

Of Marigold Beer: A Reply to Vermaas and Houkes

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ABSTRACT

Vermaas and Houkes advance four desiderata for theories of artifact function, and classify such theories into non-intentionalist reproduction theories on the one hand and intentionalist non-reproduction theories on the other. They argue that non-intentionalist reproduction theories fail to satisfy their fourth desideratum. They maintain that only an intentionalist non-reproduction theory can satisfy all the desiderata, and they offer a version that they believe does satisfy all of them. I reply that intentionalist non-reproduction theories, including their version, fail to satisfy their first desideratum. Thus neither type of function theory satisfies all the desiderata. This suggests that the list of desiderata may well be inconsistent, and that ultimately we may have to decide whether to give up the first desideratum or the fourth one. I recommend giving up the fourth one on the grounds that this choice preserves the phenomenologically salient social aspects of artifact function.

- 1 *Vermaas and Houkes attempt to satisfy their desiderata*
 - 2 *Why this attempt fails*
 - 3 *What is to be done?*
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1 Vermaas and Houkes attempt to satisfy their desiderata

Vermaas and Houkes do a great service to function theory by showing that the application of existing, biologically oriented, function theories to artifacts is not at all as straightforward or easy as function theorists appear to think, considering the little they have had to say about it. Moreover, Vermaas and Houkes have provided a very helpful framework for addressing this thorny issue. But the situation is even more desperate than they are prepared to believe. I shall use their framework to demonstrate this.

Vermaas and Houkes propose four desiderata, based on a descriptive phenomenology of artifact production and use, which they believe any adequate account of artifact function should satisfy:

D1. It must maintain a distinction between *proper* function and *accidental* function.

D2. It must account for *malfunction* in the case of proper functions.

D3. It must account for the relationship between *physical structure* and function.

D4. It must admit ascription of proper function to *novel artifacts*.

In order to evaluate existing and prospective theories in terms of these desiderata, Vermaas and Houkes classify them into two basic categories. There are *non-intentionalist reproduction* theories, which do not require (although they do permit) an appeal to the intentional states of intelligent agents, but do require a history of selection and reproduction in order for function to be established. On the other hand, there are *intentionalist non-reproduction* theories, which require an appeal to intentional states of agents, but do not require any reference to the history of reproduction of an artifact.

With this framework in place, Vermaas and Houkes proceed to argue that although non-intentionalist reproduction theories do satisfy D1, D2, and D3, they cannot satisfy D4, the ascription of proper function to novel artifacts. In the case of such artifacts—a novel prototype can opener, for instance—there is no history of reproduction to establish a proper function, leaving the alleged can opener officially functionless. Thus in principle, no theory which requires an appeal to a history of reproduction can satisfy D4. Theories of this type include Neander's ([1991a, 1991b]) selected-effects theory, Millikan's ([1984, 1993]) theory of direct proper function, and my ([1998]) pluralist theory.¹ But Neander and Millikan both incorporate into their overall theories an intentionalist non-reproduction component that does satisfy D4. The details differ, but the outcome in both cases is that provision is made for the intentions of intelligent agents to suffice for the establishment of proper function. If the designer of the novel can opener intended it to open cans, then that just is its proper function.

Vermaas and Houkes claim that in both cases this intentionalist non-reproduction component continues to satisfy D1 and D2, but that both now fail to satisfy D3, the physical structure desideratum, because reference to a history of selection and reproduction has been dropped. This history built in the relationship between physical structure and function, because only physical structures that could in fact perform the function in question

¹ My pluralist theory actually has a non-intentionalist reproduction component based on Millikan's direct proper function, and a non-intentionalist non-reproduction component, based on Cummins's ([1975]) function theory. The non-reproduction component does allow me to ascribe *accidental* functions to novel artifacts that in fact work as desired. But, as Vermaas and Houkes correctly say, this still does not satisfy D4—the functions ascribed are not proper functions, and no functions at all can be ascribed to novel artifacts that do not work as desired. Vermaas and Houkes also discuss Davies's ([2001]) system-function theory. But Davies ([2001], pp. 7–8) explicitly says he does not intend his theory to apply to artifacts, so its failure to satisfy the desiderata adds little to the argument.

