

## Du Châtelet: Idealist About Extension, Bodies and Space

Émilie Du Châtelet (1706-1749) was both part of a French movement embracing Newtonian physics and one of the few followers of Leibniz in France at the time.<sup>1</sup> Her magnum opus, the *Institutions de Physique* (1740; translated as *Foundations of Physics*), is often interpreted as aiming to reconcile a Leibniz-inspired metaphysics with Newton's empiricist physics.<sup>2</sup> This paper is concerned with the accounts of space and extension found in the *Foundations*.

Brading *et al.* (2018) completed the first full translation of the *Foundations* into English. Its fifth chapter, on space, is among those that were not available in English before their translation, and therefore has to date received little philosophical engagement in the English-speaking world.<sup>3</sup> I intend to give a detailed philosophical analysis of the views on space and extension as found in the *Foundations*. The purpose of the paper is two-fold. First, I provide an original reconstruction of the central argument of Chapter 5 of the *Foundations*, in which Du Châtelet explains how we come to perceive multiplicities of non-extended simples as extended bodies. Second, I show that this argument reveals an idealist strand in Du Châtelet's system: she is an idealist about extension in the sense that extension is a mental construct which confusedly represents multiplicities of fundamental substances. I will argue that this idealist strand extends to Du Châtelet's views of bodies and space, *contra* Stan (2018) and Brading (2018b). The picture that emerges is of Du Châtelet as both a *substance realist* and a *spatial idealist*.

The structure of the paper is as follows. In Section I, I describe and motivate the particular version of idealism that I attribute to Du Châtelet. The rough idea is that extension, bodies and space are mind-dependent constructs with no direct correspondents at the level of fundamental substances. In Section II, I offer a reconstruction of Du Châtelet's analysis of extension, which substantiates the claim that she was an idealist. In Section III, I argue that this idealism extends to her views on both bodies and space. Finally, Section IV offers a brief but critical evaluation of the emerging philosophical position.

### 1 Idealism: Existence and Essence

I claim that Du Châtelet was an idealist about extension, bodies and space. In this section I characterise the intended sense of idealism. Following Stan

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<sup>1</sup> See Hutton (2004) on Du Châtelet and Newton, and Iltis (1977) on Du Châtelet and Leibniz.

<sup>2</sup> See Janik (1982). However, Brading (2018b) argues against this reading of the *Foundations*. Detlefsen (2014) emphasises the importance of Descartes in the *Foundations*.

<sup>3</sup> There are discussions of Chapter 5 in Hutton (2012, 88-89), Suisky (2012, 138-39) and Reichenberger (2016, §5.2.1). Their focus is more historical than this paper, and hence I do not discuss these at length. Brading (2018b) gives a philosophical interpretation of the chapter, and I discuss her reading below.

(2018) and Stang (forthcoming), I distinguish between three forms of idealism: *substance idealism*, *existence idealism* and *essence idealism*. It is the latter that I attribute to Du Châtelet.

First, consider *substance idealism*:

**Substance Idealism:** all fundamental substances are mind-like ‘monads’ with representational capacities.

Leibniz was an idealist in this sense. Wolff, on the other hand, was dissatisfied with Leibniz’s substance idealism and moved to a realist view on which fundamental substances are physical elements which lack representational capacities but *are* capable of genuine causal interaction.<sup>4</sup> Wolff was thus a *substance realist*.

As Stan (2018) convincingly argues, it is *this* view which Du Châtelet inherits, Leibnizian but certainly not Leibniz’s. In the following, I will take it as a given that Du Châtelet was a substance realist: her fundamental substances are non-extended, non-spatial, non-mental (except for the soul), causally efficacious and capable of standing in genuine relations.<sup>5</sup> Therefore, substance idealism is not the relevant notion of idealism here.

The other two definitions of idealism concern the *mind-dependence relation*. In other words, the issue is not whether everything *is* a mind, but whether some particular things are *in* the mind. Stang (forthcoming) distinguishes between two versions of mind-dependence:

**Existence Idealism:** if *X* exists, its existence is fully grounded in facts about the content of subjects’ perceptions of *X*.<sup>6</sup>

**Essence Idealism:** the essence of *X* is to be part of the content of subjects’ perceptions of *X*.<sup>7</sup>

The first definition, existence idealism, concerns the grounds of the existence of some thing or property.<sup>8</sup> For example, existence idealism about colour

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<sup>4</sup> See Rutherford (2004) on Wolff’s dissatisfaction with Leibniz’ substance idealism; see also Watkins (2006).

<sup>5</sup> According to Du Châtelet, substances are the bearers of essences and attributes; they are enduring and modifiable (§52). Furthermore, the fundamental substances – those substances which ground the existence of all others – are *simple*, i.e. non-extended (§120).

<sup>6</sup> Stan’s (2018) definition of existence idealism is similar, but refers to perceptions which are common to *all* mind-like perceivers. But since Du Châtelet rejects the Leibnizian view that all substances are mind-like, the idea of a common perception is not applicable.

<sup>7</sup> Stan and Stang’s definitions of essence idealism are not identical. I am here following Stang, whose definition is more applicable to Du Châtelet’s position.

<sup>8</sup> According to Du Châtelet, all that is possible *can* exist (§34), but it depends on God’s will which beings *actually* exist (§49). Du Châtelet does not use the term ‘grounding’, but she does believe that the existence of some beings can depend on that of others;

implies that colour exists in virtue of the perceptual content of observers: all that is needed for colours to exist is that observers have perceptual experiences with colourful contents. In other words, once we have specified all the facts about observers' perceptions, we get the existence of colours 'for free'. If one denies existence idealism, then the existence of the relevant objects is at least partly grounded in non-mental facts, such as the existence of physical elements with mind-independent colour properties. It is perhaps misleading to call the denial of existence idealism *realism*, since it is consistent with the claim that the existence of some object is grounded in both mental and extra-mental facts. I will therefore call the negation of existence idealism *weak existence realism*.

