Because products are the result of a diversity of activities and appear in equally diverse manifestations, “What constitutes a product?” is a pressing question for design. In this chapter I address the question “How is a product constituted?” I contend that one manner of addressing the constitution of the product is through the dimensions of the product: its form, function, material, and expression. In this chapter I briefly describe each of the dimensions of the product. I propose that products can be described and analyzed by the distributions of significance and influence across the dimensions, resulting in different kinds of products, each with different agencies. I conclude the by presenting a brief plan of inquiry for the subsequent chapters.

One of the first and frequently encountered problems with products is a problem of definition. Products are often reductively equated to physical goods, or even more specifically, to physical commodities. This has the detrimental effect of situating the design of products in the domain of industrial design and engineering, and largely excluding products from other activities of design. Clearly, such a consideration of the product as solely a physical good or as the outcome of one, but not another, activity of design is not adequate from the perspective of design as a practice involved in the conception, planning, and making of products across ever increasing domains. Therefore, a more thorough and robust definition of the product that can account for the swelling practice of design is needed.
Design theorist Victor Margolin has put forth a definition of products that is as an effective point to proceed from. According to Margolin, products are “the human-made material and immaterial objects, activities and services and complex systems or environments that constitute the domain of the artificial.” (Margolin 1995, 122) This definition of the product is thorough and robust because it opens the space of what is considered as a product to include all of the potential results of any design activity. Following from Margolin, the product is not just a physical commodity, nor even necessarily physical. Rather, the product is the result or manifestation of design activity — any design activity. Speaking of products then includes all of those things that are designed, regardless of their physicality or status as a commodity. And as the activities and domains of design expand in scope, so too does what can be considered as a product. Margolin’s definition of the product provides a place to begin from, but a more distinguishing and exacting depiction of the product is still necessary. Given that the definition is so open and that products are the result of such a diversity of activities, thereby appearing in an equally diverse range of manifestations, what constitutes the product is a pressing question for design.

In this chapter I address the question “How is the product constituted?” The purpose of addressing the constitution of the product is to discover and articulate a means for describing, analyzing, and critiquing the product. Specifically, addressing the constitution of the product provides a perspective that calls heightened attention to the designed elements and qualities of the product and sets the trajectory of this inquiry towards having relevance to both the practice and study of design.
THE PRODUCT

A distinction can be made between viewing the product objectively or subjectively. When we use a product we usually regard it as a distinct whole. The product is considered bounded and complete in itself. This is an objective view of the product: the product as a discernable artifact that can be treated without bias on the basis of fact or a measurable quality. Considering the product as such implies three things: the product can be thoroughly described by observable and demonstrable qualities, the product can be evaluated by impartial criteria, and the product is a discreet object that can be described and evaluated “on its own.”

But there is another view of the product, a subjective view. From the subjective view, the product is revealed as a multi-dimensional effort undergoing constant interpretation and reconstruction, by both the designer and the public that considers the product and puts it to use. A subjective view is not reducible to being described as a view of the product in context. Rather the product is the context: the locus of attention from and through which experience is observed and interpreted. A subjective view of the product is necessitated by the practice of design, because an objective view of the product does not adequately account for the role of the product in establishing and maintaining relationships among people and between people and the environment. With a subjective view, rather than standing outside the product and looking at it, we place ourselves, as participants in the professional practice of design, inside the product and we look through it and with it, into the world. While we can still distinguish one product from another, the basis for the description and evaluation of the product is quite
different from, in fact contrary to, that of an objective view. The product includes qualities that are not immediately observable and demonstrable, resists impartial evaluation, and must be considered relationally.

As an example, consider a house from an objective and subjective perspective. With an objective view, we look at the house from the outside and we can appreciate its appearance. We might, if we have some architectural knowledge, discern or infer some of its structure, how it is held together. But we would not be able to know how the house works as a home. To do so, we must move inside the house and establish a subjective view. We would need to examine its floor plan and observe the ways it supports or constrains different activities. We would also need to know who lives there, what their habits and routines are, and how they make use of the house. Knowing the inside of the house would allow us to better understand the rationale of the outside of the house and the affiliation between appearance and purpose. Is the architectural style displayed on the outside of the house carried through the interior, or is it only a surface treatment? Finally, the view of the house in neighborhood is very different standing on the sidewalk looking at the house than the view of the neighborhood from within the home and through its different windows.

