Design and Rationalism: A Visualist Critique of Instrumental Rationalism

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Abstract: This article presents a visualist theory of design that contrasts with the instrumental rationalism that dominates the philosophy of design. My critique of rationalism is based on two omnipresent and paradigmatic phenomena in design: the variety of forms for one single function and the variety of uses of one form. Instrumental rationalism defines design as a coherent line that runs from a rational goal to the proper means and proper use of an object. Therefore, this philosophy values design according to its efficiency. However, the diverse aesthetic forms of design objects and the creative ways that users engage with them. do not follow the instrumental rational plan, but rather aesthetic motivations and design's visual affordance. I argue that the variety of forms of design objects and emergent uses are often more substantial than rationality in the constitution of design. Claiming that these encounters are innate to our essence and ontology as visual beings, I offer a visualist anti-rationalist theory of design and human nature.

Keywords: instrumental rationalism, form, affordance, emergent properties, Visualism

Various Forms for a Single Function and Various Uses of Single Form

Two closely related phenomena provide useful insights for the analysis of the relationship between design and rationalism: the various forms for a single function and the different uses of a single form. For example, chairs, as devices for sitting upon, have many different forms (figure 1), but it is also the case that chairs have many uses that have nothing to do with sitting, for example as workout devices, as makeshift ladders, or as convenient places for putting clothes (figure 2). These phenomena, which reflect both the nature of design and our nature as human beings, merit attention through the lenses of the fields of design and philosophy, mainly ontology, and theories of human nature. Design offers valuable insights into human nature and ontology due to its presence in everyday life since ancient times. However, there is still much to learn about us from design works, similar to what has been done with artworks. A significant insight is related to recent criticisms of rationalism (Gilovich, Griffin, and Kahneman 2002, 19–48). This essay will show how analysis of design may be useful for this general critique and then will move to criticism of rationalist theories of design. The essay will then introduce a visualist philosophy of design, as an alternative to rationalist theories.

As Daniel Kahneman noted in *Thinking, Fast and Slow* (2013), uncovering heuristics and biases has led to a critique of rationalism that challenges the "dogmatic assumption, prevalent at the time, . . . that the human mind is rational and logical" and idea that "people are generally rational, and their thinking is normally sound" (Kahneman 2013, 8–9). This has been done by uncovering of heuristics, biases, and traces of "these errors to the design of the machinery of cognition" (8). Kahneman's project has been extremely influential in analyzing human nature. It is devoted to exposing the "ways human choices deviate from the rules of rationality" and points out the harm caused by rationalism's

"unfortunate tendency to treat problems in isolation…where decisions are shaped by inconsequential features of choice problems" (14). However, I think that rationality is not the founding element of our nature, from which we sometimes unfortunately deviate. Elaborating on externalist philosophy and the visual turn, I claim that we are primarily visual beings and our engagements with the world originate mainly in the visual sphere.

What may be called the rationalist illusion predominates in the philosophy of design, its practice and academic education, as will be presented shortly. Rationalist definitions of design assume that a linear, rational design process runs from the designer's rational mental plan of an object's function to the designed object to the user, who interprets the object in order to understand its proper function and use it properly. However, the full realm of design includes the visuality of the object after it has been produced, which opens space for many possible forms and for emergent properties created by the user's encounters with the object rather than by rational plans. In addition, the facts that there are many different possible forms for one function and many different uses for one form both support insights from the visual turn (e.g., (Ventrella 2015; Nyiri and Benedek 2019; Gal 2019; Berger 2022). These two facts support a transition to a more visual approach in philosophy, which I refer to as "Visualism" (Gal 2022, chapters 1,4,5; 2020). A visualist approach suggests that our being is primarily shaped by our visual experiences rather than by rational and conceptual mental content.

These two features of design—many forms for one function and many uses for one form—argue against rationalism both from the perspective of the designer's motivation and from the perspectives of users. I contend that the variety of forms that exist for one function supports the contention that design takes place in the aesthetic stratum of the design object rather than in the intentions of the designer (Gal and Ventura 2023, 30–31, 68–71). David Pye reminds us that "whenever humans design and make useful things they expend a good deal of unnecessary and easily avoidable work which contributes nothing to its usefulness" (Pye 1978, 13). Along this formalist line, Henry Petroski points to the diversity of each tool as the right starting point for understanding how it has evolved. In *The Evolution of Useful Things*, Petroski takes as his starting point the many shapes of eating utensils, claiming that "understanding the origins of diversity in pieces of silverware makes it easier to understand the diversity of everything from bottles, hammers, and paper clips to bridges, automobiles, and nuclear-power plants" (Petroski 1994, 3).

