



# Multifunctional Artefacts and Collocation

RESEARCH

DAVID-HILLEL RUBEN 

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## ABSTRACT

There appear to be multifunctional artefacts of a type such that none of their functions can be attributed only to some proper part of the artefact. I use two examples of allegedly multifunctional artefacts of this kind in what follows, one due to Lynne Rudder Baker (aspirin) and another of my own (a spork). The two examples are meant to make the same point. I discuss her aspirin example, since its discussion has entered the literature, but without its being dealt with satisfactorily. My example is, I believe, more intuitive than that of aspirin, which Baker introduced in her response to a challenge to her views, and so I will mostly rely on my example of a spork, especially at the end of the paper, to make my case.

I argue that in at least those two cases, if the standard arguments for distinguishing between an object and what constitutes it are sound, an argument showing that what we might have taken to be a single multifunctional object is in fact a case of multiple single-function artefacts which collocate. Or almost. There is one further assumption needed for these cases, beyond what the constitution cases require, and I produce reasons for accepting that assumption.

## CORRESPONDING AUTHOR:

**David-Hillel Ruben**

Birkbeck, University of London, GB  
d.ruben@bbk.ac.uk

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I want to discuss the relation between multifunctional artefacts of a certain kind and collocation. The collocation I have in mind is quite unlike the examples of material constitution, which allegedly exists, on some theories, between an ordinary object and the aggregate of matter that constitutes it. The collocation I have in mind is between two ordinary objects, such that neither constitutes the other (more on this below). I want to use the standard argument used by those who distinguish between an object and its constituting aggregate, to show that, if sound, the same argument would show that in the alleged case of some multifunctional artefacts, we in fact have two collocating single-function artefacts rather than a single multifunctional one. This is, I submit, a very surprising and counterintuitive conclusion. I don't consider whether this shows the truth of that conclusion or some fault in the use of the standard argument used to show the non-identity of an aggregate and what it constitutes, but I do think that users of that standard argument need to consider carefully the fact that their argument can lead to this surprising conclusion. I should signal now, though, that my argument relies on the truth of a further assumption, Assumption (A), a complication that does not arise in the case of the identity of an aggregate with the object it constitutes. Denying that assumption would offer some wriggle-room for denying my conclusion. But that denial is not a get-out-of-jail-free card, for it has a cost, as I will explain.

Let me say a bit more about the sort of collocation I have in mind, since it differs from the collocation most often discussed in the literature. Philosophers who think that constitution is not the same relation as identity must hold that a physical object and the aggregate of particles (atoms, molecules, or matter) that constitutes that physical object are collocated.<sup>1</sup> (Two objects are collocated if they entirely occupy the same space at the same time.) Let's say that a pair of physical objects such that either one of them constitutes the other is a constituting pair of objects.<sup>2</sup> In such a case, the collocated objects will be of different kinds or sorts: on one hand, an aggregate (or a piece or a portion of material) and, on the other, an ordinary physical object of some other sort. For instance, as in Wiggins' classic statement (1968: 90–95) of the view,<sup>3</sup> a constituting pair is a tree and the aggregate of molecules that constitute it.

On the other hand, call any pair of objects such that neither constitutes the other 'a non-constituting pair'. Any random pair of physical objects, where the physical objects are of the ordinary sort (i.e., not an aggregate or a piece or a portion, etc.), is a non-constituting pair. A tree and a soccer ball, an elephant and a feather, a house and a chair, are all non-constituting pairs, and so are many countless others. The objects in these pairs certainly don't collocate. But could there be a pair of non-constituting ordinary objects that do collocate? If there were a pair of non-constituting ordinary objects that collocate, they might be of the same kind or of different kinds.<sup>4</sup>

We can see one obvious restriction on the possible collocation of non-constituting pairs of objects. A soccer ball and a grapefruit might entirely occupy exactly the same space at two different times.<sup>5</sup> Could they entirely occupy the same space at the same time? Since no soccer ball could

1 I am using 'object' in a wide sense to include what we normally take to be ordinary physical objects (books, statues, trees, mountains, lions), but also to include aggregates, sums, or portions, and parts, of physical objects, and so on. When I want to speak of physical objects restricted to ones as commonly understood, I speak of ordinary physical objects.

2 There are several accounts of constitution in the literature, accounts which differ especially over what is the constituter in the constitution relation (e.g., aggregates, pluralities, portions of matter). I don't think choice of one account over another will make a difference to my claims, but for the purposes of this paper, I will assume that a physical object is constituted by an aggregate, for example the aggregate of molecules that constitute it (Baker 2009; Koslicki 2008). I also accept the standard view that constitution is an irreflexive and asymmetric relation; nothing constitutes itself and nothing can be constituted by what it constitutes.

3 David Wiggins (1968: 93) thought that this is 'a sort of necessary truth': 'S\*: No two things of the same kind, that is, no two things which satisfy the same sortal or substance concept can occupy exactly the same volume at exactly the same time'. Let F and G be sortal or kind concepts in the sense that Wiggins requires, whatever that may be. Then (S\*) says.

