Available online at www.sciencedirect.com
SCIENCE DIRECT®
Stud. Hist. Phil. Sci. 37 (2006) 23–36
Studies in History and Philosophy of Science
www.elsevier.com/locate/shpsa

Function and use of technical artefacts: social conditions of function ascription

Marcel Scheele

Department of Philosophy, Delft University of Technology, Jaffalaan 5, NL-2628 BX Delft, The Netherlands

Abstract

It is argued that we cannot understand the notion of proper functions of artefacts independently of social notions. Functions of artefacts are related to social facts via the use of artefacts. The arguments in this article can be used to improve existing function theories that look to the causal history of artefacts to determine the function. A view that takes the intentions of designers into account to determine the proper function is both natural and often correct, but it is shown that there are exceptions to this. Taking a social constitutive element into account may amend these backwards looking theories. An improved theory may either have a disjunctive form—either the history or collective intentions determine the proper function—or, as is suggested in the article, be in the form of an encompassing account that views the designers' intentions as social, in so far as they are accepted by the users. Designers have authority, which is a social fact. The views argued for here are applied to two existing theories of artefact functions, a causal historic approach and an action theoretic approach.

Keywords: Function; Artefact; Evaluative judgement; Action; Collective intentionality

1. Introduction

Two people are climbing a vertical mountain face. One of them leads the climb and cannot be protected from above. He carries a safety rope with him, though, which is led through several anchors in the rock down to his climbing partner. The latter holds the rope with the aid of a belaying device that applies friction to the rope to help arrest a fall. This

E-mail address: marcel@mscheele.nl (M. Scheele).

0039-3681/$ - see front matter
doi:10.1016/j.shpsa.2005.12.004

belaying device is called a figure eight. At some point of his climb this fall indeed occurs. The climber falls some distance before the rope pulls tight, because he is only protected from below. The energy of the fall is dissipated through the system and pulls at the figure eight, which is tugged upward. This time the device is blocked in an awkward position, however, and it works as a lever against the karabiner by which it is attached to his climbing partner. The system breaks and the climber falls down. But he is lucky. He only breaks his legs.

Later, a discussion ensues in the climbing community. Some argue that the climber should not have been protected by such a device. They claim that the figure eight is not a protection device, because it is only for abseiling; this is what happens when it is used wrongly. Others reply and say that accidents can happen with any belaying device and this device is no exception. This type of accident is so rare that there is little reason to deny the figure eight this function. The discussion, which may be seen as a discussion about the proper function of the device, goes back and forth. Sometimes the climbing partner is blamed, sometimes the manufacturer of the failed system. This discussion may even be continued in court to get a formal decision on liability; the function of the device used then will be an important argument in the case.

Agents use artefacts, such as belaying devices, as a means to further their goals. Use of artefacts is normally couched in a social context. This is the case in several ways. The most obvious way is when several people together use a single artefact; we may call this collective use. This is the case for the use of public transport. It is also the case when an individual uses an artefact in a certain way, this is not independent of a social context. This might be formulated in terms of the rules of use: many of these are social rules. Take the use of private transport: single agents use vehicles, but their use is constrained by many social rules.

Artefacts are said to have a *function*, which is that *which the artefact is for*. Not anything that an artefact *can* be used for is regarded as *the* function of an artefact, though. Since use is embedded in a social context it is plausible to investigate how the social context relates to this aspect of artefact functions and artefact use. Function theories of artefacts have not addressed this aspect before. The question of this article is thus whether we can understand the functions of artefacts independently of this social context. Is the social context a context of *use* that is as it were external to the functional artefact itself? Or is the social context *also* relevant to the function ascriptions?

A conceptual analysis of the notion of function with respect to this social context is needed to answer this question, but the interest of this analysis goes further than this. The analysis presented in this article should also facilitate certain evaluative judgements concerning artefact use. By 'facilitating' I mean *understanding* these judgements, *explaining* them, and also *justifying* them. The analysis thus should provide an insight into the *type* of arguments that may be relevant for evaluations of artefact use; in this article especially with an eye towards the social aspects or constraints of use.

With regard to the example that I started with, this means that we can assess some of the arguments of that discussion, namely those that have to do with the function of the device that was used. The two main possibilities concerning such failed use are that we may blame the user, because he should never have used the artefact in that particular way, because that is not what it *is for*. It may also be the case that he used the object properly, but that it *malfunctioned*. In that case the responsibility would lie with the manufacturer or designer. Evaluations such as this should benefit from my analysis.