The second definition, essence idealism, is concerned with what it is for *X* to exist, rather than what *grounds X's* existence.<sup>9</sup> According to essence idealism, what it is for *X* to exist is for some observers to have perceptions of *X*, or perceptions with an *X*-like content. For example, essence idealism about colour means that the essence of colour is to be part of the content of those perceptions with a colourful phenomenal character. In other words, there is nothing to colour 'over and above' this perceptual content. If we think of something's essence as a set of necessary and sufficient conditions for being that something, then essence idealism is the claim that these conditions concern mental representations and nothing else. The essence realist denies this claim: according to her, the essence of (for example) colour contains something extra-mental, such as correlations to a certain molecular structure.

What is the relation between essence and existence idealism? It is obvious that essence idealism implies at least weak existence realism: if *X's* essence is mental, then *X* cannot exist without minds to represent it, and hence *X's* existence is at least partly grounded in mental facts. But essence idealism does *not* entail existence idealism, i.e. that the *full* ground of *X's* existence is mental. Stang argues that, in general, claims about essence do not entail claims about existence. He gives the following counter-example. Suppose that Leibniz' essence consists of having Friedrich Leibniz and Catharina Schmuck as his parents. This does not mean that the fact that these were Leibniz' parent is the full ground of his existence. For example, Leibniz' existence is (also) grounded in facts about his particular biological make-up: if there were no molecules aligned in a Leibniz-like fashion, then Leibniz would not exist. Therefore, the claim that Leibniz' essence consists of having a particular pair of parents does not entail the claim that having these parents suffices to ground his existence. In general, the claim that the essence of some

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specifically, she argues that there are extended beings *because* there are simple beings (§120).

<sup>9</sup> For Du Châtelet, an essence is a set of non-contradictory determinations which grounds the possible existence of beings. While Du Châtelet does not define essences in terms of what it is for some being to exist, she argues that if "the essence is no longer the same, it is no longer the same Being" (§46). The notion of essence I use is thus similar to Du Châtelet's own concept.

$X$  is  $E$  does not entail that facts about  $E$  are the sufficient ground of  $X$ 's existence.

It is thus possible to hold both essence idealism and weak existence realism, and it is this combination of views that I attribute to Du Châtelet. She considers extension to be a confused perception of multiplicities of simple substances, and so the *existence* of extension is partly grounded in extra-mental simples. But the *essence* of extension is mental: all there is to extension is that it is a confused *perception* of groups of simples.<sup>10</sup> In the next two sections I will defend this interpretation of Du Châtelet.<sup>11</sup>

Finally, a note on my use of the term 'idealist'. While Du Châtelet herself did not describe her views in the above terms, the distinctions I have drawn are both historically and philosophically motivated. Historically, the notions of substance idealism and idealism as mind-dependence are inter-twined. As Stan (2018, 490) illustrates, definitions of idealism found in contemporaries such as Wolff encompass both concepts.<sup>12</sup> As the aim of this paper is not historical, I will not further trace the origins of these terms. Of at least equal importance is the fact that these definitions are philosophically justified. Stang uses the distinctions above to contrast Leibniz with Kant, and Stan uses a related set of concepts to situate Du Châtelet with respect to Leibniz and Wolff. Their results show that these concepts are sound and powerful tools to characterise the views of Du Châtelet and her peers. In this paper, I use the same concepts to describe Du Châtelet's views on extension and space. If this analysis is successful, then this provides further support for their robustness. And although the goal here is to give an intrinsic description of Du Châtelet's idealism, using a consistent framework also enables us to further compare Du Châtelet's views with those of Leibniz, Wolff, Kant and others, a research agenda which I leave for future work.

## 2 Du Châtelet's Account of Extension

Brading (2018a) mentions Du Châtelet's account of extension when discussing the 'problem of bodies': how can non-extended physical elements give rise to extended bodies? She remarks on Du Châtelet's 'interesting and

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<sup>10</sup> There are similarities between this view and Jolley's (1986) 'misperception thesis' on Leibniz, according to which bodies are confused perceptions of aggregates of monads.

<sup>11</sup> Du Châtelet does not define the terms 'mind' or 'mental'. Instead, she uses concepts such as 'idea', 'perception' and 'abstraction'. I use the term 'mental' as a catch-all for these concepts, which all concern our *representations* of fundamental simples. For example, 'mental facts' about extension are facts about our representations of extension. I do not intend to commit Du Châtelet to any particular view on the philosophy of mind.

<sup>12</sup> For example, Wolff writes that idealists are those who "claim bodies to only have an ideal existence in our souls" (Wolff 1728, §25), which we can interpret as an expression of *essence* idealism. But in the same he claims that idealists "admit solely the soul's existence [and] are Monists who claim the soul to be an immaterial being", which is equivalent to *substance* idealism.

highly unusual' claim about space and extension in Chapter 5 of the *Foundations*, namely that we *necessarily represent a multiplicity as spatially extended*. Brading notes that this claim is an important premise in Du Châtelet's argument for extended bodies.

Given its central role in Du Châtelet's project, I will here give it the close attention it deserves. The argument for the claim appears in §77 of Chapter 5 of the *Foundations*. I will first give a reconstruction of this argument, and then comment on each of its steps. As will become clear, Du Châtelet's argument implies essence idealism about extension. In the next section, I argue that this idealism about extension likewise implies idealism about bodies and space.

The metaphysical context in which Du Châtelet writes is, as mentioned, Wolffian. The fundamental building blocks of the world are what she calls Simple Beings, or *simples*, which are physical and non-extended. What Du Châtelet argues in §77 of the *Foundations* is that we necessarily represent a *multiplicity* of such beings as extended. Given that bodies are constituted of multiplicities of Simple Beings (Brading 2018a, 158), this implies that we necessarily represent *them* to ourselves as spatially extended, solving the problem of bodies.

Here, then, is my reconstruction of Du Châtelet's argument to the effect that we represent multiplicities as spatially extended:

- (1) We necessarily<sup>13</sup> represent numerically distinct simples (i.e. multiplicities) as external to each other.
- (2) We represent simples that are external to each other *as a unity* by representing them as spatially extended.
- (3) *Sub-Conclusion*: When we represent a multiplicity as a unity, we necessarily represent it as spatially extended. (From (1) and (2))
- (4) When we represent a multiplicity, we necessarily represent it as a unity.
- (5) *Conclusion*: We necessarily represent a multiplicity as spatially extended. (From (3) and (4))

I will now comment on each of the steps of this argument.