(S\*) If (1) x is an F and y is a G, (2) x and y are collocated, and (3)  $x \neq y$ , then  $F \neq G$ .

4 Many others have discussed alleged examples of the collocation of non-constituting pairs of objects. In this article, I will not review all those other attempts, but I have discussed Kit Fine's examples in Fine (2000) in Ruben (2021).

5 Ted Sider discusses a similar issue in Sider (2001:154–155).

be made from what a grapefruit is made, they could not have all the same material constituents. So even if collocation of some non-constituting pairs of ordinary objects were possible, we might at least require:

1. If (a)  $x$  is an  $F$  and  $y$  is a  $G$ ,<sup>6</sup> (b)  $x \neq y$ , (c)  $x$  and  $y$  are a non-constituting pair of objects, and (d)  $x$  and  $y$  are collocated, then some  $z$  completely constitutes  $x$  iff  $z$  completely constitutes  $y$ .

If  $x$  and  $y$  are collocated, whatever matter (at some level) constitutes one must also constitute the other. Grapefruits and soccer balls are made of different material. So since the consequent of (1) is false in the case of the grapefruit and the soccer ball, and since neither the ball nor the grapefruit constitutes the other, and since the ball and the fruit are not identical, they can't be collocated.

Notice that the requirement is only that there is *some*  $z$  that completely constitutes both; it is not the stronger requirement that they have all the same mereological proper parts, for reasons pointed out by, for example, Achille Varzi (2008:118–119). Even if there were a non-constituting pair of non-identical, collating objects of different kinds, say,  $x$  and  $y$ , where  $x$  is an  $F$ ,  $y$  is a  $G$ , and  $F \neq G$ , one might hold that there is a specific, specialised sense of part (for example, a functional part of a heart like a valve, or an artistic part of a statue like a statue's arm, and specialised parts are certainly parts), such that  $x$  has but  $y$  lacks some part in that specialised sense, even though  $x$  and  $y$  share all the same molecules for example.

Many, following John Locke's original discussion, have limited the collocation question to the collocation of two objects of the same kind. David Hershenov<sup>7</sup> (2003) and Giuseppe Spolaore (2012), amongst many others, provide two examples of this way of conceiving the issue, although they both, like me, clearly link the fate of the collocation of (what I call) non-constituting pairs of ordinary objects with the success or otherwise of arguments for the collocation of constituting pairs of objects. I think my formulation of the question is preferable.

Presumably many such writers might be willing to accept that the aggregate and the object it constitutes collocate (aggregate and the specific sort of ordinary object it constitutes are two different kinds), but they standardly address the further question of the collocation of ordinary objects only in terms of the collocation of objects of the *same* kind. I think there are three reasons to prefer my formulation of the further question of the collocation of pairs of non-constituting objects, without restricting it to objects of the same kind: (1) the idea of a kind is not sufficiently clear to bear the weight of the distinction between same and different kinds required by the claim;<sup>8</sup> are a Phillips screwdriver and a Pozidriv screwdriver of the same kind or different kinds? Or a left-handed and a right-handed pair of scissors? (2) on Tyler Burge's (1977) account of aggregate, because of the identity criteria he gives for aggregates, two aggregates can be collocated.<sup>9</sup> The two aggregates are examples of the same kind, namely, aggregate. I presume that those who debate the collocation of objects of the same kind will not find his examples even relevant to the question they intend to be discussing, so 'of the same kind' doesn't get at what is important; (3) finding a pair of non-constituting objects of two different kinds that collocate (say, *pace* my remarks above, a football and a grapefruit) would not be more acceptable to those who deny the possibility that two objects of the same kind can collocate. So it seems better to frame the debate not in terms of same kind or different kinds but rather in terms of constituting and non-constituting pairs of objects. Sameness or difference in kind seems irrelevant.

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6 Whether  $F = G$  or  $F \neq G$ .

7 I have no disagreement with Hershov's example of two collocating roads. But 'road' can refer either a physical entity (the bricks or tarmac or whatever) or a socially constructed entity (in the sense that the road is made up of the bricks or the tarmac but is not identical to the set of materials from which it is made). Taken in the latter sense, there are many such examples of collocation. Another example would be a nation, like France, and the landmass that it occupies or the aggregate of French people. See Ruben (1985: chapters 1 and 2). I have limited my examples to physical object collocation, so that Hershov's example does not fall clearly within the terms I have set.

8 Feldman (1973); Elder(2007: 44–49). Elder's examples are, in effect, ones in which there are both a determinable and a determinate that are sortals, with further conditions specified for the determinate sortal.

9 Burge (1977:113) says that it is possible that the aggregate of water molecules and the aggregate of hydrogen and oxygen molecules, even if the latter never exist never apart from the former, would not be the same because they have different individuals as member components. '...so that the aggregate of those atoms would also coincide spatio-temporally with the aggregate of water molecules'.