The structure of the article is as follows. I start out with a discussion about the relation between function and use, as it is relevant for this topic. The notion of function helps determine an objective standard for proper use of an artefact (Section 2). Then I argue, using two examples, that we cannot give a function analysis independent of aspects of the social context. A correct function ascription should involve social facts as a necessary condition (Section 3). Finally, I discuss how this condition can improve existing theories of artefact functions (Section 4).

2. Proper use and proper function

In the introduction the idea was mentioned that artefacts have functions and that artefacts may be used properly or improperly. The terminology that will be used here to analyse these ideas is as follows. In the first place an agent may use an artefact in accordance to its *proper function*, that is, *what the artefact is meant for*.[1] This type of use is *proper use*. The proper use of an automobile is to transport persons; this use is in accordance with the proper function of an automobile. Artefacts may have more than one proper function.

Using an artefact in accordance to its proper function is not the only way to use it effectively. Any use that the artefact physically allows (in a certain environment) can be utilised by agents, this can be called *accidental* or secondary use. This is use that is in accordance with a system function of the artefact.[2] On this terminology any proper use of a working artefact is use that is also in accordance with a system function. The difference lies in artefact malfunctioning. A car that has broken down is still a transport vehicle, but at that moment 'transporting' is not a system function of the car. A standard example of accidental use of a screwdriver is its use to open paint cans. A screwdriver allows this accidental use—we may also call it rational or effective use—and in that sense it is a system function of the screwdriver, but it is not what screwdrivers primarily *are for*; it is not a proper function of a screwdriver.

This terminology does not deviate radically from most standard uses in the philosophy of biology, the discipline with the most comprehensive analyses of functions, and it is extended to encompass the point that artefacts are *used* by intentional agents in a way that biological items are not. Although organs may be *useful* for the creature that has them, the creature does not *use* them, therefore the notion of 'function' is extended with a notion of 'use'.

A final terminological point concerns the notion of 'proper' in this article. Proper use is not necessarily beneficial to the user or environment. In this article I disregard moral or other external considerations on the evaluation of use, other than those that concern the function of the artefact. So, for example, in my terminology we may use a

[1] Ruth Millikan introduced the term proper function in Millikan (1984). She uses the notion as a technical term in the analysis of biosemantics. Proper functions of organs are those capacities for which the organs were selected. There is no ethical connection intended with this notion, it is simply *the* function of an object as opposed to other capacities it may happen to have. In this article the meaning of the term is intended to be similar, although the analysis will prove to deviate.

[2] I use the notion of system function similarly to Beth Preston. The idea of system function is captured by using Cummins's analysis of function Cummins (1975). Preston argues, correctly in my view, that system functions and proper functions are not competitors, but are complementary (Preston, 1998).

gun properly to shoot someone with, although this may be said to be socially or morally improper.[3]

The notions of proper and accidental use and proper and system function can be employed to analyse evaluative judgements concerning artefact use, for instance with respect to assigning responsibility for failed use. Sometimes the terms are used in actual discourse; sometimes the judgements can be translated into this terminology. The two central cases relevant for our analysis are, firstly, those where an artefact may be used properly, that is, according to its proper function, and the use fails and/or an accident happens. The fact that the artefact was used properly is reason to suppose that the artefact malfunctioned and that therefore the user is not responsible for this failure—barring cases of neglect of maintenance. The responsibility may be assigned to the artefact or its retailer, manufacturer or designer. Secondly an artefact may be used improperly in the sense that the use is accidental. Such use may be judged rational as long as it works, that is, is effective or most efficient; standard considerations of rationality apply. However, if the actions fail to bring about the desired result or an accident occurs we have every reason to blame the user. The user may have acted irrationally or simply have made a mistake in assigning a system function to the artefact. The discussion in the climbing community that this article began with can be understood in terms of these two possibilities.

Evaluating use is not a matter of *just* looking at the proper function or *just* taking rational considerations into account. The social context is also relevant. This was clear from the point that ethical considerations, beyond the proper function, can be relevant for use. I will argue, though, that if we focus only on the notion of 'function' for a (partial) evaluation, we also cannot dispense with social facts. If social facts are relevant to ascriptions of proper functions then social considerations are relevant for evaluations of proper use in the sense of this article. This would imply that social features cannot be simply regarded as *external* considerations on artefact use, but that they enter into the *internal* considerations—internal in the sense of what the function of the artefact *is*. As such the social features may be relevant for the ascription of proper functions. Whether such internal considerations are necessary is a way to put the question stated in the introduction.