Figure 1. Variety of armchair: variety of form for one function.

The user is the protagonist of the second phenomenon—the emergent uses which one form may afford. My daughter's chair (the center of figure 2), has never been sat on. This is not an uncommon conduct! Take a moment to think about the many ways people engage with a chair: in addition to those mentioned above, chairs are used as shelves, tables, or exercise devices, but they are also used as metaphors or as status symbols. Seatablity, that is, a chair's function as a sitting tool, is not more substantial than these uses. It works the other way around as well—objects that were not meant to be used as chairs are used for sitting. For example, people often sit on fences even though they are not designed for sitting, they are not comfortable to sit on, and they are not efficient sitting tools (figure 3).
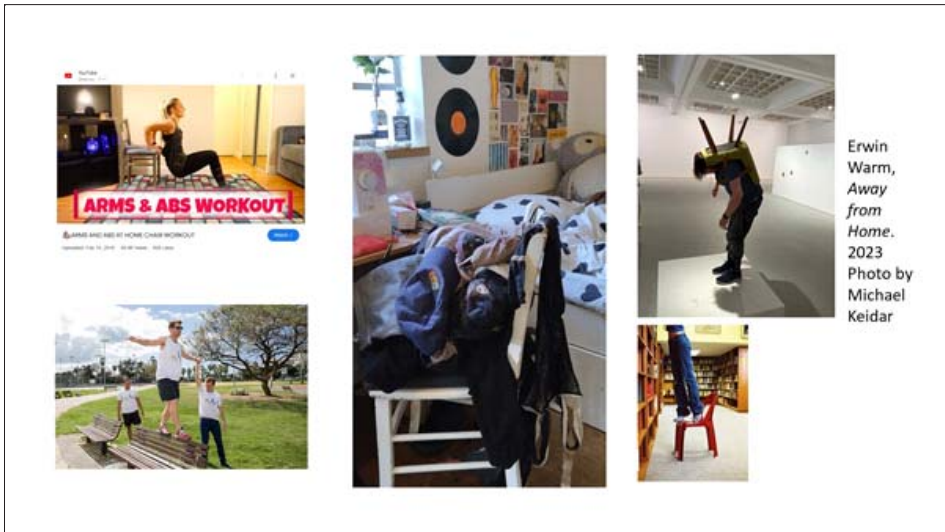

Figure 2. Variety of uses of chairs: variety of uses of one form.

Figure 3. Fences used for sitting.

Petroski's research about the evolution of tools is helpful here. He proves that the ontology of design is based on more on its visuality than on rationality. He highlights the appeal of form, rather than the designer's rational plan, as the driving force behind design innovation. He argues: "Whatever its intended function, an object's form alone often suggests new and more imaginative forms, as

the stick did the fork and the shell the spoon. And it is no less the case with manufactured things" (Petroski 1994, 51). Form even has the potential to lead to the development of function; Petroski presents the paper clip as an example of the "almost limitless functions to which a single form can lead" (Petroski 1994, 52). A study on paper clips from 1958 found out that: "only one in ten paperclips was ever used to hold papers together. Other uses included "toothpicks; fingernail and ear cleaners; makeshift fasteners for nylons, bras, and blouses; tie clasps; chips in card games; markers in children's games; decorative chains; and weapons." They become "objects of more inwardly directed aggression by providing something for the fingers to twist grotesquely out of shape during phone calls, interviews, and meetings" (52).

Adrian Forty puts forward a similar argument about the variety of forms based on our attraction to forms in *Objects of Desire.* Under the title "Theories of Diversity", he asks "How are we to explain the compulsion which gripped so many manufacturers to be so prolific with designs for their products?" (Forty 1986, 87). Forty supplies some possible answers, which include the feeling of individuality and freedom that a diversity of forms imparts to the owner of the object, a desire to increase sales, or a wish to allow imagery in design to relate to ideas and social movements: "Through the designs of knives, watches, clothes and furniture to suit every rank and station in life, one can read the shape of society as manufacturers saw it, and as their customers learned to see it. . . . And to know the range of different designs [is] to know an image of a society" (93).

