious differences in their approaches, both Herbert Simon and Dieter Rams argue that good design has a crucial, ethical component. Both see good design as having an ethical dimension in view of how broadly technological design affects people. It is the purpose of this section to compare these views on design ethics.

On Simon's view, design involves adapting the world in order to better satisfy preferences. Ethical issues arise when we account for conflicts among preferences of those who are affected by the operation of designs. It is tempting to disregard or discount the preferences of others. However, an ethical assessment of design would consider "universal values," that is, a scheme in which everyone's preferences are considered and no one's preferences are set above those of others. A model of this approach is provided by cost-benefit analysis. Although Simon admits that this model does not apply in general, it displays the characteristics of a method for assessing designs as ethically defensible.

Rams's view of good design in the ethical sense is framed in terms of the qualities of an ideal society, consisting mainly in the absence of exploitation and coercion. This ideal can be understood in terms of rights to autonomy and safety under a social contract, rights that designers ought to respect in their work. Rams argues that this ideal can be achieved through a minimalist approach: Less but better, that is, less aggression towards consumers, less emphasis on showing off, less strain on resources, and less burden on the environment.

Both views respond to similar motivations. Both Simon and Rams are concerned with the worst negative consequences of technology, likely prompted by the fact that each grew up and worked in the shadow of the Second World War. For each, good design implies the minimization of such conflicts in future.

Both Simon and Rams ground their characterizations using appeals to rationality of some sort. For Simon, rationality is synonymous with optimization in the instrumental sense. Yet, his reference to CBA as a model of ethical assessment of design extends this sort of rationality to the ethical dimension: Ethical design optimizes respect for the preferences of all, considered equally. Here, Simon is following the lead of utilitarian philosophers of the 19th and 20th centuries.

For Rams, rationality is synonymous with minimalism. The principle of good design applies instrumentally to realization of designs of proper function. It also applies ethically to realization of designs that respect the arrangements of an ideal society. Rams's concept of rationality is not the same as Simon's. In his view, rationality is both a kind of decorum, that is, ensuring that designs reflect the functionality that is proper to them, and the cultivation of calmness and peaceful interpersonal conduct. Here, Rams is following the lead of utopian designers and planners who sought to design ideal societies.

The most prominent point of disagreement between these accounts comes from their take on preferences. On Simon's account, all preferences are candidates for satisfaction through design. Simon assumes that the satisfaction of egregiously selfish designs will arise due to the compromises necessary to create designs that satisfy the conflicting preferences of disparate

people. On Rams's account, some preferences are worthy of satisfaction whereas other preferences are not. In particular, Rams identifies psychological weaknesses for flashy gimmickry and urges to resort to aggression or violence as preferences that designers have no business satisfying. They are simply incompatible with the social arrangements of a peaceful and humane, ideal society.

Conclusion

Both Herbert Simon and Dieter Rams discuss the role of ethics in technological design. In particular, both discuss the concept of good design from both instrumental and ethical senses. On Simon's account, good design in either sense arises from the satisfaction of preferences. Ethical concerns arise when designs create conflicts among preferences held by different people. On his account, the solution to ethical problems of this sort is to rely on universal values, which is exemplified in cost-benefit analysis.

On Rams's account, good design in either sense arises from the application of minimalism. Good designs obey the principle of "less but better." Ethical concerns arise when designs fail to minimize the occurrence of negative actions such as aggression or vandalism, or inflict damage on the environment. On his account, it is the responsibility of designers to exert themselves so that such situations are mitigated as much as possible.

These views are quite different in some respects: Simon's view is utilitarian whereas Rams's is contractarian. Yet, both place a similar emphasis on a single principle, applied to both instrumental and ethical concerns, grounded in an account of rationality.

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