There is a logic of the product that be discerned by examining the dimensions that constitute the product. These are its materiality, expression, function, and form. While these terms are common to design discourse, the use of these terms in the analysis of made-things is properly traced back to Aristotle’s Poetics. In the Poetics, Aristotle provides a manner of judging a work and of understanding a work by the relation of these elements (though Aristotle’s term for expression was manner). This discussion draws from Aristotle, but it is not
simply an application of Aristotelian poetics. Rather, it is an attempt to discover and elucidate a poetics from the perspective of design, examining products rather than tragedy, and extending the discourses within design that make use of these terms.

Form, function, expression, and material are important in both objective and subjective descriptions of the product. It is not that the terms themselves are different but rather how the terms are used, that is, how they operate in the description of the product. Examining the product as a multi-dimensional subjective effort requires us to see the product as a series of necessary and reflexive relationships, first within each of the dimensions, then between them, and finally between the product and its use. This perspective does not negate the product as a whole. The dimensions interact with one another to comprise the whole. But the integrity of the whole is dependant upon the relations of the dimensions: how they operate in cooperation and tension with one another. In so considering the product, the evaluation and description of the product is not so neat as perhaps it was once thought to be. What follows is a discussion of each dimension, teasing out their intricacies and interrelations, to begin to establish an understanding of the product situated in the practice of design.

**THE DIMENSIONS OF THE PRODUCT**

1. **Materiality**

Every product is the organization of some material or materials. *The materials of a product are the elements rendered by design.* But these materials are not only physical quantities. Addressing the materiality of a product is not reverting to a notion of
the product as just a physical object. It is, instead, acknowledging that the
product is a constructed thing, made of certain elements, configured in a certain
way that influences how it appears, is intended to function, and put to work. The
material elements of a product might be wood or plastic or other familiar
materials. They might also be factors such as motion or time. For example, in the
design of an animation, time is often considered as an element that can be
rendered by design for effect. Similarly, in the design of an event or service, such
as the flow of people through a line at an amusement park, the pace of a queue
(itsel a combination of time, motion, and space) might be considered as an
element rendered by design.14

The material elements of a product are different depending on the
product. For example, when designing a typeface, the material elements might be
the proportionality, x-height, ascenders and descenders, or the weight of the
typeface. When designing a publication, the elements might be the leading or
kerning of the type, the typographic hierarchy or the relation of text and image.
The unit of analysis — the least divisible part — is determined by the intended
functionality of the product (on what basis the product will be evaluated) and by
the skills and inclination of the designer. Examples of these distinctions are found
in books about designing. For example, in Type, Sign, Symbol Adrian Fruitiger
(1980) treats the individual parts of a typeface, whereas in Grid Systems in Graphic
Design Joseph Muller-Brockmann (1981) treats only the layout of the page.
(Images 1 & 2)

14 The design of the queues at Disney World is a salient example of the rendering of pacing by
design. See, Kevin Rafferty and Bruce Gordon, Walt Disney Imagineering: A Behind The Dream Look at
Making the Magic Real (New York: Disney Editions, 1996)
Every product has multiple materialities, some of which are assumed or given. For example, when designing a publication different typefaces are evaluated and a choice is made about which typeface to use, but the elements of the typeface itself are not the objects of design in that activity of designing. While the elements of the typeface are taken into account, such that the whole and the parts stay in relation to one another, the elements of the typeface itself are considered given; they are not what will be manipulated in the design of the publication. The publication may be evaluated on the choice of the typeface, but not on the design of the typeface.

Correctly identifying and understanding the materiality of the product takes on greater importance and becomes more challenging as physical objects are embedded with computational technology and as products become less physical in their manifestation. The materiality of such products is often misidentified or eschewed, resulting in incomplete descriptions and analyses of
the product. Such analyses fail to recognize and acknowledge the places where
the rendering of elements by design does, does not, or might occur, thus limiting
the available courses of action and thwarting a more complete understanding of
the consequences of materiality in design.

For example, in computationally enabled products, software, and services,
one of the elements of the materiality of the product is information. But usually
this information not unprocessed data. The information (material) in question
has already been processed, filtered, and manipulated before becoming an
element rendered by design. In this sense, it cannot be considered neutral. It is
already imbued with a bias that is more present than with other materials such as
steel.15 Usually, in such cases what is rendered by design is not the content of the
information but its representation. Even what is considered “information design”
is not editorial in nature as much as it is a task of arrangement and composition.
This can be problematic, especially as the representation becomes perceptually
distanced from the content. In previous information-oriented products such as
newspapers the bias of the information might be evident and accessible through
reading the text. In many contemporary products that abstractly represent or are
driven by information the bias is less immediately visible, yet nonetheless
with effect.