Let me return now to the discussion of multifunctional artefacts. The literature on constitution and collocation regularly uses artefact examples (statues are perhaps the most common object mentioned in the relevant literature; Wiggins lists pruning knives as an example in the quote below). Typically, these arguments consider an artefact and what constitutes it (i.e., a constituting pair). Both of the cases of collocation that I will discuss are cases of two artefacts that are a non-constituting pair.

My cases assume that artefact kinds are substance sortals in the desired sense, since they provide persistence conditions for the physical items that fall under them, and ensure that no object could continue to exist while ceasing to be the artefact that it is (Preston 1998, 2018). In *Sameness and Substance*, Wiggins says, ‘Any predicate whose extension consists...of all the particular things or substances of one particular kind, say horses, or sheep, or pruning knives, will be called here a sortal predicate’ (1980: 7). I will continue using the assumptions made by Wiggins and many other writers about artefacts, that artefact terms stand for kinds or sorts, and not just for phase properties, like being a teacher or a teenager. I know of no criterion for the distinction between phase properties and sortal (or kind) properties (or accident and essences, for example) other than using intuitions.

Artefacts are straightforwardly physical objects. If you didn’t think that a tin opener or a Swiss Army knife or the Mona Lisa counts as a physical object, you would be working with a very impoverished notion of physical object.<sup>10</sup> Some may find that my examples of two artefacts that collocate are less than persuasive, on the grounds that the examples require a number of assumptions about artefacts, assumptions that are widely accepted but still controversial. But these are mostly the same assumptions made about artefacts in the arguments referred to in (P1) below (made by philosophers who already accept that constitution is not identity).

Are there really any multifunctional artefacts, that is artefacts with two or more primary functions? To answer that question, we need some distinctions. First, we need a distinction between primary and incidental functions of an artefact. Artefact kinds supply the persistence conditions for the individual artefacts of those kinds. It is true that most tools can be used to do many things. But a distinction has to be drawn between primary and non-primary kinds, and primary and non-primary (or incidental) functions. As Beth Preston (1998: 237) recounts, ‘I have used table knives for all of the following: peeling garlic cloves...; opening cocoa tins; transplanting seedlings; removing potbound houseplants from their pots; removing crumbs from the tablecloth, and tightening or loosening screws’.<sup>11</sup> Some of the examples mentioned by Michael Rea (2000:184–186) can be seen only as examples of an artefact having a single primary function but an additional incidental function: statues used as pillars, axes used as hammers, nets used as hammocks.

On one plausible view of such artefacts, their primary function is what they have been designed to do by their maker or creator (if there is one), but we need not commit to that view in what follows. Let ‘T’ be your favourite candidate theory, whatever it may be, for assigning primary kinds to artefacts, and hence for distinguishing between primary and incidental or derived functions. My argument is unaffected by any specific choice for ‘T’. The literature on artefacts and sorts assumes that if some object has, as its primary function, to serve as a pruning knife, then it is a pruning knife, and pruning knife is the sortal kind to which it belongs. On the other hand, if some object has, as its incidental function, serving to remove crumbs from the table, it does not follow that it is a table crumb remover. As in Beth Preston’s example above, it may only be a table knife. As anyone knows who has eaten in a posh restaurant, an object can have removal of crumbs as its primary function, in which case it is a table crumb remover.

The assumption that each individual is a member of only one primary kind (or, to use different terminology: has only a single essence) has a long history. This assumption was central to

<sup>10</sup> Lynne Rudder Baker thinks that artefact kinds are amongst the primary kinds that there are, so that the artefact kinds in question provide persistence conditions for the items of those kinds. However, she has a clause in her analysis of constitution (Baker 2009:161–162) that rules out something constituting two things of the same kind. Her account ‘ensures that nothing can constitute two distinct things of the same kind at once’ (Baker 2009: 164). It seems to leave open the possibility of two non-identical ordinary objects of different kinds collocating.

<sup>11</sup> Preston also discusses derived and expanded proper functions for the case of artefacts. I will ignore all these important distinctions here.

Descartes' argument on the relation of mind and body.<sup>12</sup> David Wiggins' view is more complicated: 'No argument is known to me for the conclusion that an individual can answer to only one substance concept...if there are several such concepts, then they will all agree in the persistence condition that they ascribe to an individual lying within their extension' (1980: 64–5). Perhaps such a case would be the sorts, animal and dog, which would be 'sortally concordant' in Wiggins' terminology. But what Wiggins rules out is one substance falling under two substance kinds, such that it can persist under one substance kind but not under the other.<sup>13</sup>

Following in this tradition, Baker originally claimed that each concrete individual is a member of only one primary kind (2000: 39–40, 2009: 51–52), and so has only one such primary function. Let's assume, as Baker does at least in this example, that the primary function of an artefact is determined by the purpose for which it is created or for which it is used. A challenge to the view that each artefact has only one primary function is the case of aspirin (Houkes & Meijers 2006: 126). Aspirin was originally synthesized as a painkiller. It became apparent that it could also function as a blood thinner and was prescribed to patients with cardio-vascular problems. Aspirin is now produced to serve both functions, and both of these functions seem to be aspirin's primary functions, confirmed by the intentions with which it is (now, at any rate, even if not initially) produced, or, if you prefer, confirmed by the uses for which it is now standardly employed.