got selected and reproduced. But if artifact function depends only on what the designer wants, hopes, or expects the artifact to do, there is no explicit provision for any justification that its physical structure is such as to make its actually performing that function likely, or even possible. In order to remedy this defect, Vermaas and Houkes suggest the addition of a clause requiring an appeal to the technical knowledge the designer has and exercises in the design process. This does not guarantee that the artifact will perform as desired, of course, but it does justify the expectation that it will. And this is just what you want, for if the designer's knowledge guaranteed the desired performance, no artifact could ever malfunction, thus violating D2. In short, Vermaas and Houkes claim to have preserved the satisfaction of D1, D2, and D4, already incorporated in the intentionalist non-reproduction components of Neander's and Millikan's theories, while in addition providing for the satisfaction of D3.

2 Why this attempt fails

But have Vermaas and Houkes really satisfied D1, the desideratum that the distinction between proper function and accidental function be maintained? Let us start by reminding ourselves how it is that non-intentionalist reproduction theories satisfy D1. The proper function of something is what it is *supposed* to do—a function that is 'standardly ascribed' to it, as Vermaas and Houkes put it. Accidental functions are what something in fact does on specific occasions even though this is not its standard purpose. For example, the proper biological function of the human hand is grasping and manipulating. But some people talk with their hands. From the biological point of view, this is an accidental function. Similarly, the proper function of beer is as a beverage for humans. But some people pour it into saucers and set it out in the garden as bait for slugs.

Non-intentionalist reproduction theories aim in the first instance to explain how proper functions are established. In general, the idea is that if the ancestors of a thing engaged in a particular performance, and if so doing resulted in their selection and reproduction, that performance is a proper function of their descendants. Any other performances of these descendants are accidental functions. Pluralist theories such as the one I espouse go on to include an explicit analysis of accidental functions, usually along the lines of Cummins's ([1975]) system function theory.² In general, then, *non-intentionalist* theories of function maintain the distinction between proper function and accidental function by reference to the distinction between the embedding of a

² Although she is best known for her theory of proper function, Ruth Millikan ([1989, 1999]) in fact espouses a pluralist theory of this same type as well.

performance in a history of selection and reproduction, and the embedding of a performance in a currently operating system. But *intentionalist* theories of function eschew reference to either the ancestry or the system context of an artifact, and rest everything on the intentional states of agents.

Vermaas and Houkes do not explicitly say how their version of an intentionalist theory is supposed to maintain the distinction between proper and accidental function, but they do say very briefly how they think the intentionalist components of Neander's and Millikan's theories do this. Presumably their own version is supposed to satisfy this desideratum along similar lines. On Neander's theory, the proper function of an artifact is the purpose for which an agent designed, made, put in place, or retained it ([1991b], p. 462). Vermaas and Houkes then say that the accidental functions of an artifact are 'all other purposes for which it can be used' ([2003], p. 281). The most obvious question here is: what other purposes could we possibly have for artifacts, other than those for which we design, make, put in place, or retain them? Neander herself pretty clearly intends this list to cover all the uses of artifacts, without regard for the distinction between proper and accidental function. But more importantly, these categories of purposes are ambiguous with regard to the proper-accidental distinction. I may put in place or retain an artifact for *either* its proper function *or* an accidental function. For example, I may put in place and retain a matchbook next to the stove for the purpose of lighting the burners, or I may put it in place and retain it under the leg of my kitchen table for the purpose of keeping the table from wobbling. Making is similarly ambiguous. I may brew a batch of beer to drink, or I may brew a batch specifically for use as slug bait. Even designing may be ambiguous between proper function and accidental function. Suppose, after many long nights in the garden observing the activities of the slugs, I realize that a lot of them prefer munching on marigolds to drinking beer. I then have the happy idea of designing a beer that tastes like marigolds with the purpose of improving its performance as slug bait. Thus the purposes for which we design, make, put in place, or retain artifacts do not mark proper functions, as opposed to accidental functions, and Neander's account therefore does *not* satisfy D1, contrary to what Vermaas and Houkes believe.