15 Certainly it could be argued that steel is a biased material, for example infused or enshrouded
with the politics of labor and globalization. But this bias is not present in steel in the same way it
can be with information nor does that bias have the same immediate consequences to the design of
products. Consider databases as an example As described in Geoff Bowker and Leigh Star’s Sorting
Things Out: Classification and its Consequences (Cambridge, Mass: MIT Press, 2000), what data is
counted as information worth categorizing and sorting is as meaningful and consequential as how
that information is categorized and sorted in a database. Before a designer ever begins to construct
a database schema, much less a visualization of the database, decisions have been made about what
will considered appropriate and worthy to record and what will be left aside. These decisions are
not arbitrary, they enforce specific disciplinary agendas and values, and as such, the information
provided to the designer is already inherently biased in a way that is not present in steel, or for that
matter, most other materials.
 Whereas once it was possible for the designer to identify and have some semblance of power over the materials of a product, such letterforms or wood or even software and circuits, with emerging domains of design practice such as services, environments, and organizations, a new approach to and expectations of materiality is required. As products become more socially and technologically complex, the materiality of products also increases in complexity and our grasp over materiality at times slips. The materiality may be harder to identify. With such products people and interactions are at times treated as materials. Conflating people or the activities that people engage in with the materials of a product is highly problematic because it can lead to a mechanistic treatment of everyday life.

 Without caution the multiple materialities of such products can seem to implode into arrays and hierarchies of materialities at work with one another. In identifying the materials of a product the true and appropriate reach of design must be kept in consideration. Many of the materialities (or elements considered materials) are elements which are not — indeed in some cases should not or cannot be — rendered by design. But these nonetheless seem to exert some influence on the constitution of the product. Certainly this calls into question what might be meant by a “mastery” or “control” of material that previously characterized design and exacerbates the need to correctly those elements that are, or could be, rendered by design.

2. **Expression**

The expression of a product is not the form, but the way form is made. *The expression of the product is how the materiality of the product is rendered by design.*
Because products are things designed by people, the manifestation of the product cannot be wholly separated from the designer. Too often expression is considered as style and style is considered as only visual aesthetics based upon personal or market preferences. In fact, the issues of expression, indeed the issues of style, are much more complex. As Richard Buchanan notes, style is the manifestation of design thinking (1995, 46) Differences in style, in the way the product is expressed, reveal differences in the philosophical assumptions and beliefs of the designer.

It is the philosophical differences of the designer, not color or shape preferences, which set the trajectory for the expression of the product. For example, consider the work of industrial designers Dieter Rams and Ettore Sottsass. It is not simply that one preferred fur and bright colors and the other stark geometric shapes in black, white and gray. (Images 3 & 4) They both share a common concern with the experience of use and a belief that the designer can influence that experience through a product’s expression —
through the act of designing. But they fundamentally differ on the ethics of doing so. For both Rams and Sottsass a product’s “expressiveness” is a factor of the presence of the designer in the product. One believes this presence is necessary and appropriate; the other vehemently disagrees. For Rams, it is the responsibility of the designer to minimize the expressiveness of the product in the environment as he makes clear in his statement, “Good design is unobtrusive. Products fulfill a purpose like tools. They are neither decorative objects nor works of art. Their design should therefore be both neutral and restrained, to leave room for the user’s self-expression.” (Makovsky 2004, 74) In contrast, for Sottsass it is the role of the designer to make products that perturb the environment to the benefit of the individual:

I just started to think that if there was any point in designing objects, it was to be found in helping people to live somehow, I mean helping people to somehow recognize and free themselves, I mean that if there was some point in designing objects, it could only be found in achieving a therapeutic action, handing over to the objects the function of stimulation the perception of one’s own adventures. (1970, 56)

In considering design as a practice we also need to extend the notion of expression — the manner of creating form — beyond the acts of an individual or a single discipline. The designer as an individual or as a distinct professional is often no longer the sole creator of the product. Perhaps, in truth, the designer never was, but this situation is becoming gradually more recognized and consequential. Increasingly, the expression of a product involves the activities and influence of other professionals and non-professionals who might not traditionally be considered designers but who nonetheless are active participants in the practice of design. Approaches such as “participatory design” seek to integrate others into the design process. (Sanoff 1990) The goal of this effort is to
design products that are more democratically representative of the constituents of the product, beyond the individual intentions and beliefs of the designer.