Baker assumed that she could deal with this example by distinguishing between two similar but distinct artefacts, aspirin and aspirin\*, the former of which had only the single primary function of pain-killing, and the latter of which had the 'multi-function, painkiller-cum-blood-thinner'.<sup>14</sup>

It seems that, on her later, considered view, instruments or tools can have more than one primary function after all, since aspirin\*'s function, 'pain-killer-cum-blood-thinner' is the multi-function, pain-killer & blood-thinner. Although she says that aspirin\* is multi-functional in the quote above, she might have been thinking of 'pain-killer-cum-blood-thinner' as naming only a single, complex function, but on the most obvious way of counting functions, it names two. On her considered view, it seems that any single aspirin\* tablet will now belong to two primary kinds, pain-killer and blood-thinner.

Let's reverse the time order, so that aspirin\* is everywhere first produced, at *t*, both to kill pain and thin blood. Now imagine that the situation changes at a later time *t'*. The very same chemical composition is now produced in two separate locations, in one of which it is produced only to kill pain (so it is a pain-killing medicine) and in the other of which it is produced only to thin blood (so it is a blood-thinning medicine). Alternatively, you might imagine that people themselves physically change, so that there are two disjoint populations, in one of which it can kill pain but not thin blood and in the other it can thin blood but not kill pain. Or you might imagine that, at *t'*, either no one ever needs a blood thinner or no one is ever in pain, there being no further use for the other medicine. How many medicines did we have at *t*, when aspirin\* (using Baker's terminology) was first produced? How many medicines do we have at *t'*, when the initial situation changes in any of the ways I described?

## TYPE (a) CASES AND TYPE (b) CASES

Before further discussion of her example, we need to distinguish between two different types of cases of supposed multiple primary functions for an artefact.

The first type, (a), are cases in which *x* constitutes a single tool *y*, *y* appears to have more than one proper function, say *f*<sub>1</sub> and *f*<sub>2</sub>, but *y* has proper parts, and each of *f*<sub>1</sub> and *f*<sub>2</sub> can be ascribed to some proper part of *y* but not to the other(s). An example of this is a Swiss Army knife. The lump of metal and plastic (*x*) constitutes a single tool (*y*), a Swiss Army knife, but the Swiss Army knife has several proper parts, for instance, a knife, a corkscrew, a bottle opener, and an awl, and each of those proper parts has a different primary function. It is not always so easy to distinguish parts

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12 Described in detail by Marleen Rozemond (1998: 24–28 and *passim*) as The Attribute Premise.

13 It is not clear that Wiggins would treat artefact kinds in the same way as natural kinds; he has many reservations about artefact kinds (Wiggins 1980: 90–99).

14 Baker (2006: 135), replying to Houkes and Meijers (2006).

in this simple way. Smart phones are multi-(primary)functional. By design, they make and receive telephone calls, serve as cameras, and access the worldwide web.<sup>15</sup> Different components of the hardware or software of smart phones are responsible for each function. Only a knowledgeable expert can discriminate one part from another.

Suppose a token Swiss army knife has only a knife, cork screw, bottle opener, and an awl. I don't know if the Swiss Army knife should be thought of as merely the sum of these four artefacts, or as something over and above the four which includes them. Settling that question is not important for my argument. But the main point I want to make is that, given such a Swiss army knife, its proper parts themselves have the primary functions, one each, of a knife, corkscrew, bottle opener, and an awl. Whether or not we have an additional item, a Swiss Army knife, which also inherits the primary functions of its parts by courtesy, we certainly have, as its parts, a knife, a corkscrew, a bottle opener, and an awl, each of which serves one and only one of the primary functions mentioned. We don't somehow lose having a knife, a corkscrew, bottle opener, and awl, just because we have a Swiss Army knife of which they are its parts.

The second type, (b): In contrast to (a) cases, there at least seem to be some cases in which (1)  $x$  constitutes  $y$ , (2)  $y$  has more than one primary function,  $f_1$  and  $f_2$ , but (3) there are no constituent proper parts of  $y$  such that  $f_1$  but not  $f_2$ , or  $f_2$  but not  $f_1$ , can be ascribed to one of them rather than another. Baker's aspirin\* seems to be a bona fide example of a (b)-type case.<sup>16</sup> Every molecule of the aspirin contributes to both functions. In what follows, I am only interested in allegedly multifunctional artefacts of type (b), and my claims are restricted to this subclass of artefact.

## THE LEIBNIZIAN ARGUMENT

In what follows, I identify what I call the 'Leibnizian argument' that employs the indiscernibility of identicals:

(LL):  $(x) (If\ x = y, then\ (P) (Px\ iff\ Py))$ .