1. Premise (1) is clearly stated by Du Châtelet at the start of §77:<sup>14</sup>

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<sup>13</sup> The sense of necessity here is tied to facts regarding our perceptual and representational capacities as human beings; see Du Châtelet (1740, §153).

<sup>14</sup> All quotes, except where mentioned otherwise, are from Du Châtelet (1740), trans. Brading *et al.*, 2018, available at <http://kbrading.org/translations>.

We feel that, once we consider two things to be different, and when we distinguish one from the other, in our minds we place one external to the other. (§77)

However, it is unclear what Du Châtelet means by ‘external’, and she does not define her use of this term. I want to suggest two alternative readings of this term. On the strong reading, ‘external’ is a *spatial* notion. Consequently, we necessarily represent distinct simples as located in space at some distance from each other. On the *weak* reading, on the other hand, ‘external’ is not a spatial but a metaphysical relation such as ontological independence. Thus, on the weak reading we do not (yet) represent simples as standing in spatial relations to each other at this stage of the argument. At first sight, the weak reading seems implausible: what can ‘external’ mean, besides spatial removal? Indeed, recent commentators such as Stan and Brading subscribe to the strong reading without considering the weaker alternative. Nevertheless, I believe that there is both historical and textual evidence that the weak reading is the correct one. I now give three arguments to show this.

First, note that Wolff uses the term ‘external’ in a non-spatial sense. Insofar as Du Châtelet follows Wolff, then, the weak reading is preferable. According to Wolff, it is the *ontological* order of externality that we represent as a spatial order. Consider for example the following passage from Wolff’s *Deutsche Metaphysik*:

§46. *What space is.* Now when many things that exist at the same time and are not identical are represented as external to one another (§45), a certain order among them thereby arises [...]. And as soon as we represent this order [of externality] to ourselves, we represent space to ourselves.<sup>15</sup>

Wolff writes that space is the representation of an order among elements, and that order is induced by the external-to relation. Therefore, the external-to relation *precedes* our representation of space and so is not itself a spatial relation. Hogan (2007) remarks of this passage that “Kant would later interpret [it] as according a conceptual priority to the representation as ontological distinctness over that of spatial relatedness” (30). There is thus a strong historical precedent for a non-spatial interpretation of ‘external’.

Second, the example Du Châtelet gives to illustrate her notion of externality fits the weak reading. The example is that of ‘[imagining] a structure that we have never seen before’. This object, being a figment of our imagination, does not exist in the world. It is *internal* to our mind. Nevertheless, ‘we represent it as external to ourselves [...] because we know that it is different [i.e. numerically distinct] from us’. The sense in which we imagine the object as external is thus not spatial. The point is not whether or not we represent the imagined object as *co-located* with the mind, but that we represent the object as not *in* the mind; in other words, as non-mental, and hence not dependent

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<sup>15</sup> Wolff (1720), as translated in Beck (1969)

on the mind for its existence. This internal/external distinction has an ontological flavour which the strong reading cannot capture.

Third, a later remark in the same section lends further support to the weak reading. Here, Du Châtelet discusses philosophers who consider the soul as extended. She rebukes that “regarding attributes and modes of a Being as separate Beings, existing external to one another is to abuse the notion of Extension; for these attributes and modes are inseparable from the Being that they modify” (§77). Du Châtelet argues that, since the attributes and modes of a Being are inseparable from it, it is incoherent to consider them as external to each other. It is again implausible that she is concerned with the physical location of these attributes and modes. Rather, it seems that the sense of internal and external used here is again that in which attributes are internal to the substance in which they inhere, whereas distinct substances are external to each other and thus ontologically independent. Du Châtelet’s point then is that, since attributes and modes are internal to and dependent on Simple Beings (as she argues in Chapter 3), it is a mistake to represent them as external to each other.

In conclusion, there is strong support for the weak reading of ‘external’. I will return to this issue below when discussing Du Châtelet’s views on space. But before moving on to the next premise, let me discuss an objection to the weak reading, namely that it is *too* weak. Since Simple Beings are the fundamental substances of Du Châtelet’s metaphysics, their ontological independence is guaranteed and hence the first premise of Du Châtelet’s argument is trivial.<sup>16</sup> I have two responses to this objection.

First, externality is not the sole ingredient in Du Châtelet’s account of extension. As we will see below, *unity* is another and equally important element. This reveals an important difference between Du Châtelet and Wolff. According to the latter, we represent space “as soon as we represent this order [of externality]”, and hence that order is isomorphic to space itself. For Wolff, then, the external-to relation does a lot of work: it has to account for the metric properties of space, and so is richer than ontological distinctness. But Du Châtelet does not face the same burden, since she never claims that we represent the external-to relation as space. Her account of space does not require a strong reading of ‘external’.

Second, there is room within the weak reading for a thickening of ‘external’. For example, Brading (2018b) suggests that what is represented as external is a *causal* order among simples. Du Châtelet herself suggests another interpretation. In §133, she explains that all simples are dissimilar to each other, such that each one requires all other simples to coexist with it. She writes that “it is by this dissimilarity that one can understand how non-extended Beings can form extended Beings; for the Elements exist each of them necessarily external to the others [...]”. It is evident that Du Châtelet

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<sup>16</sup> I thank an anonymous reviewer for levelling this objection.

sees a close connection between externality and dissimilarity. But dissimilarity is a richer notion than ontological distinctness, since it involves the intrinsic properties of simple substances. There is thus scope for a less trivial interpretation of 'external'.

I lack the space to follow up on these threads, and leave it to future research to figure out the exact meaning of 'external' in the *Foundations*. For our purposes, the important point is that even these thicker readings of 'external' are consistent with the weak reading, since both 'causally related' and 'dissimilar' are non-spatial concepts. Therefore, the weak reading I have proposed is far from trivial and, I believe, the correct one.