But the case of design here is arguably less clear. An intentionalist might try to make the case that the proper function of the marigold beer is slug bait, not beverage. Or if it turned out that people like marigold beer too, that marigold beer, unlike ordinary beers, has two proper functions. The intuition here is that the intentions of designers, at least, should mark proper functions, since what the designer intends something to do—the designer's purpose in designing it—just is the purpose of the artifact as well. Millikan ([1999]) holds this more restricted view. As Vermaas and Houkes put it, Millikan's theory satisfies D1 because 'the designer's intentions serve to distinguish proper

and accidental functions' ([2003], p. 282).³ If and when the intentions of users deviate from those of the designer, they mark accidental functions only. So ordinary beer has the proper function of a beverage. If a gardener uses it for the purpose of baiting slugs, that is an accidental function. But if the gardener designs a special marigold beer to appeal better to slugs, it has the proper function of slug bait. If a user now takes the marigold beer and uses it as a hair rinse to add body and volume to her coiffure, that is an accidental function. Thus Millikan's theory of derived proper function satisfies D1 by making the distinction between proper functions and accidental functions depend on a distinction between designers' intentions and users' intentions.

But there is no account in Millikan's theory of any difference between designers' and users' intentions that would justify this distinction, along the lines of the account in non-intentionalist theories of the difference between a selection history and a currently operating system. And, as I shall argue, it is difficult to see what account Millikan could possibly give. But first let us review the relevant details of her theory of derived proper function. In its application to artifact function, it starts with the claim that the intentional states of agents have proper functions. In particular, desires have the proper function of getting themselves fulfilled. If a desire gets itself fulfilled in virtue of the production (as opposed to the use) of an artifact, that artifact derives the relevant proper function from the producer's desires and intentions. For example, if my desire is to open cans, I may fulfill it by designing a novel device to do the job, or by using an artifact whose proper function is not opening cans—a heavy knife or a hacksaw, say. In the first case, the novel device derives the proper function of opening cans from my intentional states. In the second case, the artifact used does not derive the proper function of opening cans, even though this is what the user desires and intends, and even though it may work better than the novel device.⁴

It is important to note that the alleged difference between these two cases rests entirely on Millikan's definitional stipulation that proper functions may be derived only through production relations, and not through use relations. It is this stipulation, and this stipulation alone, that maintains the distinction between proper functions and accidental functions and thus allows Millikan to satisfy D1. For if proper functions could be derived through use relations, *all* artifact functions would be proper functions. Millikan herself did not always

³ Millikan herself says that artifacts derive proper functions only from the intentions of their *makers*, not their users ([1999], p. 205). But since the literal maker of an artifact may be a different individual from the designer, and may be uninformed or mistaken about the designer's intentions, her point here must be that it is designer's intentions, specifically, that establish the proper function of an artifact.

⁴ I am ignoring here two intermediate cases which are not important for the issue at hand—the production of a can opener of standard design, and the use of an already existing can opener of standard design.

recognize the importance of this stipulation, and at one point ([1993], p. 49) suggested an expansion of her notion of derived proper function to include use relations as well as production relations. After I pointed out ([1998], p. 232 ff.) that this move erased the distinction between proper functions and accidental functions, Millikan ([1999]) retracted this suggestion and reaffirmed the original stipulation. But she still did not cite any phenomenological difference between production and use in general, or between the intentional states of designers and the intentional states of users in particular, which might remove the *ad hoc* status of this stipulation.

Vermaas and Houkes are careful to ground their account of artifact function in phenomenological description of artifact production and use, for which I heartily commend them. So let us consider what phenomenological grounding there might be for the distinction between designers' intentions and users' intentions.