(LL) is typically used to show that an object  $\neq$  the aggregate that constitutes it. The view I defend in this paper is that if the Leibnizian argument worked in the case of a constituting pair of objects, it would work equally well in some cases of pairs of non-constituting objects. So the argument I am considering is this:

(P1) There are sound applications of the Leibnizian argument that show that constituting pairs of objects are not identical and collocate.

(P2) If there are sound applications of the Leibnizian argument that show that constituting pairs of objects are not identical and collocate, and if Assumption (A), stated below, is true, then there are sound applications of the Leibnizian argument that show that at least some non-constituting pairs of ordinary objects are not identical and collocate.

(P3) Assumption (A) is true.

(P4) So there are sound applications of the Leibnizian argument that show that at least some pairs of non-constituting ordinary objects are not identical and collocate.

(C) There are some pairs of ordinary non-constituting objects that are not identical and collocate.

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<sup>15</sup> Houkes and Meijers, 2006, 126 cite this case but fail to distinguish between (a) and (b) types of cases.

<sup>16</sup> Some object  $o$  might have two functions,  $f_1$  and  $f_2$ , and have a proper part  $o-$ , such that both  $o$  and  $o-$  have both of the two functions. Suppose some instrument has two proper functions,  $f_1$  and  $f_2$ . But then that instrument, minus a few molecules (call it instrument-minus), may still perform both of those two functions. (b) excludes only the case in which one function, but not the other, can be 'differentially' ascribed to a proper part of the object.



This paper is a defense of (P2), and (P3). I don't address (P1) in this paper. The two examples of the collocation of a non-constituting pair in what follows are both cases of type (b). Remember, I'm not trying to convince anyone, in this case, or in any other case, of some allegedly multifunctional artefact of the right type, that what in reality we have are two or more single-functional artefacts that collocate. The argument is only that if the standard argument for the collocation of a constituting pair of objects were sound (like the tree and the aggregate of wood molecules that constitute it, for example), and if assumption (A) were true, then the argument I produce for the collocation of a pair of non-constituting objects, viz., two single-functional artefacts of type (b), would be sound as well. I will say what Assumption (A) is, and say much more about it, below.

The Indiscernibility of Identicals, by contraposition, claims that if  $x$  has some property  $P$  that  $y$  fails to have, then  $x \neq y$ . However, we must be careful in our choice of substitution instances for 'P', and for 'x' and 'y', for several reasons.

Some predicates might not express any property at all, or might only express properties which are not uncontroversially legitimate substitution instances in (LL).<sup>17</sup> Modal, epistemic, and some temporal predicates for instance have been considered to be suspect. For example, some have argued as follows: the statue is essentially a statue at all times at which it exists, but the mass of material that composes the statue is not essentially a statue but is only contingently a statue, and might only be a statue for some limited time during its existence. There has been a lively literature on the question of which predicates can be used in a sound Leibnizian argument. In my arguments that follow, I avoid using any of these sorts of predicates or properties that are suspect.

Moreover, many Leibnizian arguments for non-identity have been dismissed as invalid on grounds of referential or predicational shift. Referential shift occurs when the term substituted for 'x' or 'y' in (LL) shifts its reference between premisses. Predicational shift occurs when 'P' expresses two or more different properties in the premisses.<sup>18</sup> Both predicational and referential shift would make the argument for non-identity invalid. (See Fine 2006; Fine 2003; King 2006; Frances 2006.) I have tried to ensure that none of my arguments are invalid on these sorts of grounds either.

Other Leibnizian arguments for non-identity rely on negation. The constituting material is a hunk of marble; the statue is not a hunk of marble. A line of response to this sort of argument, developed by Almotahari (2014), is to deny that the negation in one of the premisses of the argument is ordinary negation: 'I don't have €5 in my pocket' (when I have €10 in it) doesn't mean that it is *not* the case that I have €5 in my pocket. It means something like: 'I don't have just or only €5 in my pocket'. So, on Almotahari's view, if it is true that the statue is not a hunk of marble, that is not to say that it is false that the statue is a hunk of marble. It means something like: the statue is not just a hunk of marble. None of my arguments in what follows turns on negation in one of the premisses.

So it is important that the arguments that purport to establish non-identity in (P1) and (P4) are not susceptible to these various sorts of challenges. Fine (2006:1069–1072) claims that 'destroyed', 'open/shut', and 'counterfeit' are predicates that survives these doubts. My own example of the non-identity and collocation of a non-constituting pair survive these doubts too: 'does such and such', 'is destroyed', and 'is damaged to such-and-such degree'. One might think that the idea of function attributions imports a modal element (Nanay 2010). However, even were you to think that mentioning 'function' imports some illicit modal property, simply ascribing to some artefacts that are in good working order some operation that they actually do, which follows from that function, does not import any modal property. My argument will assume that we have artefacts that are in working order, unless otherwise specified, and actually are doing what they are meant to do.