2. There is no explicit mention of premise (2) in the text, and one might wonder whether we cannot do without (1) and (2) and directly postulate (3), which is explicitly stated in §77. However, Du Châtelet's statement of (3) starts with 'It follows from this that [(3)]', making it clear that she means (3) to be a (sub)conclusion following from at least (1). However, (3) does not follow from (1) without the addition of (2), and hence a charitable reading adds (2) as a 'hidden premise' of the argument. An example Du Châtelet gives is suggestive of this missing link:

Thus we give extension to a line, insofar as we pay attention to several distinct parts which we see as existing externally to one another, which are united together and which are for this reason a single whole. (§77)

On the one hand, when representing a line we represent its parts as external to each other. On the other hand, however, we represent the line as a *single whole* – a unity – rather than as a collection of parts. This is what causes us to represent the line as spatially extended. It is, as it were, a trick of the mind in order to represent a multiplicity of simples as a unified whole. See the discussion of premise (4) for more detail on how extension provides unity to a multiplicity.

3. The sub-conclusion (3) follows straightforwardly from (1) and (2) and establishes an interesting thesis. It is clearly stated by Du Châtelet:

It follows from this that we cannot represent to ourselves several different things as being one, without this resulting in a notion that is attached to this diversity and union, and this notion we call *Extension*. (§77)

4. The sub-conclusion (3) states that when we represent a multiplicity as a unity, we necessarily represent it as spatially extended. However, we don't yet know if the antecedent of this conditional is true: *do* we 'represent several different things as being one'? While it is clear that Du Châtelet assumes this, she does not discuss this assumption in Chapter 5. However, elsewhere in the *Foundations* she sheds light on the question. Chapter 7 ('On the Elements of Matter') contains the following passage:



[The idea of extension] is nothing but a Phenomenon, an abstraction of several real things, by the confusion of which we form for ourselves this idea of extension; it is from this confusion that arise almost all the objects that fall under our senses, and of which the realities are often infinitely different from the appearances. Thus, if we could see distinctly all that composes extension, this appearance of extension that falls under our senses would disappear, and our Soul would perceive only Simple Beings existing each external to the others[.] (§134)

In other words, we represent Simple Beings that exist externally to each other as a spatially extended unity because we cannot *distinctly* perceive those beings that together compose an extended being. Our perception is, as it were, ‘low-resolution’. If we were to have high-resolution perception, we would see the individual, non-extended Simple Beings that we confuse – in the sense of *fusing together* (Stan 2018) – as truly external to each other. It seems to be a brute fact about our sense organs that this is impossible for us.

We can now understand what makes Du Châtelet an essence idealist. In Chapter 8 (‘On the Nature of Bodies’), Du Châtelet calls extension a ‘Substantial Phenomenon’, with which she means phenomena that “seem substances to us, but that nevertheless are not” (§156). It *seems* as if extended matter is an enduring substance with changing states, or modes. But, she goes on to write, “there are no true substances except [non-extended] simple Beings”. Therefore, extension is a *phenomenon* “which arises from the confusion that reigns in our organs and in our perceptions” (§152), where phenomena are defined as ‘images or appearances arising from several realities by confusion’ (§154).

Du Châtelet compares extension with sensible qualities such as colour. Suppose that we have a canvas on which yellow and blue dots are placed close together. From a distance, the canvas appears uniformly green. However, the green appearance of the canvas is a phenomenon: the green is an image which results from (con)fusing together the yellow and blue dots. According to Du Châtelet, extension is like the green colour of this canvas: it exists as a confused appearance in our minds, while the world at its fundamental level is made up of non-extended Simple Beings.

Recall that essence idealism about extension is the view that extension is an essentially mental phenomenon: extension is part of the content of our perceptions, and not ‘out there’ in the mind-independent world. And that is what Du Châtelet believes extension is: it is an “image or appearance” which results from a confusion of the mind. She leaves no doubt about the essentially mental nature of this appearance. Continuing the comparison with colour, she writes that “the Phenomenon of green exists only through this confusion” (§153), and “it is therefore certain that *there is nothing in Nature* like the colors and the objects that result from their combinations [...]; and that *all things exist only in so far as Beings exist* who, in confounding the realities they could not discern, *bring into existence* in themselves these images that are only Phenomena” (§154, emphasis mine). In the next

paragraph, she calls extension “an image that is infinitely different from the realities entering into it (§155). In sum, extension is not a representation of a mind-independent attribute of (aggregates of) simples. It is a mental construct, and disappears without a mind to represent it.”<sup>17,18</sup>

Nevertheless, Du Châtelet is not an existence idealist. The existence of extension is partly grounded in mental facts, since without minds to represent multiplicities as extended the phenomenon of extension ceases to exist. But extension is also grounded in these multiplicities themselves. After all, it is these multiplicities that we confuse into extended bodies, and so without them there is no image of extension. As Du Châtelet writes, “it is impossible for us to represent to ourselves the internal state of all the Simple Beings (*upon which, nevertheless, the Phenomenon of extension depends*)” (§134). Therefore, she believes that the ground of extension is part mental and part extra-mental. In conclusion, Du Châtelet was both an essence idealist and a (weak) existence realist about extension.

Du Châtelet’s essence idealism allows her to explain the sense in which extension *unifies* multiplicities of simples. There is a paradox here, because multiplicities have independent parts and hence are *not* unified wholes. If Du Châtelet believes that extended bodies are identical to aggregates of simples, then her bodies cannot have any genuine unity. However, she does *not* equate bodies with multiplicities. Instead, bodies are mental representations of multiplicities *as* unified wholes. It is thus the *idea* of extension that has a genuine unity, and this unity is conceptual rather than actual. Without the mind to represent bodies as extended, this unified object disappears and all that is left are aggregates of non-extended simples that are external to each other.<sup>19</sup>

5. Finally, from (3) and (4) the ‘interesting and highly unusual’ claim that plays the role of premise in Brading’s reconstruction of Du Châtelet’s solution to the problem of bodies follows as a conclusion. Du Châtelet states it as follows:

Since we represent to ourselves in extension several things that exist externally to each other, and that are one through their union, all extension has parts that exist externally to one another and which are

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<sup>17</sup> See also Gireau-Geneaux (2001), who gives a detailed analysis of Chapter 7 and 8 of the *Foundations*. Her reading agrees with mine on the mental nature of extension for Du Châtelet: “Les qualités sensibles n’existent donc pas en soi mais par l’homme qui confond les éléments qui les composent, faute de pouvoir discerner” (184).

<sup>18</sup> Du Châtelet does not use the term ‘mental construct’, but instead refers to acts of perception, confusion and abstraction. It is these representational acts which the term ‘mental’ is supposed to capture. See also fn. 11.