One possibility is that the intentions of designers might have some special cognitive structure or characteristic that sets them apart from the intentions of users. An example of such a view is perhaps suggested by Randall Dipert ([1993]) in his action-theoretic account of artifacts. He focuses on the cognitive processes employed by designers of artifacts through which, he holds, the artifact obtains its function as well as its physical and structural features. Specifically, there is a 'deliberative history' in the course of which the creating agent contemplates the overall function of the artifact as her goal, considers alternative means for achieving it, and forms a complex set of intentions in the form of a construction plan. When executed, this plan imposes artifactual features on the resulting object, chief among them the artifact's purpose or function ([1993], pp. 150–3).

The problem is that accidental functions of existing artifacts are often the outcome of exactly the same sort of planful deliberation. You want to pry a large rock out of your lawn; you don't have a crowbar; you consider available artifacts like steel fence posts and wooden rake handles until you find the one that best suits your purposes. You may even modify it to better suit your purposes—pounding the end of the steel fence post flat with a sledgehammer so as to get it under the rock more easily, for instance. But if designers' intentions in the form of a deliberative history are sufficient for establishing proper function, and if users must employ relevantly similar deliberations in order to use artifacts for other functions, then why are those other functions not proper functions as well? It seems that cognitive characteristics cannot be the criterion that distinguishes designers' intentions from users' intentions, then.

Another possibility is that designers are creative in a way that users are not. Designing and making bring something new into the world, whereas use merely operates with what is already there. But here we encounter an

analogous problem. On the one hand, use is often very creative. It endows existing artifacts with new functions by using them in novel ways. Consider the recent and all too effective use of airliners as incendiary bombs, for instance. And in some cases an accidental function instituted in this way by users ultimately becomes a new proper function by the non-intentional reproduction route. For example, the original proper function of aspirin was to lower fever and alleviate pain, but it is now so commonly prescribed to prevent blood clots in cardiac patients as well that it is most reasonably regarded as having acquired the additional proper function of preventing heart attacks. On the other hand, design is often not very creative, especially in contexts where what is being designed and produced is a variation on a standard type. Much design work only changes the form of an artifact with minimal effect on function. Consider the continual redesign of soft drink bottles, for instance. And much design work is oriented towards the enhancement of an existing function rather than the institution of a new one. Consider the streamlining of automobiles, for example. In short, use can be as creative as design, and design can be as pedestrian as use. So creativity cannot be the criterion that distinguishes design from use either.

A third possibility is that design involves intentional modification of materials in forming the artifact for a proper function, whereas use for accidental functions does not. But artifacts are often modified to one extent or another in order to perform accidental functions. For example, roll up a newspaper, and you have a fly swatter; cut the bottom off a two-liter soft drink bottle, and you have a cloche for sheltering young plants; cut old woolen clothes into strips, braid the strips and sew them together in a coil, and you have a chair mat. So the fact of intentional modification of materials does not seem to separate design from use. Moreover, there are cases one is strongly tempted to characterize as design that involve little or no modification. This is because prototypes can be produced by utilizing existing artifacts as components. For instance, Les Paul is said to have put together his first electric guitar by using an acoustic guitar, a telephone mouthpiece, and a radio as an amplifier (Bacon and Day [1993], p. 8). This case does involve some modification in the sense that the telephone mouthpiece had to be attached to the guitar and wired into the radio. But the modifications were very minor. The basic form and function of the guitar, the mouthpiece and the radio were not changed, just connected up in a novel way. So neither the fact of intentional modification nor the extent of the modification provides a clear criterion for distinguishing cases of design for a proper function from cases of use for an accidental function.