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17 For a good account of the arguments as to which predicates can be used as substitution instances in the Law of the Indiscernibility of Identicals, see both Koslicki (2008:45–68) and Magidor (2011).

18 Consider 'badly made'. The statue may be badly made but the piece of marble that constitutes it is not badly made. Does that show their non-identity? Arguably not, because it is plausible to hold that 'badly made' expresses two different properties in the argument. In one case, the statue is badly-made-as-a-statue. The piece of marble is not badly-made-as-a-piece-of-marble. So the identity theorist can reason that both of those predicates are true both of the statue and the piece of marble.

Let's return now to Baker's example. What is the relation between these three: aspirin\* (which allegedly has two functions), the blood-thinning medicine, and the pain-killing medicine? The definite descriptions, 'the blood-thinning medicine' and 'the pain-killing medicine' presumably refer to something. Our question is: to what do they refer?

Confronted with the reverse time scenario I sketched, and the blood-thinning and the pain-killing medicines being produced in different places or for disjoint populations, Baker might well think there were three medicines in that diachronic story: the multifunctional aspirin\* at *t* (now the original) and two later ones at *t'*, the blood-thinning and the pain-killing medicines. After all, the logic seems the same. She thought that a multifunctional artefact and a single-functional artefact could not be identified, when single function aspirin was originally produced and multifunctional aspirin\* was subsequently produced. So if aspirin\* at *t* and the pain-killing medicine at *t'* can't be identified, there seems to be no reason to identify the blood-thinning medicine at *t'* with aspirin\* at *t* either.

Let's look at the synchronic story now, the story at *t*, but which still reverses the time order of Baker's original story. How do matters stand if you use Leibniz' Argument? There seem to be three options by which to describe what exists at *t*: (i) the blood-thinning medicine = the pain-killing medicine = aspirin\*, so that there is only one medicine at *t* with a double function (that is perhaps the conventional way of viewing the matter); (ii) there are *three* medicines at *t*, the pain-killing medicine, the blood-thinning medicine, and the aspirin\*; (iii) there are only two medicines at *t*, the blood-thinning and the pain-killing medicines, the aspirin\* being merely the sum of the other two and therefore introducing no novel item (I assume for the purposes of this paper that sums in this sense are an ontological free lunch).

Whatever view we take of aspirin\* (allegedly, two functions), it seems that the pain-killing medicine  $\neq$  the blood-thinning medicine. After all, each has a property the other lacks. Assuming they are doing what they are meant to do, the pain-killing medicine kills pain, but the blood-thinning medicine does not kill pain; the blood-thinning medicine thins blood, but the pain-killing medicine does not. As we have seen, at *t'*, one may cease to be produced without the other ceasing to be produced. My argument uses straightforward non-functional, non-modal, properties, the properties of (actually) thinning blood and (actually) reducing pain, or, of existing, and not existing at *t'*.<sup>19</sup> So there will be an apparently sound argument to show that the blood-thinner  $\neq$  the pain-killer.

There seems to be an argument for their non-identity, paralleling the argument that shows that an aggregate is not identical to the object which it constitutes. And if so, they will be at least two medicines, the blood-thinning medicine and the pain-killing medicine, that will collocate at *t*. But what about the aspirin\*? Maybe either the blood-thinning medicine or the pain-killing medicine is identical to aspirin\*. But they can't both be, since the pain-killing medicine  $\neq$  the blood-thinning medicine. So at *t*, there will be either two or three medicines. What there won't be at *t* is only one medicine. However many medicines there are at *t*, they collocate.

## THE SPORK EXAMPLE

I want to introduce a second example. It makes the same point as Baker's aspirin\*, but I offer it because I think that this example has greater intuitive purchase. There may be some pressure to think that the above story of aspirin and aspirin\* is an obvious reductio of the possibility of collocation. I don't think that the spork example produces anything like the same pressure.

A spork is a combination of a spoon and a fork (look it up; these were once very popular culinary items).<sup>20</sup> They can be made in several different ways, but the only way I have in mind is that in

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19 I assume that we can have probative intuitions about acceptable and unacceptable property attributions before we know whether we have one or two things, and that we can use our intuitions about that as a way of settling whether we have one thing or two things. In any case, remember that my claim is conditional: if the Leibniz argument works for pairs of collocating constituting objects, it will work for the case of non-constituting pairs of collocating objects. So the philosopher to whom my argument is addressed accepts these as probative.

20 I thought of this example long before seeing the ghastly Toy Story 4 with my grandchildren.



which one end of the spork is the cup of a spoon and the other end of the spork has a fork's tines. The spoon's cup is an integral part of the fork's handle. The fork's tines are an integral part of the spoon's handle. One might worry that the handle of the fork does not include all of the spoon's cup (but ends a bit earlier), and similarly for the handle of the spoon and the fork's tines. In that case, the spoon and the fork would only be partially coincident. Although this could be true of some cases of sporks, it does not seem to be true of the case in the picture I have included below. One way to see this is to imagine (as it seems to be the case in the picture) that the curvature of the spork's body is sufficiently curved so that one cannot hold on to it very easily. The result is that one must grab the spoon's cup in its entirety in order to use the fork and one must grab the fork's tines in their entirety in order to use the spoon.