We should be careful, though. If proper use is couched in a social context and we are interested in evaluating use, why ask whether we may analyse proper functions independently of this context? It has indeed been argued in the literature that we should regard functions in general as observer relative properties. Function ascription is grounded in (collective) intentions, because this can take place only within a set of prior assignments of value (Searle, 1995, Ch. 1). Proper functions then are constituted by collective intentions.

There are two reasons to be careful with such a far-reaching claim. In the first place, although the social considerations of artefact use should be stressed, this is not the full story. The aforementioned rational considerations with respect to accidental use of artefacts are also relevant for proper use. These considerations refer, in part, to physical features of artefacts, which are obviously not socially constructed. Social considerations then are at best *necessary*, but not *sufficient* conditions. Although Searle is aware

[3] For a broader scope concerning normative judgements regarding artefacts, cf. Franssen (2006).

of this fact, he places too weak constraints on the physical aspects of artefact functions.[4] In the second place it has been shown in the field of biology that proper functions can be successfully naturalised and thus provide an objective framework of function ascription. Such an objective framework can also be used as a basis for evaluations of artefact use.

The standard view on artefact functions is closely analogous to biological functions. In biology the functions of organs are defined in terms of the evolutionary history of the organ, not in terms of some goal the organ may have. That capacity of an organ, which helped the organism survive, is the proper function, other capacities are secondary, only system functions. Even if the organ does not work well—for example, pumping blood is currently not a system function of a heart—the organ has this proper function, because that is what it was selected for.

In the case of artefact functions the intuition is to look at the *design* history. We can cite the evolutionary biologist Dawkins in a recent lecture: with regard to many things we encounter in daily life it is natural to ask 'What is it meant for? What function did the designer have in mind?' (Dawkins, 2004). So, in the case of artefacts we may 'look backwards' and find a designer who accounts for the teleology of artefacts, a view that disappeared in the nineteenth century from most areas in biology.

Preston has developed this view in detail. She takes a closer parallel to biological functions and views the economic market as a kind of evolutionary playground. The feature that gives success on the consumer market picks out the relevant capacity that determines the proper function. For instance, a vacuum cleaner's capacity to clean is the reason that these objects persist in our society and not their capacity to make a lot of noise. Therefore the former capacity may be said to be the proper function, although the latter capacity may be utilised on occasion (Preston, 1998).

Millikan, one of the main proponents of the causal history or 'etiological' view of proper functions takes a disjunctive view on artefact functions: 'artifacts can acquire proper functions either in Preston's way, that is, "directly," or through the maker's (not the user's) intentions, or in both ways' (Millikan, 1999, p. 205).

Houkes and Vermaas developed an action theoretic view of artefact functions that includes the intentions of the designer as one condition of function ascription: 'the agents d that developed p [i.e. the designers] have intentionally selected x for the capacity to ϕ' (Houkes & Vermaas, 2004, p. 65). This condition indicates a backwards looking view on proper functions as well.

The advantage of these approaches to artefact functions is that we may identify proper functions independently of current subjective or intersubjective intentions and are as such objective views. It is not my *current* personal intention, or our communities' intentions that determine the proper function, but the causal history of the artefact formation accounts for it. This means that we have an objective basis that may be used in assessments of artefact use.

In the next section I argue that there are examples of proper functions of artefacts whose ascriptions should take current social facts into account. Thereafter I will use the developed insights to modify this backwards looking view on functions.

[4] Which is understandable, due to the topic of his book, which is not artefact functions, but social reality in general. Social facts in general are constituted by collective intentions.

3. Social aspects of proper functions

In this section I argue that we cannot refrain from involving social aspects into our ascription of proper functions generally. Two examples show this. The first is an example of a token artefact that originally had a certain proper function, but under the influence of social processes this proper function has changed. The second is an example of an artefact type that can be categorised on the basis of its objective properties, that is, by its physical properties and its causal history. We shall see that this type may be regarded as a union of two artefact types that differ with respect to their proper functions. This difference can be traced to social facts about the users of the artefacts.

Examples of the first kind may be found in medieval churches. Performing religious ceremonies in the confines of the building was their original proper function. These churches were especially suited for that purpose and they were especially designed with an eye towards this function. The most obvious, but non-special, architectural feature is that they were large enough to hold many people, and keep them warm and dry.[5] Other features were special for their proper use. Examples of such architectural features are the form of the church, for example the form of a Latin cross, to remind the faithful of the suffering of their Christ. Often the choir is oriented to the east, to emphasize the direction of the holy country. Another specific architectural feature has to do with the organisation of the building. In many cases the nave of the church, where the congregation stood, was accompanied by two aisles. This whole was often divided in four traverses, by the placement of columns and windows. This created twelve (open) areas, which then were given specific religious themes; the connection with the twelve apostles is obvious. There are many more architectural features of churches that were meant to facilitate the performance of religious ceremonies and I refer the reader to the literature on this topic.[6] Much more can be said about church building, but the point of this story is that with respect to the proper function of a church the design and building of the church was (and is) not just directed at providing a warm and dry area to meet; there are many other features that are intended to enhance the religious service.