As the practice of design broadens and is engaged by other professionals, they too make their mark on the product. For example, since at least the 1980s social scientists have had significant influence on the design and development of furnishing and technologies for the workplace at companies ranging from Herman Miller and Steelcase to IBM and Apple.16 By extending the expression of the product — how the materiality of the product is rendered — beyond the acts of an individual or a single discipline, the product and indeed design itself unfolds into unfamiliar territories.

3. Function

Ever since the American architect Louis Sullivan penned the phrase “towering upward, form ever follows function” in his 1896 article “The Tall Office Building Artistically Considered” function has been a mantra in design. The function of a product is the work a product is designed to do. The function and functionality of the product is a (if not the) central tenet by which it is defined and evaluated. For example, as Moholy-Nagy states, the “functional justification of a chair is sitting” (Moholy-Nagy 1947, 44). Simply stated, a chair provides the opportunity to sit and supports the action of sitting and the activity of being seated. The

16 There is extensive literature on social science research in corporate settings. For overviews specifically related to design see Jorge Frascara, ed., Design and the Social Sciences (London: Taylor and Francis, 2002) and Brenda Laurel, ed., Design Research: Methods and Perspectives (Cambridge, Mass: MIT Press, 2003). Perhaps the most well-know anthropologist to contribute to the design of technical systems is Lucy Suchman. Her work and her reflections on her work has been and continues to be influential. See Lucy Suchman Plans and Situated Actions: The Problem of Human-Machine Communication (Cambridge: Cambridge Univ. Press, 1987).
functionality of the product is the extent to which the design of the product allows for the function to be achieved.

The functional qualities of a product include psychological and sociological requirements in addition to physical requirements. To continue with the example of a chair, in addition to being able to support the structure and weight of a person, the chair should also mentally and socially afford sitting. The chair should appear as if a person would be physically and emotionally secure sitting in it and that sitting in it would be a socially appropriate thing to do — and the chair should fulfill on these expectations in use.17 Granted, these functional qualities can change and are often manipulated in the expression of the product.

The work that a product is intended to do, its function, can be ludic as well as practical. A product’s functionality can be equally evaluated on how well it enables reflection and play as well as labor. For example, the function of park benches is to enable people to sit together, to foster communication and community. Similarly, we can consider a product’s functionally on both operational and aesthetic terms. The functionality of a product concerns both how effectively a product allows for its prescribed function to be achieved and also with what sorts of aesthetic qualities it does so. Even such researchers such as Don Norman, who previously championed functionality from a cognitive psychology and human factors approach and disregarded aesthetics, are beginning to acknowledge that it is difficult, if not inaccurate and inappropriate, to separate a product’s usefulness from its lyricism. (Norman 2004) The relation

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17 Now consider for example the electric chair. It is a horrifying image precisely because it is an abomination of all that we consider to be the right and just function of a chair.
of the operational and aesthetic function of a product is intimately related to the
dimension of expression, as noted in the previous example of the work of Rams
and Sottsass.

Finally, the function of a product plays a unique role in the constitution
of the product; it not only describes the product, it often defines the product. The
dimension of function in the product seems to carry a sort of precedence in the
determination of the product. For example, if a product did not allow sitting, it
would not be considered a chair. The chair, as a specific product, is defined by the
fact that that allows sitting. In order for a product to be a chair, it must fulfill this
one quality, first and foremost.

4. Form

A product’s form is not reducible to its shape, volume, or composition, nor is it
the product’s style. *The form of a product is the organization of relationships between the
materials, expression, and function, toward the public. It is the experiential whole of the
product, unified and stable but open to interpretation and change.* Discussions of form,
in particular the making and meaning of form, permeate design discourse. These
discussions overwhelmingly treat form from a materialist perspective, producing
descriptions and evaluations of a product’s sensual qualities, particularly a
product’s visual appearance. But as design historian Clive Dilnot states “The
concept of form is so basic to design and so denuded in meaning in the formalist
tradition that designers and design historians have not realized the full
implication or importance of the concept.” (1989, 248)