So there is both a spoon and a fork having the same shape, and completely spatially coinciding at t, or anyway so the definition of a spork would have us believe. According to the *Collins Dictionary*, 'Hyde W. Ballard filed an application to register "Spork" as a trademark for a combination spoon and fork made of stainless steel.'<sup>21</sup> Below, for your amusement, I have inserted a picture of the item I have in mind (Figure 1).



Figure 1 Spork.

Are the fork and the spoon two objects that collocate? One might think that there is only one object in the case of the spork. Since 'this spoon' seems to refer to the whole object in front of one (and not to any proper part of it), and 'this fork' also seems to refer to the whole of the object in front of one (and not to any proper part of it), and similarly for 'this spork', they must, so this way of construing the situation would have us believe, be identical. So, perhaps the spoon = the fork = the spork.

Forget the spork as such for the moment. Let's first worry only about the relation between the fork and the spoon. Is the fork = the spoon? Using the same arguments that philosophers who hold that constitution is not identity use, we can show that they are not identical by finding a property that one has at a time t that the other fails to have at t, or by imagining changes in the one but not the other.

First, the difference in properties at a single time. The spoon has the single primary function of transferring liquid into one's mouth; the fork has the single primary function of skewering solid food. It just isn't true that, for example, the spoon has in addition the primary function of skewering solid food. They might also have different incidental functions. Given the difference in their functions, and, assuming they are in good working order, as a consequence they also actually do different things.

Now for cases of change. Cases of damage will also show that the spoon  $\neq$  the fork. If we break off all of the tines, we no longer have a fork at t'. But it is not true that we no longer have a spoon. All that has happened to the spoon is that it now has a somewhat weird handle. Similarly, if we destroy the spoon's cup at t', we no longer have a spoon. But it is not true that we no longer have a fork, although the fork now has a very strange handle. Given a certain kind of damage, we are left either with a spoon but no fork, or a fork but no spoon, so the fork  $\neq$  the spoon.

21 <https://www.collinsdictionary.com/submission/4428/spork>.

Perhaps you don't agree that in these cases we have one but not the other artefact. Maybe we have only a damaged fork or a damaged spoon. It isn't always so clear how to distinguish a damaged artefact from no-artefact-at-all. The statue often used in the standard arguments for (P1) suffers from the same unclarity. If the constituting material is completely flattened, as is usually envisaged, it seems clear that we no longer have a statue. But there will be all sorts of in-between states when it isn't at all clear whether we have a damaged statue or no-statue-at-all.

A fallback argument might be this, for someone still unconvinced that the spoon or the fork is destroyed in the above cases of damage. Remove the tines, and you have a slightly damaged spoon but a grossly damaged fork (and not: no-fork-at-all); hole the cup, and you have a slightly damaged fork but a grossly damaged spoon (and not: no-spoon-at-all). After all, when the tines are removed, the spoon can still be used as a spoon but the fork can no longer be used as a fork, and vice versa when the spoon's cup is holed. The properties of being slightly damaged and grossly damaged are, in each case, had by one of the pair but not the other. So each still has a property that the other lacks.

The above argument, you might say, doesn't take into account that what we have at *t* is a spork (or aspirin\*, as in the previous example). My argument so far, if successful, might only show that we have a spork at *t*, and a spoon but no spork at *t'* (or, a fork but no spork at *t'*). It doesn't show that we also had a spoon and a fork at *t* as well as a spork, before the spork was damaged. The same applies to my above argument about medicines. I assumed that at *t*, there was, in addition to aspirin\*, a pain-killing medicine and a blood-thinning medicine. How can I justify those assumptions? Maybe there was only aspirin\* at *t*.

## ASSUMPTION (A)

Earlier I did not say what Assumption (A) is.<sup>22</sup> I will apply Assumption (A) only to the spork case, because it is more intuitive, but parallel arguments can be given in the case of Baker's aspirin\*. Assumption (A) claims that at *t*, a spoon and fork exist when the spork exists.

As far as I can see, the best way in which to block my argument for non-identity and hence collocation of the spoon and the fork is to deny that they even exist at *t*, although they might come to exist later, after *t*, after the spork is damaged. But at *t*, there is only a spork, but no spoon, no fork. So Assumption (A) is this: in the case of the spork, what exists at *t* is a spoon and a fork (and maybe a spork too). This assumption is crucial to my argument. I think that both the spoon and the fork both exist at time *t*, that the spoon ≠ the fork, and that they collocate when they both exist at the same time. For this, I need to accept Assumption (A).

Once Assumption (A) is made, it is fairly easy to argue for their non-identity. But why accept Assumption (A)? Why not hold that what exist at *t* is only a spork, but not a spoon nor a fork. The spoon or fork only comes into existence at *t'* when the multi-functional spork loses either its tines or cup. It's true that the standard definition of a spork is that it is a combination of a spoon and a fork, but it might be easy enough to hear this only as asserting that a spork is a utensil that can be used both as a fork and as a spoon. I don't put any weight on the conventional definition.