For all kinds of reasons, involving the process of secularisation in Western Europe, many of these old churches are no longer used for their original purpose. An example of this is the Pieterskerk[7] in Leiden, The Netherlands. This is a gothic church that got

[5] The non-speciality of this feature is reflected in the fact that such churches were occasionally used for other purposes than contained in their proper function, such as providing market space on wet days. This use was not proper, but accidental use.

[6] The easiest entrance into this matter is via theological encyclopaedias, such as the *Catholic encyclopaedia* (Herbermann et al., 1914). The (Dutch) dissertation, *Church architecture after 2000* is also interesting (Jonge, 2002). A recent publication of the National Conference of Catholic Bishops in the USA states the following: 'The church is the proper place for the liturgical prayer of the parish community, especially the celebration of the Eucharist on Sunday.... Whenever communities have built houses for worship, the design of the building has been of critical importance. Churches are never "simply gathering spaces but signify and make visible the Church living in [a particular] place, the dwelling of God" among us, now "reconciled and united in Christ"' (Commission of the Liturgy, 2000, §17).

[7] St. Peter's Church.

its current form in the mid fifteenth century AD. Throughout its history the church had many accidental uses, alongside its religious proper function. However, in due course, the church stopped being used for religious ceremonies. This process culminated in the acquisition of the church by a private foundation in 1975. This foundation lets the building on a quasi-commercial basis. This development has led, I submit, to *a change in the proper function* of the church. Now the proper use of the Pieterskerk is any use that is accepted on a contractual base by the owner. Its proper function is to hold semi-public events in it; it is used for concerts, conferences and even dinner parties.[8] A social process of secularisation, culminating in the buying contract of a private organisation has changed the proper function of this particular church.

Is this proposal more than stipulative? If I *define* proper functions in terms of social features, then the view expressed here is true, but trivially so. Up to a certain point I plead guilty of this: I simply stipulate that the process described here is a change of proper function and thereby implicitly stipulate that the proper function changes under the influence of social processes, since the building does not change physically. But why not call it an accidental function and be done with it?

Doing that is precisely to miss the point of the analysis. As I said in the last section, the point of analysing functions is to have a tool for evaluating use. Suppose that a group of people, ardent Christians, now protest against this commercial use on the grounds that it is not according to its proper function. These protestations may be fought out, and eventually move to the highest court of law. As it stands, we may expect that the group will lose. The short summary of the decisive reasons will be that the current use is proper, because the church was bought legally and a religious belief is not in general a valid reason to contest such a contract. It may be said that it *is* no longer a church on that legal ground.

The point is that a couple of hundred years ago the very same arguments by the opponents would have been sound. This difference between the situations can be explained in terms of proper functions: but then we need an understanding of the proper function of this church in terms of social processes that occurred after the building was created.

A second example concerns an artefact that can be categorised as one type on the grounds of objective properties in the sense used before, but that can be distinguished into *two* types when the proper function comes into play. The difference in function can be traced to social facts with regard to the users of the objects. The example concerns a device that is used in rock and mountain climbing, called the figure eight (Fig. 1). This device was originally designed as an abseiling device. Over time it also began to be used as a device for belaying climbing partners. Since there are similarities and differences between its use as an abseiling device and its use as a belaying device I will discuss both uses in parallel.

In both cases you use the device to apply friction to the climbing rope by attaching the rope to it as shown in Figures 2 and 3. The rope blocks and the energy is dissipated through the complete system, the energy causes distortion of many parts of the system

[8] It can also be rented for church services, but it is telling that this possibility has no special place in the listed possibilities of the organisation. Consulting the city guide of the Leiden tourist bureau produces the following remark: 'The church has been secularised and now serves mainly non-religious functions'.

Fig. 1. The figure eight. A metal object of about 15 cm long.

Fig. 2. Attaching the rope to the figure eight. The figure eight is attached to a locking karabiner, which is attached to the harness. The rope going down is where the brake hand should be during abseiling and belaying.

Fig. 3. A different angle. The karabiner is attached below to the harness. In a fall, the figure eight would pull upwards.