Two sources to more provide a basis for this discussion of form: Aristotle’s
*Poetics* and John Dewey’s *Art as Experience*. In the *Poetics* Aristotle defines form as
the “object of imitation.” (Telford 1961, 1 and 4-5) According to Aristotle the specific form of tragedy is “worthy and complete action having magnitude” (81). What is imitated is not a staid object but a desired state of being. Dewey also treats the theme of imitation in *Art as Experience.* (1972) As Dewey notes, calling a thing as an imitation is not derogatory: “For the doctrine [of imitation] did not signify that art was a literal copying of objects, but that it reflected the emotions and ideas that are the chief institutions of social life.” (7) Imitation is what connects art, or the product, to life. It is through imitation that products communicate values in their attempt to embody social and cultural significance.

In *Art as Experience* Dewey defines form as “common patterns” among experiences. (43) Form is neither pre-determined nor static, even in plastic objects. The form of a product emerges through the ordering of relations and provides unity to otherwise disparate elements. The extent to which the form achieves unity is the basis on which the form should be evaluated.

Such notions of form are not limited to Dewey and Aristotle. They are echoed in the work of many theorists and practitioners of the arts in the Twentieth century and forward. Because of the tangled history of art and design and the greater maturity of discourse, theory, and criticism from within and of the arts, theories from the arts can be insightful for understanding design. As the arts began to include found objects and ready-mades, performance, installation, and even social action, the nature of form, its manifestation and its making, was reconsidered. For example in *The Contingent Object of Contemporary Art* Martha Buskirk explores how new art works undermine the qualities of originality and permanence that previously characterized and determined the value of the fine arts. (2003) Such works of art could be documented and described, but not
necessarily exhibited or collected in a traditional sense. The form of a work of art became an experience or a record of the experience, rather than an artifact.

Corollaries to the changing nature of form in the “fine arts” exist within products. Much of this has had to do with what has erroneously been considered the de-materialization of products, their miniaturization or the miniaturization of their parts or their manifestation in less-physical forms such as software, services or organization. In *Hertzian Tales*, designer Anthony Dunne explores the form of electricity in contemporary consumer products and suggests a reconsideration of form in terms of “the aesthetics of use.” (2000) In products such as services or environments, the form of the product is no longer a single thing, but rather is considered as a system of artifacts and activities, which only taken in their allied totality constitute the form of the product. To achieve success as a form, that is unity in the organization, each of these elements must contain within them a reflection of the whole. As an organization of materials, expression and function, the proper consideration of form is one of relations and unity; what relations are present in the product and how are they unified.

**THE PUBLIC MAKING OF PRODUCTS**

The dimensions of a product describe a subjective view of the product from the inside looking out — from the perspective of a practice of design concerned with how products establish and maintain relationships among people and between people and the environment. The dimensions identify the facets of any product that must be present in order for the product to manifest. Although the dimensions are mutually constituted, this constitution may not be symmetrical.
That is to say, although they depend on one another and are all necessary for the manifestation of a product, they may not be weighted the same.

The practice of design requires an active public to achieve the ends of establishing and maintaining relationships with the product. An important aspect of the product, particularly from the perspective of the practice of design, is that the product does not exist in isolation. Not only is the product multidimensional, it is situated in a social and cultural milieu. The product is not simply interpreted by people in the social and cultural milieu; it is in a very real sense “made” by them. Consider the now common camera. It was not enough for George Eastman to invent an affordable camera and an accessible form of film — amateur photography had to be cultivated and mature for the product to assume a place in society. (Jenkins 1975)

The consideration of the “making” of a product by the public is different from the dimension of expression internal to the product. The dimension of expression internal to the product addresses those people who are part of the relatively formalized and institutionalized (i.e., professionalized) design process. Even in considering methods such as participatory design, the public is being “brought into” the design process. The activities and actions that make up the dimension of expression internal to the product take place during the development of the product, up to the point of its manufacture or “release.” The making of the product by the public considered here occurs before and after that process, as the product is first imagined in popular culture and once it enters into the market.