All of these answers have to do with the appearance of design objects and very little to do with a rational plan of proper function that the user must detect. They all point to the power of form and the drive for visuality. Like Petroski, Forty notes that the various appearances of design products as they evolve bring out new needs, new tools, and inspirations for further design. Elsewhere, I have elaborated on a theory of "attachment to forms" about why we create metaphors—a phenomenon that is closely related to the two core ideas that various forms exist for one function and that one design form has various uses. I am trying to track the reason for our basic tendency to use known forms as sources for reconstructing concepts and objects, such as using the concept of physical depth in the metaphor of a deep thought or using the shape of a banana to design a chair or a purse. I suggest that this is because we cherish certain forms and that those forms persist through time, valued, referred to, and hinted at. They are recycled, borrowed, or duplicated. They provide joy and solace, shaping layers of culture; organizing thoughts, concepts, and beliefs; and enriching our very existence (Gal 2020, 73–73; 2022, 14–15).

The Rationalism versus Visualism Debate in Design

Interestingly, despite the sensuous thickness and visual richness of design, the majority of the current theories of design present it as a field based on rationality in terms of both the creative process and design products. The authors of "Rationality in Design" from 2009, Kroes, Franssen, and Bucciarelli, declared,

> It is a premise of much work done in the field of design methodology and engineering design itself that rationality plays a significant role in design processes, not only at the level of the organization of design processes, but also at the level of the design of products. The underlying idea is that many of the decisions that are made regarding design — regardless of whether they concern the set-up and execution of the design process or the object of design itself — can be justified on the basis of reasons (arguments)) (Kroes et. al, in Dov M. Gabbay, Paul Thagard, John Woods 2009, 565).

A similar approach is manifested by the prominent theoretician of design Donald Norman is based on the idea that "design takes root in cognitive science—a combination of cognitive psychology, computer science, and engineering, analytical thought" (Norman 2004, 8–9). He claims that the starting point of design is rationalist mental content, a conceptual model that is supposed to be communicated through design work, which then produces an equivalent mental model in the user's mind (Norman 2007, 95; 1990, 189). Norman argues for a rationalist evaluative standard as well,

claiming that the "the most important part of a successful design is the underlying conceptual model. This is the hard part of design: formulating an appropriate conceptual model and then ensuring that everything else is consistent with it" (Norman 1999, 39). According to this model of rational coherence, a good conceptual model allows us to predict the effects of our actions. For Norman, design ought to produce efficient environments and therefore its function should be transparent enough that the user, who Norman refers to as the interpreter, can easily understand it. This goal is accomplished through a consistency between the conceptual model the designer provides, and the presentation of an object's operations and results. Like other rationalist philosophers of design, Norman believes that efficiency is possible through a sound, rational linearity in design. According to rationalist thought, the result of a design should be the user's correct engagement with the object that is produced. Design thereby prevents the user from making what Kahneman refers to as the "systematic errors " our minds are susceptible to (Kahneman 2013).

However, neither the forms or appearances of design nor our engagements with design objects are bound to rational linearity or are consistent with a conceptual model. Pye notes that the form of design is not chained to a conceptual model: "the form of designed things is decided by choice or else by chance; but it is never entailed by anything whatever. Nothing in the realm of design looks like that because it has got to be like that" (Pye 1978, 13). Pye does not assume rational linearity, emphasizing instead that "efficiency . . . justifies no design in itself" (95). Similarly, users' engagements with design objects often depart from the conceptual plan and from the linearity that rationalists assume runs from the mind of the designer to the mind of the user. Users' engagements with design objects are sensual, wide-ranging, dynamic, and creative and may be modified many times. They are based on the intensity of visuality, on human beings' attachment to forms, on the affordances of the object's appearance, and on its emergent properties after production, which often cannot be planned or preconceived. While some will call these departures errors, I disagree. New uses develop because humans are visual beings who interact with visual surfaces.

This argument is part of a more comprehensive theory of visualism that endorses the visual turn in the humanities and social sciences. Acknowledging the impact of visuality on us, the visual turn identifies the visual sphere, rather than the rational mind, as the proper sphere for studying our essence, ontology, and our culture. In this framework, the phenomena of the variety of forms a function can take and the multiple ways one form can be used after production are paradigmatic for proving the visualist nature of human beings. Thus, design objects are definitive in the rationalism versus visualism debate.