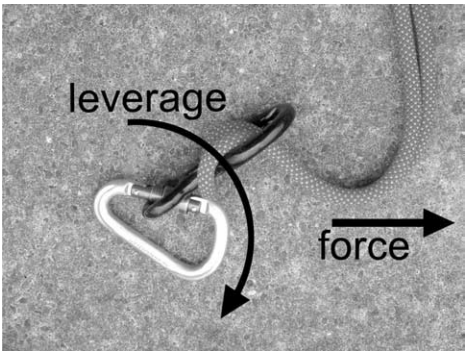

Fig. 4. The figure eight is solid metal and can slide down the karabiner. If a sudden force is exerted at a moment when the figure eight has slid over the lock of the karabiner the lock may snap.

(e.g. climbing ropes stretch up to 40 per cent) and energy is converted into heat. In both cases the purpose is safety.

One difference lies in the subject that is protected by the device. When abseiling, you use the device to protect and to transport *yourself*. When belaying you use the device to protect *your climbing partner*, who is not transported by the device either. Another difference lies in the role that your mass plays in the use of the object. When abseiling, your mass is used to descend, while you use your hand to control the process. When belaying, your mass helps absorb the energy of the fall of your partner.

The device thus has at least two accidental uses: abseiling and belaying. Now we may ask: are both of these uses also proper use? To answer this question we may look to the design history and to what the manufacturer says about it. Some manufacturers sell it *as* an abseiling device, others sell it *as* a combined safety device. However, this information is not enough. In fact the 'correct' answer depends a lot on whom you ask. In the

climbing world the use of the figure eight is a point of debate. The content of the discussion revolves round a safety issue concerning its use as a belaying device, which inclines many climbers to regard it as not generally being fit for belaying. This safety issue was mentioned in the introduction, and has to do with the possibility that the figure eight may produce leverage on the karabiner; if the force thus generated is applied to the lock of the karabiner, it may break (see Figure 4). Others resist this conclusion. They reason that this use of a figure eight is well within acceptable safety margins. If these risks make the use of an object 'improper' then driving a car in a normal way would also be improper use.

Of course, many climbers do not participate in this discussion and just follow others in a particular use, as is the case with many artefacts. This happens at indoor climbing walls in the Netherlands. Hall personnel normally rent out figure eight devices *as* belaying devices: why should the visitor suppose otherwise?

The situation is as follows. On the grounds of a similar physical structure and causal history we may identify *one* artefact type. However, if we add the arguments about the proper function, we may distinguish *two* types. This latter distinction is based on what may be called certain collective intentions. A certain group of climbers accepts the belaying use as proper, and in that sense the use *is* proper. This acceptance is in part a reasoned attitude, but in part it is socially constituted. Much acceptance is simply grounded in copying behaviour, but also the reasoned attitude rests partly on the social fact that safety is a particularly big issue in the climbers' community.[9]

Again it may be debated whether this is truly a proper function constituted by social facts and not simply a trivial definition; and again the proof of the pudding lies in the eating. I refer to the example with which I started this article. For all sorts of reasons: personal, legal and moral, we are interested in assigning responsibility in cases like this. For the purposes of this article we focus on the functional aspects of the question of responsibility. Should the belayer be held responsible, because he should have known that a figure eight should not be used for this purpose? Can the manufacturer be held responsible on the grounds of a malfunctioning artefact? The conclusion drawn in a debate on this matter is not clear from the start, but for our purposes it is interesting to know what arguments might be relevant to this debate. The manufacturer's and designer's intentions will be relevant, of course. If an artefact is made for a certain purpose and it is used in a different way and an accident ensues, the manufacturer is not automatically responsible. However, he is also not automatically free of responsibility. A manufacturer may contractually waive all responsibility, but if this results in what is called an unfair result in Dutch legal practice, this waiver is not valid. This discussion already involves social facts, because what is unfair in contract law is partly a matter of (public) opinion. Concerning the proper function of artefacts we also see room for social factors. If I belong to the group, whether or not consciously, that regards the figure eight as a belaying device as well as an abseiling device, this fact can be used as an argument to show that I *did not* need to have known better. I had no responsibility beyond my knowledge that the figure eight is a belaying device. Of course, this is not the only

[9] The points made here incidentally put Franssen's distinction between types and kinds of artefacts under pressure (Franssen, 2006, Section 5). With respect to functional role (his criterion of 'kind') we may distinguish two 'kinds', but within such a kind, there may be no distinction with respect to the physical properties and design history (his criterion of type). Invoking social facts into the analysis may sharpen this distinction.

possible argument and it does not necessarily clinch the argument, but that is not the point. The point is that this social determination of proper function is a relevant argument in the debate.