The attention given to “users” is one way the public has been taken into account in contemporary discussions of products. One of the most obvious
examples is the increased prominence of human-centered design, which has
developed a host of research and development techniques to incorporate
prospective and actual users of products into the development and evaluation of
products. Users have also been the subject of much consideration outside of
product development. In the introduction to *How Users Matter: The Co-Construction
of Users and Technology* sociologists Nelly Oudshoorn and Trevor Pinch identify
and outline a wide range of approaches to users (including social construction,
feminist, semiotic, actor-network, and media and cultural studies) from an
equally wide range of disciplines (anthropology, sociology, history, political
science, and so on). (2003) In contrast to human-centered design, the
approaches discussed by Oudshoorn and Pinch tend to come from an analytic
perspective outside of the practice of design. No one of these approaches are
“right” or the “best”; they provide different insights to different problems.

Rather than adopting and championing one theory or methodology of
analyzing the user, I want to briefly consider how the public (not all of whom
can be categorized as users) are necessary, though not always aware or willing,
participants in the making of the product. In one sense, the product is made by
the public because the product arises from the imaginations, desires, and beliefs
of the public. This idea is not foreign to design and is captured in George
Nelson’s statement: “No matter what happens, the object in its transformations,
disappearances, shrinkages, and proliferations will continue to reveal through its
design the real concerns, priorities, values, of the society which permits it to
come into being.” (1979, 149)

Unlike natural occurrences, there is human control in the making of
products. Arguably, this control may not be equally distributed across society. In
clandestine or coercive endeavors, the manipulation of the public into the acceptance of the product (or to an idea through the product, such as in the case of propaganda) is explicit. In marketing, advertising, and the “cultural industries” the manipulation is more ambiguous. However, even in the most ethically corrupt instances, unless we are willing to adopt a wholly deterministic position, there is still the capacity of a society to influence the making of products by accepting or rejecting, permitting, or denying them.

Beyond exerting influence, most often through consumption or the lack thereof, for some the product arises from the public in a more expressive manner in which the product is a manifestation of the desires and beliefs of the public. This too is captured in Nelson’s quote when he speaks of the product revealing societal “concerns, priorities, and values.” (Nelson 1979). The making of products by the public also occurs in fantasy, in the imaginations of the public. The phrase “cultural imaginaries” was coined by anthropologist George Marcus to denote how our ideas about, or imaginations of, the world or how we would like the world to be, shape our experience of the world (1995, 4). Cultural imaginaries are socially and historically situated and specific. These imaginaries shape our ideas about what future products might or should exist. On a superficial level, these expressed desires and beliefs and imaginaries are often rallied to project futures for products. But on a deeper level they reflect the values of a culture. They produce currents of the present that influence the course of the future and are difficult to navigate against. The notion of a society permitting a product to come into being and cultural imaginaries harkens back to Latour’s statement in

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18 Theodore Adorno’s critical work on the culture industries and their role in the propagation of a capitalist agenda at the expense of the public provides an important perspective on the problematic place of design in contemporary society. See, Theodore Adorno, *The Culture Industry* (New York: Routledge, 1991).
Chapter 1 on “matters of concern”, that before a product is actually produced, it is being publicly, that is socially and culturally, governed. (2004)

The idea that a public is necessary to complete the product has also been treated by John Dewey. Specifically, it is in Dewey’s discussion of the experience of art that the idea, and significance, of the public’s making of the product is most thoroughly and eloquently stated. In *Art as Experience* Dewey describes the experience of art as one of “reconstructive doing” in which the viewer of a work of art re-makes the work in her mind. (1972, 53) This reconstructive doing is necessary for the work of art to be complete.

For to perceive, a beholder must create his own experience. And this creation must include relations comparable to those which the original producer underwent. They are not the same in any literal sense. But with the perceiver, as with the artist, there must be an ordering of the elements of the whole that is in form, although not in details, the same as the process of organization the creator of the work consciously experienced (54)

For Dewey, reconstructive doing is essential to perceiving the work of art. Perception is differentiated from recognition. Perception seeks an end in itself, whereas recognition is perception “arrested at the point where it will serve some other purpose, as we recognize a man on the street in order to greet or to avoid him, not to see him for the sake of seeing what is there.” (52) Through perception and reconstructive doing, not only is the work of art made complete, but also “consciousness becomes fresh and alive.” (53)

Furthermore, for Dewey, the work of art is not contained in the painting on the wall, the work of art is the relationship made through reconstructive doing between the painting and the viewer. In a similar way to Dewey’s treatment of art, the public re-makes the product through use, and perhaps more profoundly we might assert that the product is not the instantiation of the
designed thing, but the resulting relationship between the designed thing and the
public. And Dewey’s claim about consciousness is also provocative. It suggests
that we might consider if, and if so how, the making of the product by the public
might affect, even transform the public.