<sup>19</sup> Compare this with Leibniz’ distinction between an *unum per se* and an *unum per aggregationem*: the latter is likewise a phenomenon which receives its unity from the mind.

one, and once we represent to ourselves things that are both diverse and unified we have the idea of an extended Being. (§77)

This completes Du Châtelet's account of extension. On this 'extension-first' interpretation of Du Châtelet, she held the view that we must represent multiplicities of simples as united wholes due to our perceptual limitations. In order to do this we construct an extended representation of these multiplicities, which is an unfaithful representation of aggregates of fundamental substances. This makes her account an idealist one, in the sense described above.

It is useful at this junction to compare the above reconstruction with the alternative reading offered in Brading (2018b). I will first summarise Brading's interpretation before giving arguments against it. Brading subscribes to the strong reading of 'external', interpreting it as a spatial relation. On her interpretation, in order to have a unified representation of a multiplicity of simples we have to represent it spatially. She illustrates this with an example adopted from Du Châtelet:

Suppose that we wish to imagine *two* similar apples. How do we ensure that we have *one* representation of *two* apples, rather than *two* representations of *one* apple? The answer, Du Châtelet suggests, is that we represent the apples to ourselves as standing in spatial relations to one another. The spatial relations ensure that we have a single representation (a unity) of two things (of a diversity or multiplicity). (Brading 2018b, 61)

Thus, the requirement of a unified representation of distinct simples leads us to represent simples as being external to each other in an extended spatial manifold. However, placing simples in a spatial manifold does not yet give us a perception of extended *bodies*. This is where the notion of *confusion* comes in, according to Brading: "The answer is that we are unable to perceive the multiplicity distinctly [...], perceiving them only confusedly instead. Confused perception accounts for how a collection of interconnected simples yields the experience of a single extended body [...]" (63).

Brading's Du Châtelet thus offers a two-tiered account of extension. Firstly, we represent distinct simples as *spatially* external to each other in order to obtain a unified representation. This immediately implies the representation of an extended space. Secondly, we confuse these distinct simples, which are now already placed within an extended spatial manifold, into a unified whole, resulting in the perception of extended bodies. This differs from the above reconstruction on two crucial points. First, I construe external-to as a non-spatial relation. And second, I believe that the *same* confusion *both* leads to our perception of bodies as extended, *and* to our representation of an extended space. I believe that the interpretation I have offered is favourable over Brading's, for the following two reasons.

First, Brading favours a strong reading of the term ‘external’. Therefore, the arguments I have given above in favour of the weak, non-spatial reading are applicable here, too. If ‘external’ is *not* a spatial notion, as I have argued, then Brading’s account does not come off the ground.

Second, Brading’s account accords an awkward dual role to the notion of a unity. On the one hand, it is the requirement of *representational* unity that leads to the representation of simples within an extended *space*. On the other hand, the fact that we confuse distinct simples into a *perceptual* unity leads to the spatial extension of *bodies*: “the confusion in how we represent the plurality of causally related simples to ourselves yields our experience of that plurality as a *single* extended thing [...]” (Brading 2018b, 64). On Brading’s account, representational unity and perceptual confusion appear as two distinct steps in how we form our eventual idea of extended bodies. However, this duality is not apparent from the text of the *Foundations*. For example, when Du Châtelet introduces her discussion of perceptual confusions in §133, she explicitly refers back to §77, using the exact same terminology. It seems uncharitable to interpret her as using these words in two different senses, first for representational unity and spatial extension, and later for perceptual confusion and the extension of bodies, without commenting on this distinction. Or consider the following already quoted passage:

[I]f we could see distinctly all that composes extension, this appearance of extension that falls under our senses would disappear, and our Soul would perceive only Simple Beings existing each external to the others[.] (§134)

This passage makes no mention of simples as unified, and a plausible interpretation is that if we could perceive simples without confusing them into a whole, we would have a faithful representation of them as only external to (and not unified with) each other. Hence, it is the perceptual confusion that leads to our representation of simples as unified. Therefore, if we accept the reconstruction that I have laid out above, then we can give a consistent interpretation to these passages, on which the extension of bodies results from our representation of multiplicities of simples as confused unities.

At the start of §77, Du Châtelet states her intention to examine ‘how we come to form our ideas of extension, Space and continuity’ – what of space, then?<sup>20</sup> In the next section, I will argue that Du Châtelet builds her account of space *on top of* her account of extension; hence, if she is an idealist about the latter, she must also be an idealist about the former.

### 3 Bodies and Space

On the one hand Du Châtelet is a *substance realist*: her Simple Beings are physical elements, and thus lack representational capacities while

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<sup>20</sup> Unfortunately, I do not have room to address continuity; see Van Strien (2017) for a discussion.

participating in genuine causal interaction. On the other hand there is a clear idealist strand in Du Châtelet's thinking. For her, extension is neither fundamental nor a well-founded phenomenon grounded in fundamental relations between simples; it is a *confusion*, a reality brought into existence through our perception. In this section I argue that this strong idealist strand extends to Du Châtelet's views of both bodies and space. On my view Du Châtelet was both a *substance realist* and a *spatial idealist*.

### 3.1 *Bodies*

As we have seen, there is no doubt that Du Châtelet is an idealist about the extension of bodies. Stan concurs: "Du Châtelet's position is clear: no corporeal extension or force without a mind to represent it as such" (2018, 494). However, he disputes that Du Châtelet is an idealist about bodies themselves: "her view is realist, and so is her picture of bodies, which likewise exist qua real aggregates, without help from minds" (495). I argue that Stan is incorrect: although bodies are partly grounded in aggregates of simples, their essence is mental and hence their existence is mind-dependent.

I lack the space to set out Du Châtelet's account of bodies in detail, but here is a sketch. According to Du Châtelet, the essential attributes of bodies are *extension*, *active force* and *passive force* (§145). We have already seen how she accounts for extension, and she gives both types of forces an analogous treatment. For Du Châtelet, these forces result from confused perceptions of the internal states of Simple Beings (§152). Therefore, active and passive force can ground the mind-independent existence of bodies no more than extension can. In the following, I will take extension as the representative essential attribute of bodies. Du Châtelet allows for this, since for her "extension, passive force and motive force do not depend at all upon each other" (§147). We are therefore justified in considering extension in isolation.