Rationalist definitions of design align with the rationalist project of philosophy, while visualism embraces externalist philosophy and more boldly confronts the messiness of external reality and its impact on us. Rationality is the ability to choose between alternatives by exercising cognition rather than being led by feelings, urges, personal preferences (including aesthetic ones), or external pressures. Rationalist philosophy classifies this ability as superior to others. In the case of design, the kind of idea endorsed by rationalist theoreticians, albeit not explicitly, is *instrumental rationalism*, which is distinct from epistemological rationalism. Epistemological rationality is the justification of views and knowledge based on reasoning, cognition, and logical consistency, and the practice of "holding beliefs that are commensurate with available evidence" (Stanovich, West, and Toplak 2011, 792). In contrast, instrumental rationality focuses on accomplishing goals, on using reason to achieve desired ends efficiently by selecting the means that are most likely to achieve the desired outcomes. It is well characterized in "Intelligence and Rationality" as follows, and note how well it applies to the rationalist philosophy of design and practice, which sees the process of creative design as seeking efficiency through planning, embodying, and tracking a proper function:

> In its simplest definition, instrumental rationality is behaving in the world so that you get exactly what you most want, given the resources (physical and mental) available to you. Somewhat more technically, we could characterize instrumental rationality as the optimization of the individual's goal fulfill-

ment. . . . Epistemic rationality is about what is true and instrumental rationality is about what to do. (Stanovich, West, and Toplak 2011, 795)

According to Joseph Raz's well-known critique, instrumental rationality is (mistakenly) considered to be the basis of practical reason, "of following the means to our ends" (Raz 2017, 1, 23). Raz thinks that this claim is too reductionist because we sometimes exercise a broader normativity, a judgment regarding the "content of the ends," about the values of the ends themselves (17). Even more basically, our conduct is often guided by important noninstrumental reasons that are not aimed at preplanned ends and are not necessarily motivated by preexisting desires. According to Raz,

> These reasons often demand certain actions regardless of whether they are the most efficient means to an end. In particular there is no specific form of rationality or of normativity that concerns the relations between means and ends. Philosophers fostered a myth of instrumental rationality, sometimes taking it to be the only, sometimes the simplest and clearest type of practical rationality or of normativity. (24)

Nevertheless, instrumentalist rationalism in design is still a fairly reductionist view. It requires instrumental coherence from both the designer and the user, who are connected through the design work, which is supposed to communicate how an object should be operated and evaluated based on its efficiency in achieving its preconceptualized end. The rationalist definitions of design accordingly describe design as originating *before* the object is produced, relying on intentional plans whose products are carefully constructed to realize that purpose and to be used properly in line with these purposes. "All in all, there are three stages that follow from the goal: intention, action sequence, and execution," Norman states (Norman 1990, 48). Rationalist definitions consider the product to be a means to an end; they take for granted that both the product and its uses follow logically from the mental content of the designer as some sort of entailment. Such definitions usually do not cover the autonomous power of the medium itself or the user's immersion in the power of composition, which is a *post-production* emergent property of the object.

The instrumentalist roots of the philosophy of design lie in the twentieth century. In 1938, R. G. Collingwood described what came to be known as instrumental rationality in *Principles of Art*, where he defines craft (and design) as "the power to produce a preconceived result by means of consciously controlled and directed action" (Collingwood 1968, 15). The foreknowledge, Collingwood clarifies, ought to be precise: a designed table is not, could not be, based on vague plans about size and proportions. In 1955, the prominent philosopher of design and industrial designer Henri Dreyfuss argued in *Designing for People* that the motivation for design is "the drive for something better, for more comfort and convenience," to conserve "a person's time, effort, and nerves as well as prevent injury" (Dreyfuss 1974, 15, 21). A similar instrumental rationalist proposition is offered by Glenn Parsons in *The Philosophy of Design* from 2015. He defines design as "the intentional solution of a problem, by the creation of plans for a new sort of thing" (Parsons 2015, 11). Parsons associates rationalist intentionality with "a practical or utilitarian nature." (Parsons 2015, 22). According to Parsons, affordance, unintentional or unplanned uses, and various unforeseen effects or results are not part of the design. Another recent manifestation of instrumental rationalism regarding design is Jane Forsey's *Aesthetics of Design.* Despite her classification of design as an aesthetic phenomenon, Forsey identifies a rational linearity that flows from the designer as the planner to the design product to the user of the design object in the proper way. Each design product, she argues, "is meant to be used in a specific way: the planes flown, the shoes worn, the office chairs sat in" (Forsey 2013, 30). Forsey argues that the identity of the design object *as design* is constituted by its form— "What else is to distinguish a Philippe Stark goblet from a generic one purchased at Walmart if not its formal elements" (41). However, she associates the aesthetic value of the design object with the way its form contributes to its function and efficiency.[1]