The Dimensions of the Product and The Public

In the activity of reconstructive doing, the public is not without guidance. They
are provided direction by the dimensions of the product. This is the significance of
the dimensions of the product. Not only do the dimensions of a product order the
manifestation of product from the perspective of the practice of design, they also
guide the encounter with the product by the public. It is along the dimensions
that products are brought to serve common purposes and enable, engender and
thwart different experiences. By examining the product as a multi-dimensional
subjective thing, we can identify how the dimensions of the product and their inner
relations shape the possibilities of outer relations among people and between people and the
environment. Prior to using a product, the dimensions of a product are still. But
when the product is put into use, the relationships within and between the
dimensions of the product become activated. These in turn shape the
relationship between the user of the product and the product, as well as between
the user and other people and the environment.

The product, in a sense, presents itself. This presentation may be more or
less assertive. Unfamiliar products, present particular challenges and
opportunities because the public has less knowledge or experience upon which to
base judgments of the products. This is especially true with the products of
emerging technologies which have limited precedence. With unfamiliar products,
how the product is presented plays a crucial role in its integration into the intended milieu. If a product is too different it may be ignored or dismissed. If an unfamiliar product is not different enough, for example, if a virtual telephone agent seems to be human, we may accord to it unrealistic and inappropriate expectations. As the product is presented, the public in turn makes choices about how to respond to this presentation, about how to make use of the product, and through those choices and the subsequent use of the product, the product is made complete.

**Conclusion and The Plan for The Following Chapters**

The framing of the product as multi-dimensional subjective effort, constituted by relations amongst the dimensions of expression, materiality, form, and function, provides an alternate approach to examining products. Specifically, the dimensions allow us to consider how products are brought to serve common purposes and how products enable, engender, and thwart different experiences through the design of the product — i.e., from the perspective of design. The dimensions of the product allow for the elucidation of the design elements and qualities through which the products of contemporary design can be more constructively considered toward the goal of informing and advancing the activities of the practice of design and subsequently the planning, conception, and making of products.

But the dimensions of a product are rarely, if ever, in balance with one another. *This results in different kinds of products.* Each dimension of a product facilitates and encourages different kinds of interactions and associations with the product in different ways, thus promoting different experiences and purposes.
The dimensions of a product may exert or be given/accorded greater or less influence, greater or less authority in the constitution of a product. Products can be described and analyzed, in fact newly categorized, in a manner not bound to subject matter distinctions, but rather by the distributions of significance and influence across the dimensions and the skew of the relationships between them.

In the following chapters I will examine four different kinds of products: the authored product, the embodied product, the idealized product, and the performative product. These kinds of products are not based upon the usual subject matter distinctions. They cannot be adequately considered only as objects of industrial, communication, engineering design, etc. Rather, these kinds of products emerge from variations in the prominence of one dimension or another. They are not the only kinds of product, but because each kind of product gives prominences to a different dimension, they compellingly exemplify the effect of different distributions of significance and influence across the dimensions.

Each of these kinds of products can be considered as a theme in contemporary design. As themes they weave theories external to design together with products and publics in order to open the space of products beyond the standard concerns of design. In doing so, new understandings of the product will emerge and “what is distinctive” of design will be revealed as theories require adjustment to address products and nuances of those theories are revealed and taken up relative to the practice of design.

In addition to producing descriptions, analyses, and critiques, with each kind of product I will draw attention to how it differently configures the agencies of the product: the capacity of a product to appear to be “acting out” and to offer
the potential for action for both the designer and the public. I contend that these agencies are directed by the prominence of one dimension or another: different kinds of products produce and provide different agencies. Each theme then exemplifies both a kind of product and its attendant agency. While this is not an inquiry into the ontological nature of agency itself, discovering and articulating these different agencies will be a concurrent endeavor within the inquiry into these different kinds of products.

As stated in the introduction, in the following chapters I will primarily use robots as examples of these kinds of products. As hyperboles of the contemporary product, robots will bring the qualities and consequences of each kind of product into greater relief. Robots also provide a particularly relevant site of inquiry because, like so many contemporary products, the distinguishing characteristics of robots are often reduced to technological factors. Examining robots relative to the dimensions of expression, materiality, form, and function along with the exemplary themes of authorship, embodiment, ideals, and performativity, thwarts a reduction to technological factors alone.