If the essential attributes of bodies are all mind-dependent, it would seem that bodies themselves must also depend on the mind. But according to Stan, bodies are identical to aggregates of Simple Beings and so do not depend on the mind for their existence. It is true that Du Châtelet sometimes appears confused on this issue: she writes that 'Extension is one of the essential properties of matter' (§150), but also that 'Composite Beings are not Substances in themselves, but assemblies of Substances or of Simple Beings' (§134) and that '[Bodies] are Beings composed of several parts' (§140). Stan cites these passages as evidence for his realist interpretation. In the remainder of this subsection I will argue that these passages are consistent with an essence idealist reading.

First, note that when Du Châtelet writes of 'parts' of bodies, she does not always mean their *mereological* parts, the Simple Beings. Often, she means *geometrical parts*, that is, the parts that arise from the division of an extended

body, and which are thus themselves extended.<sup>21</sup> Consider, for example, Du Châtelet's reasoning in §139. Here, she argues that the nature of bodies cannot solely consist of extension, for then matter would be homogeneous, which stands in contradiction with the Principle of Sufficient Reason. Hence, she introduces an active force distinguishing parts of matter. Therefore, Du Châtelet here must mean *extended parts* of matter rather than their fundamental constituent simples, because the latter are non-extended to begin with. The passage cited by Stan, in which Du Châtelet writes that bodies 'are Beings composed of several parts', occurs in the next section. Thus, the context already suggests that she means the extended parts of bodies. This is confirmed in what she writes next: "there cannot arise changes in the composite except with respect to its shape, its size, the situation of its parts [...]" (§140). It does not make sense for this passage to refer to non-extended simples, since only extended things can change their shape and size. Therefore, when Du Châtelet claims that bodies are 'composed of several parts', she means that *extended* bodies have *extended* parts. *Contra* Stan, she does not mean that bodies are identical to aggregates of Simple Beings.

Second, in §134, in which Du Châtelet explains how extension results from the aggregation of Simple Beings, she speaks of 'Composite Beings' or '*Composé*', rather than 'Bodies' or '*Corps*'. This terminological shift suggests that in passages such as these, Du Châtelet is talking about bodies *qua* aggregates of simples, without committing to the claim that bodies are *identical* to such aggregates. Indeed, in the same paragraph Du Châtelet goes on to argue that extended bodies emerge from aggregates through confused perception, which supports the essence idealist reading on which the essence of extended bodies is mental.

In conclusion, the passages that Stan cites as supporting a realist view of bodies are better interpreted as statements regarding multiplicities considered as aggregates of simples. We cannot conclude from these passages that Du Châtelet was a realist about bodies. Instead, the more natural reading is that her idealism about the *essentialia* of bodies implies idealism about bodies themselves. Indeed, Du Châtelet argues in Chapter 3 that the essential determinations are "the sustainer of the Being" and its attributes and modes. Since the essential determinations of bodies are mind-dependent, so is their existence: "for the essential determinations being removed, the attributes fall as in ruins, just like the modes, *and so the Being no longer exists*, it is no more" (§52, emphasis mine). The relevant sense of mind-dependence is again that of essence idealism. Since bodies are confused perceptions of aggregates, the latter are a partial ground of the existence of bodies. Nevertheless, bodies are not *identical* to aggregates. Instead, bodies are identified with certain representations, and hence are mind-dependent in the sense that their

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<sup>21</sup> Du Châtelet further elaborates on this distinction between geometrical and physical bodies in Chapter 9 (see §168ff).

essence is mental: there is nothing to bodies ‘over and above’ our representations of them.

Objection: this interpretation implies that Du Châtelet is inconsistent in how she grounds extension. On the one hand, extension is grounded in mental facts about the confusion “that reigns in our organs”. But on the other hand, she follows Wolff in introducing non-extended simples as the ultimate ground of extension. For example, she writes that “extended beings exist because there are simple beings” (§120) and that “God cannot have created extension without creating simple beings first” (§124).<sup>22</sup> It thus seems as if Du Châtelet has two different stories about extension: in Chapter 7 she argues that it follows from the Principle of Sufficient Reason that extension requires the existence of simples, but then in Chapter 8 she turns around and claims that extension is no more than a mental confusion!

However, Du Châtelet is not inconsistent here. It is possible for her to both hold that extension is grounded in Simple Beings, *and* that it is in its essence a mental construct. Recall the difference between essence and existence realism. The latter concerns what grounds the existence of bodies, and the passages I have cited above prove that Du Châtelet was not an existence idealist about extension. But I claim that she was an *essence* idealist, i.e. that her bodies are confused phenomena. And as I argued in Section I, existence realism does not entail essence realism, so it is possible for Du Châtelet to hold both essence idealism and (weak) existence realism. Du Châtelet’s bodies are mental phenomena that are grounded in the existence of simples, and this explains how she can both argue for the existence of these simples *and* claim that the essence of bodies lies in our perceptions of them. Du Châtelet’s account of bodies is complicated and at times equivocal, but it is consistent across the various chapters of the *Foundations*.

### 3.2 Space

While Stan does not discuss Du Châtelet’s account of space in detail, he does state that ‘for her, space and time are grounded in real relations between elements, not just abstractions from common perceptions by all basic substances’ (489). In other words, according to Stan, Du Châtelet follows Wolff in grounding space in mind-independent relations between substances. Brading (2018b) also argues that space is a faithful representation of an extra-mental order. I dispute these claims: for Du Châtelet, space, like extension, is a mental construct which is a confused representation of the relations between simples.

It is important to distinguish between two senses of ‘space’: space as a substance, and the spatial character of our representations. In Chapter 5, Du Châtelet draws this distinction in the form of a contrast between the idea of space as an independent substance on the one hand, and our representation

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<sup>22</sup> Du Châtelet (2009).

of actual bodies in space on the other: “those who wanted to apply to *actual Space* the demonstrations that they had deduced concerning *imaginary Space* could not help but lose themselves in labyrinths of errors from which they could find no way out” (§87, emphases mine). The latter, imaginary space, is the idea of space as a substance we construct for ourselves when considering extended bodies in the abstract, and which we can consider in isolation. On the other hand, actual space is that space in which we represent actual bodies, and which depends on these bodies for its existence.