Norman also characterizes the visuality of design as subjugated to its predetermined plan. He refers to "a frustration of everyday lives, with inefficient objects, "ones that we can't figure out how to use, with those neat plastic-wrapped packages that seem impossible to open, with doors that trap

people, with washing machines and dryers that have become too confusing to use" (Norman 1990, 1–2). Thus, Norman portrays a normative instrumental rationalist reductionist picture of design. For him, "well-designed objects are easy to interpret and understand" (2). Designers can produce such objects, he claims, by taking into account the psychology of materials in order to design objects that produce transparent signals. He calls this process "natural design" (4). Natural design objects clearly direct the user how to engage with them; examples include the horizontal plane of the chair and the shape of the chair that invites a specific position—no hesitations or errors—because, says Norman "a chair affords ('is for') support and, therefore, affords sitting" (9). Therefore, he privileges the predetermined plan over the affordances of the material and the emergent uses of the design object, even though the uses of chairs are diverse and the forms or appearances of chairs have great importance for many users. Throughout history, chairs designs have showcased numerous styles, some of which are exceptionally crafted, beautiful, and even symbolic. In *The Politics of the Artificial*, Victor Margolin refers to one of the "non-sitting" uses in his account of the designer Massimo Vignelli's exaltation in response to the chair that Ludwig Mies van der Rohe designed for Villa Tugendhat: "Vignelli celebrated its aesthetic value rather than its functional qualities: 'I sit on a Brno chair all day long, not the most comfortable chair. There are a thousand other chairs done by friends that are terrific and much more comfortable, but no one has that class. All the time my mind gets massaged by that class!'"(Margolin 2002, 43) Margolin labels such emergent properties of the design object "reflective parameters," which are distinct from an object's "operative parameters." While Margolin makes the mistake of saying that the operative parameters "are limited by the configuration of the product itself" (again, look at the various uses of chairs), he emphasizes that "there is no limit to the parameters for reflection. We can think or have feelings about a product in any way we choose, whether we focus on its operative value, its poetic qualities, or its social significance" (42).

Norman's wish for instrumental efficiency would trap users in a sphere of heteronomous efficient operations that has been predetermined for them. An example would be the transparent and "efficient" Nespresso coffee machine, which limits the user to a closed universe of premade capsules and three buttons. Kahneman's general philosophical observation that the thought of the world as "more tidy, simple, predictable, and coherent than it really is" could be applied to design, and helps challenge the instrumental rationalist's idea of controlling either the form of the design object or the users' engagements with it:

> The illusion that one has understood the past feeds the further illusion that one can predict and control the future. These illusions are comforting. They reduce the anxiety that we would experience if we allowed ourselves to fully acknowledge the uncertainties of existence. We all have a need for the reassuring message that actions have appropriate consequences, and that success will reward wisdom and courage. (Kahneman 2013, 205)

In contrast to the rationalist approach, visualist theories define design as originating in the object itself, in its form, appearance, and affordances. Visualist approaches to definitions of design embrace externalist philosophy and confront the messiness of external reality and its impact on us. In visualist theory, the design object is an open space of emergent properties and creative and improvised encounters. These are not guided by the designer's intention or by the embodiment of that intention in the design object. The ways that users interact with an object do not always cohere with the designer's belief about the transparent function of the object or the object's efficiency in achieving the purpose the designer intended, or "optimization of the goal fulfillment". The same is true of the multiple forms that are created for design objects that have the same function. As Margolin stresses, design theory and practice ought to take into account "the world situation in its largest sense" (Margolin 2002, 80). Design theory must consider the external dynamic of reality—"a world situation that itself is in turmoil" (79). True, the design object may invite "proper" uses. But because of the visuality of the object and the power of its composition, it affords many other uses that are dependent on individuals and communities of users. The preconceived uses are merely one group among the