Attributivity is a standard way out of avoiding non-identity conclusions, for actions as well as for objects. Ordinary rules of detachment don't apply when there is attributivity. There is always a trade-off between attributivity and identity. Grundy wasn't both short and tall; he was short for a basketball player but tall for a man (the example is a well-known one from Davidson). Without citing attributivity, we might have foolishly concluded that short Grundy ≠ tall Grundy. Might this maneuver help with aspirin\* and the spork? The aspirin\*-qua-pain killer does one thing, the aspirin\* qua-blood-thinner does another; the spork-qua-spoon does one thing, the spork-qua-fork does another. That might lessen the appeal of the co-existence and collocation of two medicines or two utensils at the earlier time, *t*.

Let me give some reasons to accept Assumption (A), and reject the attributive strategy. I don't think that rejecting Assumption (A) is incoherent or impossible. I don't think I can provide a knockdown argument for its acceptance or against its rejection. But I do think I can give some

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<sup>22</sup> Assumption (A) covers only sortal properties of course, and not phase properties.

good reasons for accepting it. I suppose, in the final analysis, the reader will have to weigh up the costs of accepting Assumption (A) and allowing for some collocating artefacts, or dispensing with collocating artefacts and accepting whatever costs follow from the rejection of Assumption (A).

First, the argument from alteration. Consider the difference between something remaining an F and one's creating a new F. There are certainly times at which I can create an artefact, say a tool, by transforming one into another. I can alter the tip on the shank of a screwdriver at t in such a way that the screwdriver becomes a chisel at t'. What is true in such a case is that I did not have a chisel at t. I have created a chisel at t' from a screwdriver at t. In the case of the spork, do I create a spoon or fork for the first time, by altering or damaging the spork?

I don't think so. I don't think that if I damage or alter the spork, I therefore create a new utensil that I did not have before. In the cases of the spork, we make salient what was always there by eliminating one of the pair. Both the spoon and the fork were there all along. Damaging the spork in a special way does not create either of them. If they were both there at t, then they must have collocated.

Second, the argument from requests. Someone asks me for a spoon and I have a spork to hand. I might say: 'Sorry, I do not have a spoon. I do have a spork.' That is a reasonable reply, but what exactly does it show? Does it show that I have no spoon if I have a spork? No. Repeating the kind of argument Almotahari used earlier, I would not read the 'not' in that sentence as the 'not' of regular negation. It means something like: 'I don't have just a spoon, but a spork' (Cf., 'I don't have just €5 but €10.').

Third, the argument from comparison to (a) type cases. Think back to type (a) artefacts, like the Swiss Army knife. We might say that the Swiss Army knife has four functions: the function of a knife, the function of an awl, the function of a bottle opener, the function of a cork screw. But when the Swiss Army knife has those four functions, no one would consider denying that we have a knife, an awl, a bottle opener, and a corkscrew as parts of the army knife. It's the awl that has the function of punching leather, it's the bottle-opener that has the function of opening bottles, and it's the corkscrew that has the function of opening wine bottles. No one would be tempted to argue that the bottle-opener, the awl, and the corkscrew are eliminated as such and their functions are taken over by the Swiss Army knife and are exercised only by it. Or that each one emerges only if we eliminate the other functions of the knife.

Why should type (a) and type (b) artefacts be treated differently in this regard? Why are type (a) artefacts able to retain their component utensils as proper parts, but type (b) artefacts lose theirs, submerged in the greater whole? In both types of artefacts, type (a) and type (b), we don't lose the component parts to the whole; the components remain, hiding in plain sight, each having its own function. If we treat type (a) and type (b) artefacts in the same way, just as the awl, knife, bottle-opener, and corkscrew continue to exist as components of the knife, so too the spoon and the fork and the pain-killing medicine and the blood-thinning medicine continue to exist, and continue to be the bearers of their functions, even when they are components of the spork and the aspirin\*. That the components of aspirin\* or of the spork would then collocate in type (b) cases, where this is not the case in (a) type cases, should not itself make a difference that would force us to accept the continued existence of the components only in a type (a) case but not in a type (b) case.

For these reasons, and perhaps others, there are costs to denying Assumption (A) as a way of avoiding collocation. It seems to me plainly obvious that if I have a spork, I have a fork and a spoon, although I grant that 'plainly obvious' doesn't add much additional probative strength to my arguments. I think that the common or more natural assumption is that the fork and the spoon exist as parts of a spork; when we have a spork, we do have a fork and a spoon. I have tried to offer arguments for accepting collocation in the alleged case of multi-functional artefacts of the (b) type, *if* we accept collocation of an object and the matter that constitutes it. That, of course, is consistent with denying collocation in both cases.

## COMPETING INTERESTS

The author has no competing interests to declare.

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