Let us consider the former first: does Du Châtelet believe in a Newtonian absolute space as an independent substance? Du Châtelet is clear in her answer to this question: she follows Leibniz in considering space as an *idea*, not a substance (§74). Before going into detail, it is again important to distinguish between two sorts of account one can give of space as a substance. The first is an account of what space *is*, whereas the second concerns how we acquire our *idea* of space. Since Du Châtelet believes (without giving much of an argument) that there is nothing substantial to space over and above our idea of it, she equates the two questions and goes on to answer the latter. In §78, Du Châtelet explains that we arrive at the idea of homogeneous extension by abstracting away the ‘internal determinations’ of the diverse and united simples that we confuse into bodies. In §79, then argues that the idea of space “is nothing other than [this] idea of extension joined with the possibility of restoring to the coexistent and unified Beings, from which the idea was formed, the determinations that we had already stripped from them by abstraction”. It is this concept that she then calls the ‘order of coexistent things’. Du Châtelet uses this account to derive the essential properties of absolute space, such as its homogeneity, infinity and immutability (§§80-85). Unfortunately, I lack the space here to give these powerful paragraphs their deserved attention. What is important to note is this: the idea of space is based on the idea of extension. It is a further abstraction from the idea of extension, rather than extension being an abstraction of the idea of space.<sup>23</sup> Thus, insofar as Du Châtelet is an essence idealist about extension, she is also an essence idealist about space. For Du Châtelet, space *is* an abstract idea, and hence its essence is mental.

The second question concerns not space as a substance, but our spatial representation of the world. Even if space is an abstract idea, we still represent bodies as having spatial properties such as location and distance. The question I now want to ask is whether Du Châtelet was an idealist about space in this sense: does she believe that the essence of the spatial character of our representations is to be part of the content of our perceptions? Of course, this is not the case for an absolutist such as Newton. For the absolutist, part of the essence of our spatial representation is that it represents the locations of bodies in absolute space. Since these locations are

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<sup>23</sup> As Suisky (2012) notes, this sets Du Châtelet apart from both Leibniz and Wolff, who reverse the order of explanation here and explicate extension in terms of a *prior* notion of space.



mind-independent, not all of the essence of our spatial representations concerns the content of those perceptions. And hence absolutists are not essence idealists.

It is also doubtful whether someone like Wolff, who was a relationist, was an essence idealist about space. As I discussed above, Wolff argues that we represent space as soon as we represent the order of elements which are external to each other. And so for Wolff, part of the essence of our representation of elements in space is that it maps onto this order of coexistents, which is of course a mind-independent order. Again, this means that part of the essence of space is extra-mental, so it seems that Wolff was not an essence idealist about space.

With Du Châtelet the issue is not as clear. The question relates back to the distinction between the strong and weak reading of 'external'. On the strong reading, Du Châtelet's account is similar to Wolff's: space is a representation of the order of Simple Beings. On this reading, part of the essence of space is that it bears a structural resemblance to this mind-independent order, and so the strong reading is not essence idealist.<sup>24</sup> On the weak reading, on the other hand, space and extension are *both* brought into existence through our confused perceptions of distinct simples as united wholes. As we have seen, Du Châtelet is an essence idealist about extension. On the weak reading, then, she is likewise an essence idealist about the spatial character of our representations, which is also a phenomenon or appearance.

We cannot give a definitive answer as to which interpretation is correct, since Du Châtelet never states her views on this subject. I believe that the weak reading is correct for the reasons given in Section II. I also believe that a strong reading, such as Brading's, is problematic, for reasons expressed in the same section. I now want to advance one more argument for the claim that Du Châtelet was an essence idealist about space. It is not a knock-down argument, but it adds further support to the idealist reading I propose.

The argument goes as follows. If Du Châtelet believes that space is a truthful representation of the order of simples, then space for her is *prior* to the concept of extension. After all, extension is *not* a truthful representation of the relations between simples, but a confusion. However, Du Châtelet *reverses* this order of explication. Specifically, she explicates the notion of parts of space *in terms of* the extension of bodies. Since the extension of bodies, for Du Châtelet, is mind-dependent, these further aspects of our spatial representation must therefore be mind-dependent to at least the same degree. Therefore, Du Châtelet is a spatial idealist.

In §87, Du Châtelet writes that:

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<sup>24</sup> It is, of course, *existence* idealist, since it is trivial that mental representations are mind-dependent.

Just as there are no real units more than there are actually existing things, neither are there any actual parts of Space except for those designated by actually existing *extended* things. (§87, emphasis mine)

Recall that actual space here is opposed to imaginary space, or space as an idea. Du Châtelet writes that actual space has actual parts. But these parts are determined through the *extension* of *bodies*, rather than the intrinsic properties of Simple Beings. Since extension is mind-dependent, it follows that the division of space into actual parts is also brought into existence in our minds without corresponding to a division at the level of Simple Beings. But if Du Châtelet were an essence *realist* about space, she would believe that the properties of actual space are grounded in the order of simples, and thus cannot depend on extended bodies. This passage therefore provides evidence for Du Châtelet's strong spatial idealism.<sup>25</sup>

Objection: Du Châtelet could still hold a *limited* form of (weak) realism. Perhaps the 'continuous' aspects of space, such as its division into parts, are mind-dependent, but the 'granular' properties of spatial location and distance are not. For example, Du Châtelet may imagine Simple Beings as located on a discrete manifold, or grid, which, being non-continuous, cannot be divided into parts.<sup>26</sup> Nevertheless, it is still possible in this case for Simple Beings to bear spatial distance relations to each other. Therefore, the strong reading on which Du Châtelet is a spatial realist is still viable.

But note against this view that Du Châtelet never even mentions the existence of some sort of discrete spatial manifold in which Simple Beings exist. Given that the view is rather subtle, and not at all familiar from the writings of Descartes, Leibniz or Wolff, it is implausible that she held a view along these lines. Thus, there is no direct support in favour of this limited strong reading. I see no philosophical gain in assuming that she held this view, and it makes Du Châtelet look rather confused to presume that she did. Therefore, I conclude that Du Châtelet considers the whole of our spatial representation, including both its continuous and discrete elements, as mind-dependent and essentially mental.