I conclude that in at least some cases, social features are necessary conditions for justified ascriptions of proper functions. These social features can be constituted by the collective intentions of the relevant social group in, for example John Searle's sense (Searle, 1995). This makes arguments concerning proper use more complicated, for instance because we now have to reckon with *internal* social factors concerning the functions, alongside external social factors in our evaluations.

4. Theories of artefact functions

Social facts may be a necessary condition for the ascription of functions, but this does not provide a complete function theory in itself. In this section I investigate how the view expressed here can help improve two of the currently best developed theories of artefact functions. I use this discussion also to shed some light on the scope of the social condition, because it may be wondered how generally it can be applied.

Earlier I mentioned Preston as an important proponent of the view that artefact functions should be analysed analogously to biological functions. She developed a pluralist theory of functions, pluralist in the sense that the notions of system function and proper function are complementary, rather than in competition. Organs, as well as artefacts, have both types of functions, each serving different explanatory roles. A difference that is relevant for our purposes ensues with respect to the causal historical mechanism that is invoked in an account of proper functions. In biology the mechanism of mutation and selection is invoked; for artefacts a market mechanism is invoked (Preston, 1998).

The attempt to ground the ascription of proper functions in the causal history of artefacts is sensible. The more firmly the proper function is objectively grounded, the more firmly we can justify relevant evaluative judgements concerning the proper use of artefacts. We cannot, however, analyse functions completely in this way. In at least some cases the causal history of the formation of an artefact is not enough to account for the proper function.

Preston's theory can be supplemented with social facts. Some of the material for this is already present in her analysis and we may use it for further development. She describes cases of functions that are positioned between proper functions and system functions, which she calls *ongoing system functions* (Preston, 2000, pp. 32–33). She also speaks of use that differs from the (original) proper function, which may be likened to the biological process of exaptation. In some cases this may be culturally standardised and is called standardised ongoing exaptation (Preston, 1998, p. 251). The notion of an ongoing system function is more or less the same notion as that of an ongoing exaptation. Both may be culturally standardised, which goes a long way towards regarding cultural processes as creating proper functions, but not quite so. The key is that Preston maintains that '*Proper* functions are acquired or lost not by individual existing things but by lineages of things' (Preston, 2000, p. 31). This is not surprising given the stress on the etiological theory of proper functions.

Under this theory the story about the Pieterskerk could only establish a standardised ongoing system function. It should be realised that the difference between Preston's and

my position is more than one of nomenclature. The typical example of a standardised ongoing system function differs importantly from the example of the Pieterskerk. Preston uses the example of chairs that are frequently used as a step to reach up high. She argues, correctly, that this frequent use, and the fact that it is widespread practice in Western culture, does not make it into a proper function of the chair. One way of seeing this is that considering it a proper function would collapse the distinction with (real) step stools. Her argument is, of course, based on the difference in reproductive history of the artefacts: step stools are produced to stand on; chairs are not (ibid., pp. 32–33).

From the perspective of Preston's theory it may be argued that the example of the church is no different. Just as a chair might be bought for sitting on, but has become old and is moved to a shed and eventually is only used to stand on to reach high places, a church may stop being used in its original way and only used alternatively. These situations will not alter the proper function of the chair, or of the church.

I maintain that there still is a difference between the two cases, a difference that has to do with the role function ascriptions play in evaluative judgements. In Section 2 I discussed how the change in function could be relevant for admissible arguments concerning this use. Similar ways of use could be evaluated differently based on social facts. The 'proper function', in whatever formulation, is an admissible argument here: but in the case of the mentioned chair, such a discussion would be pointless. No one actually contests this alternative use and no one claims that this alternative use is according to the 'proper function' of that chair. If we put it in terms of collective intentions, we may say that the accidental use of the chair is merely collectively accepted, but the church is collectively regarded *as* a different kind of artefact. How these notions of collectivity should be understood exactly, is another matter, which is not within the scope of this paper.

We may want to add a distinction to Preston's list, namely between her (standardised) ongoing system functions and proper functions we would want to add a 'socially created, or constituted, proper function'. Given the variety of notions identified by now, namely system functions, ongoing system functions, standardised ongoing system functions and proper functions, it is even plausible that we shall have to leave the idea of several separate types of functions and view the notion of function as indicating an array of types. I suggest that the social dimension will be an important dimension along which to place function types: types of social acceptance will help us to define types of functions.