possible uses, views, and aesthetic experiences, interpretations, and even emotional relations that emerge as users interact with a design object. These often cannot be preconceived, conceptualized, or planned. Indeed, the use of a chair as a clothes stand, an exercise device or a makeshift ladder, the use of a fence as a bench, or the use a bench as a balance board are often more substantial than the intended purpose. These emergent uses often become well-established and become part of the identity of the object. The rational instrumentalist conception of choosing the most efficient ways, materials, or tools to reach an end also does not apply to the variety of forms for objects that possess the same function. These various forms are chosen by both designers and users mainly because of aesthetic motivations rather than because the person has a goal of instrumentally and efficiently achieving functional ends. Form thus activates a generative power of experiences, expressivity, metaphors, or newly produced meanings.

I, therefore, claim that the identity of the design object is not determined by its instrumental rational plan and does not naturally operate through a rational line of ends, means, and proper use. Thus, efficiency is not necessarily the best parameter for judging a design object's effectiveness. In light of our visualist nature, design mainly operates by its form and appearance, which also determine the discipline of design's progress and vitality.

The debate about instrumentalist rationalism versus visualism in design puts design objects and people's encounters with them in the context of the wider and more fundamental controversy between rationalism and visualism regarding human beings. One might argue that the gravitas of design objects could contribute to the disillusionment with rationalism and the emerging theories of the visual turn. Rationalist definitions of design derive from the Western tendency to think that using rational reasoning to accomplish ends represents humans at their best. This view fails to see the value of external influences. In an age of a vast proliferation of images (including AI-generated images), interfaces, and screens, we can no longer ignore the disruption of the linear flow that rationalist design theories associate with design. We can no longer ignore the importance of our visual engagement with objects, which is evidence of our visualist and externalist nature. A philosophical analysis of design ought to reconsider what rationality means in general. The question is whether we are primarily rational beings, interacting with our environment through pre-planned uses and flourishing in efficient spaces, or we are visual and aesthetic beings, interacting with our surroundings through the creation and observation of forms and thriving by achieving well-arranged or inspiring compositions.

Anti-Rationalism and Affordance

The rationality of the designer's mental content and preconceptualized plan often has no bearing on the space of the design object. We engage with objects in the perceptual space of interactions, which consists of the appearance, form, and power of the composition of the object that the viewer or user is invited to explore. Therefore, I propose that:

> 1. The variety of forms for one function and the variety of uses for one form prove that our relations with objects are affected by our visualist nature rather than by rationality.

> 2. Accordingly, the term "affordance," which is based on visuality and emergence, should be used in place of the terms "intention," "plan," "function," and "efficiency."

"Affordance," a term coined by James Gibson, which means the space of possible uses and interactions that an object, or environment, allows, is logically related to the frantically visual era we face and the corresponding visual turn. Affordance is conditioned on visuality, which allows for emergent properties and relations with design. In the case of a chair, its visual structure allows, even invites, various uses. It may range from the back of the chair inviting a coat to hang, to the entire chair being transformed with a glass top to serve as a coffee table, as demonstrated by Enrico Salis in

his piece *Archetype* (2012, figure 4). *Archetype* is described in *Social Design Magazine* as follows: "The objective that Enrico Salis tried to achieve with this table is to break the link between the object and its archetype. Enrico Salis intends to awaken the observer's imagination from the daily routine" (Social Design Magazine 2012). My analysis of this concept contrasts with that of Norman, who reduces affordance to the transparency of the object regarding its specific intended plan and instrumental efficiency (Norman 1999). "Affordance" also fits new theories of everyday aesthetics and the visualist philosophy of design. Gibson first used the term "affordance" in *The Senses Considered as Perceptual Systems* (1966) and extended the definition in *The Ecological Approach to Visual Perception* (1979). Gibson claims that "the observer and his environment are complementary. So are the set of observers and their common environment" (Gibson 2014, 11). He speculates that the theory of affordance may advance from the perception of the visuality of surfaces to the perception of what the surfaces afford: "How do we go from surfaces to affordances? Perhaps the composition and layout of surfaces *constitute* what they afford. If so, to perceive them is to perceive what they afford" (119). Applying the theory of affordance to design, we can shift our focus from the rational plan to the power of the visual piece, and to immersion in the power of composition or configuration of surfaces. These, as we saw, often do not cohere with the intended, rational plan. In this frame of thought, the theoretician of material culture Judy Attfield criticizes in her *Wild Things* what she describes as "the central 'given' in design theory . . . that assumes an agency on the part of the design process to be able to predict and control how the product will be put to use within certain parameters of space and place" (Attfield 2000, 77). Attfield proposes a more contextualist view of the material reality of our lives, seeing objects, especially design objects, as "social things within a dynamic existence in the material world of everyday," which, for example, sometimes create design objects as "things with attitude" (32).