One last possibility is that the actual content of the agent's intentions specifies whether the projected function is a proper function or an accidental function. Thus the intention of a designer is that the artifact being designed should have such and such a *proper* function, specifically; whereas the

intention of a user using an artifact for a purpose that is not its proper purpose is that it should have such and such an *accidental* function, specifically. But although the distinction between proper and accidental functions is phenomenologically well grounded, and philosophically significant, it is not part of the conceptual framework of the average designer or user. Indeed, judging by how frequently I have to explain to an average person in the street inquiring about my work what I mean by ‘the function of an artifact’, it is not clear to me that even the concepts ‘function’ or ‘artifact’ are well delineated within the folk framework. Moreover, users can be mistaken about whether what they are using an artifact for is what it is supposed to be used for or not. This is a permanent possibility in principle, because users may be ignorant of, or misinformed about, the intentions of the designer. So the content of users’ intentions does not reliably and consistently mark the distinction between proper and accidental functions of artifacts, and the content of designers’ intentions would only mark the distinction reliably with regard to artifacts they themselves had designed.

The intentions of users do not appear to differ from the intentions of designers in any relevant way, then. So if proper functions are derivable from the intentions of designers, it seems they must be derivable from the intentions of users as well. In other words, if the purpose of the designer establishes the proper function of the artifact designed, then the purpose of the user must equally establish the proper function of the artifact used. But any intentionalist non-reproduction theory conceding this would have to view all artifact functions as proper functions, and would thus fail to satisfy D1. Moreover, unless and until function theorists of the intentionalist persuasion can provide some theoretically relevant way of differentiating designers’ intentions from users’ intentions, they cannot avoid this consequence. I have shown that existing intentionalist non-reproduction theories are in this unhappy situation. And I have argued that none of the more obvious routes to a solution is open. In short, intentionalist non-reproduction theories do not satisfy D1, and I do not myself see any way they could.

3 What is to be done?

Vermaas and Houkes have advanced four plausible desiderata for theories of artifact function. But non-intentionalist theories do not satisfy D4 and intentionalist theories do not satisfy D1. Moreover, D1 and D4 are connected in such a way that satisfying one of them makes it difficult—perhaps impossible—to satisfy the other. On the one hand, the most obvious way to satisfy D4 is to make the intentions of individual designers sufficient for establishing the proper functions of novel artifacts. But this makes it difficult

to satisfy D1, because if the intentions of designers are sufficient, the intentions of users must be as well, and the distinction between proper function and accidental function collapses. On the other hand, the most obvious way to satisfy D1 is to rely on the distinction between a reproduction history and an embedding system to underwrite the distinction between proper and accidental functions. But this makes it difficult to satisfy D4, because novel artifacts have no history of reproduction and embedding systems only yield accidental functions, not proper functions. In short, it appears that it may be impossible in principle to satisfy D1 and D4 simultaneously. If this turns out to be the case, the set of desiderata proposed by Vermaas and Houkes would be shown to be inconsistent. And if they are inconsistent, we will have to decide whether to give up D1 or D4.

What is to be done? It might seem premature to address this question, since it is still possible in principle that a solution reconciling D1 and D4 may be found. But I would like to consider this question briefly, because I think doing so sheds light on the roots of the tension between D1 and D4.

I strongly recommend retaining D1 and giving up D4. The distinction between proper function and accidental function is central to the phenomenology of artifact production and use in ways that the ascription of proper function to novel artifacts is not. The central reason for this is that D4 commits us to a thoroughly individualist theory of function in virtue of its insistence that the intentional states of individual agents are sufficient by themselves for the establishment of the proper function of artifacts.⁵ But if a descriptive phenomenology of artifacts assures us of anything, it is that artifacts are cultural products and that artifact production and use—and thus artifact function—are essentially bound up with social processes and structures. And D1 embodies a recognition and partial analysis of some of the most salient social features of artifact function. Thus the tension between D1 and D4 is not due merely to the difference between an intentionalist and a non-intentionalist approach to artifact function. This surface difference is rooted in the underlying difference between an individualist approach and a social approach to artifact function.