I will not repeat the story concerning my second example, because many of the points made will also apply here. Concerning artefact types there will be more to say about the determination of a *lineage* of artefacts. The figure eight has a certain development history, which may account for the (initial) proper function of the object after a few generations in terms of Preston's theory. The proper function of a token artefact from this lineage may still deviate because of certain social facts as we have seen. Such facts should be included in our account. Again, if the controversy about proper use reaches a dramatic culmination point in a court of law, the causal history, such as the claims of the manufacturer, will be relevant, but not exclusively so. Social considerations concerning the proper use will also be relevant.

I mentioned before a different strategy concerning artefact use. This is a strategy that takes the idea that when dealing with artefacts, the *use* an artefact is put to and its analysis and explanation, is important, rather than the function. This may be called an action theoretical approach. Ascriptions of functions are seen relative to the use of artefacts for

certain (human) goals and the analysis can be seen as an instrument for assessing the (rationality of the) use. Beliefs about the capacities of the artefact by the user, justification of these beliefs through a, possibly rudimentary, account of the capacities and communication of the goal and mode of use between the designer and users are central to this analysis. The analysis is called the ICE-theory that stands for *intentions* (primarily the beliefs of the agent that uses it), *causality* (present in the justification of the beliefs), and *evolution* (namely in the form of the history of the artefact in design and designer–user communication) (Houkes & Vermaas, 2004; Vermaas & Houkes, 2006).

This approach agrees with the view expressed here to the extent that an important interest of talking about artefact functions and use is to understand certain evaluative statements about use. There are two ways in which the analysis could be improved, both having to do with the relevance of social factors for the evaluation of use, as argued for in the last section. The first way concerns the fact that this approach concentrates on a *rational* reconstruction of action (or use). Given the analysis of the last section it seems that rational considerations and social considerations can be fruitfully analysed in parallel. I argued that social considerations are a necessary, but not sufficient, condition for a justified evaluation. It can be inferred from the way the arguments in different discussions are presented that rational considerations are also necessary. To understand the discussions concerning the use of the church and the figure eight, arguments to the effect that certain properties of the artefact support a certain way of using the object are relevant. These arguments are analysed in the intention and cause conditions of the ICE-theory.

The conditions in this theory are conditions for the ascription of a capacity ϕ as the function of artefact x. The third condition, having to do with the design history of the artefact, might be modified to include the social aspects of function ascriptions. As it stands, the designer is privileged with respect to the function ascription of the artefact, because the designer, or design team, is the one who 'intentionally selected' the artefact for the capacity ϕ and the designer is the source of the right way to use the artefact via an act of communication. The designer need not be privileged in this way: if my arguments are correct, there are cases in which the designers' intentions regarding the function ascription are not the only relevant considerations. The current users overrule these intentions and use the object in an alternative way, which is just as 'proper' as the use intended by the designer. This possibility may be incorporated in this theory.

The following remark concerns such a modification. A process such as a function change for a medieval church may be called *social redesign*. This is a type of redesign of the proper way to use the church. Since the ICE-theory distinguishes between design of *use plans* (the central design task) and the design of artefacts proper (the material design process in which objects are made with the desired capacities that fulfil the goals that are defined in the use plan) we may broaden the 'designer' mentioned in the third condition in such a way that it can encompass social collectives when appropriate.

This modification also gives us a reason to assume that the privilege of the designer should be rethought as well; the scope of the argument in the last section may extend quite far. Up to now it has been an implicit assumption that the original ascription of function to an artefact is the prerogative of the designer, on the grounds that he or she is the one that is in the best position to know the relation between the function and capacities of the artefact. Depending on the scope of the argument given in the last section we may want to revise this position. The grounds on which the designers are privileged with respect to arte-

fact functions consist of more than the accounts that may be given with respect to the capacity of the object enabling a function; an account that would fit into a rational reconstruction. The grounds should also encompass certain social factors, which may, in the first instance, be grouped under the heading of a division of labour. In our society the standard case is that the division of labour is such that the designer is regarded as the authority regarding the proper function of an artefact, this would often be the rational thing to do, but this does not *have* to be the case.[10] Society, or certain communities, may simply be irrational and, for all kinds of social reasons, decide otherwise about the proper use of an artefact. Or, the designer might be wrong and be 'corrected' by society.