Figure 4. Enrico Salis, *Archetype,* coffee table, 2012.

We can now conclude with an individualizing design proposition that runs as follows:

> Although design products are useful by their nature, the actual space of design is an open aesthetic space that both endows them with identities as members of the group of design objects and distinguishes between them as design objects and imparts to them affordances and emergent properties.

The main point is that our interactions with visual appearances are of great importance for the critique of rationalism and for understanding how visualist we are. Our creative, particular, and emergent relationships with the appearances and visual forms of design objects are innately attached to our visual being. We are attached to forms, and the forms we encounter inspire us and leave a significant impact. They are passed down through cultures and generations, becoming well known and deeply rooted in our cultural heritage. Forms are not just used for their immediate function; they also inspire the creation of new objects and the reconstruction of existing ones. This, rather than instrumentalist rationalism, is what motivates design. William Morris, the nineteenth-century aesthetician, designer, and leader of the arts and crafts movement, pointed to the aesthetic properties and affordance of useful objects as a basic human condition. He said, "To give people pleasure in the things they must perforce use, that is one great office of decoration. . . . I say that without these arts, our rest would be vacant and uninteresting, our labour mere endurance, mere wearing away of body and mind" (Morris and Morris 2012, 5). Even proponents of modern industrial design, such as Herbert Read, agreed that the meta-motivation of design was aesthetic, pointing out that design began with the introduction of a variety of forms for functional tools, with the departure from the wish for efficiency. In his significant work *Art and Industry: The Principles of Industrial Design* (1935), Read associated the variety of forms for one function with free choice and personal freedom:

> Early man, we may assume, in making his implements was governed entirely by considerations of utility. A hammer had to have a blunt head, an arrow a sharp point, and so on. Form evolved in the direction of functional efficiency. But a moment arrives in the development of civilization when there is a choice between equally efficient objects of different shape. The moment that choice is made, an aesthetic judgement has operated. What are the motives that lead man to prefer one shape to another? (Read 1935, 15)

When we think about design as existing in the aesthetic level, we can examine even instrumental excellence through visuality. Function itself may possess other properties besides functionality, such as expressivity and affordance. Arnheim's eye-opening theory of design in "From Function to Expression" draws attention to the affordance of function that "enters the aesthetic realm by means of the expressive pattern of shape, colour, movement, etc. into which it is translated" (Arnheim 1964, 38). The visible elements of function join the affordance of the design object and prove the narrowness of the instrumental rationalist idea of means and ends in design:

> In a functional-looking object, we may see the dynamics of pouring, soaring, containing, receiving, etc. We also see such "character traits" as flexibility, sturdiness, gracefulness, strength, etc., which, just as in a representational work of fine art, are intimately and totally related to the theme: the gracefulness of the spout consists in the graceful pouring it displays visually; the sturdiness of the Doric column consists in its supporting the roof sturdily. (38–39)

Indeed, the rationalist idea that function is given to reasoning and efficiency alone is too reductionist. Too narrow also is the conservative dichotomy between form and function regarding their roles in the visual affordance of the design product. Form may be useful and function may be visual, exciting, or comforting or it may elicit irritation, humor, or gloominess. The visuality of the solid handle of a coffee machine, which provides a good, sensuous experience to the holding hand and ease to the mind that trusts this tool, can elicit feelings of comfort and solace and ideas about the efficiency and reliability of the machine. Accordingly, we should reconsider the concept of rationality as less central to our existence, especially in our daily interaction with our designed surroundings, and instead, explore the visual sphere and our experience of it to understand our inherent nature.

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Notes

[1] See Forsey's essay in this volume, "Design and Beauty: Functional Style" (pp. 36-43).

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