Vermaas and Houkes effectively conceal this underlying issue because the phenomenological descriptions with which they begin their paper do not include examples that clearly exhibit the social nature of artifacts. This is no doubt unintentional; as they say themselves, they are aiming at simplicity rather than completeness. But in this particular respect the incompleteness of their phenomenological description is problematic and must be remedied. Rather than giving more examples of the type Vermaas and Houkes offer,

⁵ At best a small group of agents might be involved in the case of design teams, for example.

though, I will discuss briefly in more general terms two salient features of artifacts that their brief phenomenology passes over in silence.

First, there is the rather obvious fact that artifacts are reproduced. Minimally, the reproduction of artifacts is social because it typically involves multiple agents organized into social groups in which individuals take different roles. These groups are themselves often reproduced over large geographical areas or long stretches of time, and they exhibit culturally and historically specific features, as do the artifacts produced. Thus it is the reproduction process that accomplishes and maintains the standardization of artifact form, in accordance with local practices and styles. And this standardization of form in turn underwrites the standardization of function that is central to the whole notion of proper function, as opposed to accidental function. As Vermaas and Houkes themselves say, proper functions are functions that are *standardly* ascribed, i.e., functions that are socially recognized and sanctioned in various ways. But if we retain D4 and give up D1, the standardization of both form and function of artifacts is entirely dependent on the intentions of the individual designer. The designer sets the standards—the reproduction process merely confirms them. It has no essential bearing on their establishment. And this, it seems to me, is to underrate both the salience of reproduction as a phenomenological feature of our dealings with artifacts, and its significance with regard to both form and function. On the other hand, if we retain D1 and give up D4, the reproduction process is restored to its proper phenomenological salience and theoretical significance. The intentions of individual designers simply do not embody the knowledge or the control over ensuing social processes of reproduction for use that D4 requires us to assume. But without D4, we must look elsewhere for the source of the proper functions of artifacts. And the obvious place to look is the social process of reproduction. Design is still important as one phase of this process, but its importance is not blown out of proportion, as it would be if we retained D4 instead of D1.

A second crucial aspect of the social nature of artifacts has to do with their use. Minimally, artifact use is social because many artifacts are designed for use by more than one person, either simultaneously or serially. Artifacts also are central to many typical social situations, such as the family dinner or the movie date. But more fundamentally, artifacts are not used in isolation in these situations. As Heidegger ([1962], pp. 97 ff.) noted, an artifact is in the first instance a member of a suite of other, functionally related artifacts, e.g., knives, forks, spoons, napkins, glasses, and so on. These suites of artifacts are culturally and situationally specific. You would not expect the same tableware in Hanoi as in Helsinki; nor would you expect the same tableware at a family dinner as at a black tie affair in an upscale restaurant. These organized artifact contexts correspond to organized patterns of social practices involving the use of these artifacts. Thus at a family dinner you would happily use the same fork

for salad as for steak, whereas at the black tie affair you would use different forks or risk criticism. The individualist slant of D4 orients us away from the consideration of such patterns of artifacts and practices involved in their use. But D1 orients us towards them, because they are important for understanding the distinction between proper function and accidental function, as well as for giving an account of accidental function in terms of substitutions into existing systems of artifacts and correlated practices. Thus retaining D1 again does justice to the social nature of artifact function, whereas retaining D4 only makes this more difficult.

Choosing to give up D1 and retain D4 would constitute a commitment to an intentionalist, individualist theory of artifact function. Correspondingly, choosing to retain D1 and give up D4 would constitute a commitment to a non-intentionalist, social theory. If push comes to shove, this latter commitment is what I recommend because it sorts much better with a more complete and adequate descriptive phenomenology of artifact production and use. I would like to conclude by pointing out that individual intentional states do have a role to play in a non-intentionalist theory, because they are necessary for the *implementation* of histories of reproduction and social systems. And it would certainly be nice to have a better understanding of the implementing roles which individuals' intentional states play in this respect. But regarding individuals' intentional states *collectively* as a *necessary* condition for the establishment of artifact function in this way is quite a different matter from regarding the intentional states of *individual* agents as a *sufficient* condition, as the intentionalist theory of Vermaas and Houkes does.

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