The second way in which the action theoretic approach may be improved concerns the importance of the notion of 'function'. The action theoretic approach is not used to distinguish between notions such as 'system function' and 'proper function', because it concentrates on an analysis of *use*: but in reality assessments are given that involve an idea that relates to 'proper function', as we have seen in Section 2. In important argumentative situations the idea of proper function may be relevant in a court of law, for instance in the case of an accident that occurs when an object is used in a certain way and for a certain goal, as in the case of the figure eight.[11]

In a context where this is desirable we may supplement a rational reconstruction along the lines of the ICE-theory with social considerations. In this way we may assign a proper function to an artefact that does not depend on just one agent assigning a function at some particular moment in time. In the sense I use 'objective' in this article, this is a move towards an objectification of the function ascription.

5. Conclusion

I have argued that we cannot understand the notion of proper functions of artefacts independent of social notions. I argued this on the grounds of two actual examples of proper functions that were partly socially constituted. This social constitution is a necessary, but not a sufficient condition. The arguments in this article do not warrant a whole new function theory, but can be used to improve existing function theories that look to the causal history of artefacts to determine the function. A view that takes the intentions of designers into account to determine the proper function is both natural and often correct, but I have shown that there are exceptions. Taking a social constitutive element into account may amend these backwards looking theories. This theory may either have a disjunctive form or be in the form of an encompassing account that views the designers' intentions as social, in so far as they are accepted by the users: designers have authority, often for good reasons. Action theoretic approaches to artefact functions may benefit by taking collective intentions into account. Again, this should not be seen as a fundamental change, but rather as an improvement of existing views.

[10] Cf. Houkes (2006) for some remarks on this type of division of labour.

[11] We can find evidence of this, for example in Dutch civil law, concerning liability. For example, 'When executing a contract, if an object is used that is not fit for that purpose, then the resulting failure is ascribed to the debtor, unless this is unreasonable, with respect to the contents and implications of the act from which the contract originated, what is commonly accepted and the other circumstances of the case' (Article 77, Book 6 of the Dutch civil code, my translation). The evidence in jurisprudence points towards an interpretation of 'an object that is not fit for that purpose' in terms of proper functions; such an interpretation makes for a useful instrument in those contexts.

Acknowledgements

I thank Wybo Houkes, Peter Kroes and Anthonie Meijers for useful comments on earlier drafts of this article. The comments of the Delft research group The Dual Nature of Technical Artefacts were also very helpful. The research for this work was supported by the Netherlands Organisation of Scientific Research (NWO).

References

Commission of the Liturgy. (2000). *Built of living stones: Art, architecture, and worship. Guidelines of the National Conference of Catholic Bishops*. Washington, DC: National Conference of Catholic Bishops.

Cummins, R. (1975). Functional analysis. *Journal of Philosophy*, *72*, 741–765.

Dawkins, R. (2004). The four whos: The Niko Tinbergen Lecture, Leiden. *NRC-Handelsblad*, *22 May*. (A Dutch newspaper).

Franssen, M. (2006). The normativity of artefacts. *Studies in History and Philosophy of Science*, *37*, this issue, DOI:10.1016/j.shpsa.2005.12.006.

Herbermann, C. G., Pace, E. A., Pallen, C. P., Shahan, T. J., & Wynne, J. J. (Eds.). (1914). *Catholic encyclopedia*. New York: The Encyclopedia Press.

Houkes, W. (2006). Knowledge of artefact functions. *Studies in History and Philosophy of Science*, *37*, this issue, DOI:10.1016/j.shpsa.2005.12.011.

Houkes, W., & Vermaas, P. E. (2004). Actions versus functions: A plea for an alternative metaphysics of artefacts. *Monist*, *87*, 52–71.

Jonge, S. de. (2002). *Kerkarchitectuur na 2000* [*Church architecture after 2000*]. Thesis, Theologische Faculteit Tilburg.

Millikan, R. G. (1984). *Language, thought, and other biological categories*. Cambridge, MA: MIT Press.

Millikan, R. G. (1999). Wings, spoons, pills, and quills: A pluralist theory of function. *Journal of Philosophy*, *96*, 191–206.

Preston, B. (1998). Why is a wing like a spoon? A pluralist theory of function. *Journal of Philosophy*, *95*, 215–254.

Preston, B. (2000). The functions of things, a philosophical perspective on material culture. In P. M. Graves-Brown (Ed.), *Matter, materiality and modern culture* (pp. 22–49). London: Routledge.

Searle, J. R. (1995). *The construction of social reality*. London: Penguin.

Vermaas, P. E., & Houkes, W. (2006). Technical functions: A drawbridge between the intentional and structural natures of technical artefacts. *Studies in History and Philosophy of Science*, *37*, this issue, DOI:10.1016/j.shpsa.2005.12.002.