#### 4 Brute Facts and the PSR

In closing, this section discusses an alleged issue with Du Châtelet's idealism. The issue is that Du Châtelet leaves an explanatory gap in her account of extension. This seems to leave her account both incomplete and inconsistent with her prior commitment to the Principle of Sufficient Reason.<sup>27</sup> I believe

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<sup>25</sup> Brading seems to agree with this reading, writing that "the division of the world into a multiplicity of bodies must take place within our experience of the world, through how we represent the simples to ourselves, rather than within the causal relations among the simples themselves." (2018b, 64)

<sup>26</sup> Stan (2018) also considers this possibility.

<sup>27</sup> I thank an anonymous reviewer for encouraging me to evaluate Du Châtelet's position on this point.

that Du Châtelet has to bite the bullet in this case: she *does* posit brute facts about perception. However, I will argue that this does not spell the end for her account.

The brute fact Du Châtelet has to posit is the central contention of her explanation of extension: that we confuse multiplicities into extended unities. She faces the problem twice over: (1) it is a brute fact that we represent multiplicities *as unities*; and (2) it is a brute fact that we represent multiplicities as unities *through extension*. Regarding (2), note that there are other ways of representing a multiplicity as a unity. For example, we can represent distinct individuals as having various roles within a hierarchical organisation, e.g. president, manager, etc. The concept of ‘organisation’ then unifies these various individuals.<sup>28</sup> Du Châtelet states that “we cannot represent to ourselves several different things as being one, without this resulting in [extension]” (§77), but she never justifies this claim. There is thus, as far as we know, no sufficient reason for these facts, which therefore stand in apparent contradiction with the PSR. Iltis (1977, 36) gives a strong expression to this objection: “[Du Châtelet] did not really try to clarify [the relationship between the phenomenal and substantial levels of nature]. *This left her account incomplete and unconvincing*” (emphasis mine).

I have two responses in Du Châtelet’s defence. First, she is not alone in facing this problem. Both historical and contemporary commentators have accused Leibniz and Wolff of similar faults. It would take us too far afield to detail their respective accounts of space first-hand, so a selection of quotes from the secondary literature must suffice. Of Leibniz, Rutherford (2004) remarks that he “does not attempt to explain the spatiality of appearances in terms of the reality of monads”, arguing that this is the reason Wolff adopted his substance realism. But Watkins (2006) levels the exact same charge at Wolff: “In neither treatise does Wolff’s argument explain why spatiality rather than some other kind of relationship is required by the order that happens to exist between simples”. And Hogan (2007) traces the same objection back to a critic of Wolff, Crusius, who he quotes as writing that “a piece of music or a meditation or a definition would be a space, because it contains many things next to each other”. Therefore, if Du Châtelet’s account indeed faces an explanatory gap, then the problem is not limited to her own views but is a widespread flaw in those accounts which attempt to recover space from a non-spatial basic regime. This does not mean that there is no problem, but it does mean that Du Châtelet’s failure to solve it does not set her apart from her contemporaries.

Second, Du Châtelet has the resources to ameliorate the problem. Recall that according to her the confusion which causes us to perceive extension is due to a limitation of our sense organs: “we easily sense that this increasing distinction and this decreasing confusion could have almost infinite degrees, *if our organs were capable of it*” (§153). This is a biological fact, not a physical

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<sup>28</sup> I thank an anonymous reviewer for suggesting a similar example.

one. And it is reasonable to assume that such non-basic regimes of science fall outside the purview of the PSR. Of course, Du Châtelet's rationalism is universal: *every fact* has a sufficient reason, including our particular biological features. But not all these reasons are accessible to *us*; some are only known to God. Du Châtelet is clear about this: "When we say that we must to try to provide reason for all natural effects through matter and motion, we do not mean that we are obliged to find this reason for all the Phenomena [...]; the feeble extent of our minds and the present state of the Sciences do not permit it" (§163). As Detlefsen (2014) puts it, "[Du Châtelet] makes clear that full knowledge of contingent truths is too complex for humans to grasp through rational intuition".

Du Châtelet does not give an account of when the PSR is applicable as an epistemological principle. But it is clear that the principle has its most fruitful applications in metaphysics and basic regimes of physics: questions about the nature of space, motion and substance. On the other hand, it seems foolish to use the PSR to explain, for example, the colour blindness of dogs or the fact that spiders have eight eyes, even though God must have had a sufficient reason for doing this. If Du Châtelet believes that the confusion "that reigns in our organs" is closer to such facts about the contingent biological features of other animals than to metaphysical questions, it makes sense that she does not even attempt to find its sufficient reason. In other words, Du Châtelet 'demotes' the relation between the phenomenal and the substantial from a metaphysical to a biological question. And it is this novel move that allows her to dismiss the request for a sufficient reason, since *we* cannot use the PSR to explain such contingent facts. *For us*, the fact that we represent multiplicities as extended is indeed a brute fact.

## 5 Conclusion

I have argued that Du Châtelet is an *essence idealist* about extension, bodies and space: according to her, there is nothing to extended bodies and space over and above our representations of them, and bodies are not identical to aggregates of simple substances. This implies that the existence of bodies and space is mind-dependent. Nevertheless, Du Châtelet is not an *existence idealist*: she is clear that the existence of bodies and space also depends on the existence of physical elements. In short, Du Châtelet was a *spatial idealist* but a *substance realist*. I am not the first to note that these views come close to those of the later Kant.<sup>29</sup>

In closing, let me comment on the implications for Du Châtelet's broader system: the relation between physics and metaphysics. If the interpretation I have given is correct, then Du Châtelet's world-view is dualistic: there is a separation between the fundamental level of simples, and the phenomenal

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<sup>29</sup> See Gireau-Geneaux (2001, 186); Brading (2015, 28); Stan (2018, 494); Hagengruber (2019).

level of bodies. The connection between these two levels is complicated. On the one hand, the basic level grounds the higher regime: no bodies without elements. On the other hand, we cannot *reduce* the phenomenal level to the fundamental level, since the former is a mental construct with the latter as its partial input. Furthermore, the phenomenal is not a truthful representation of the fundamental level: it is a *confusion*, which misrepresents the ground level in some of its basic aspects. Physics applies to the phenomenal level: it describes the interactions of bodies. The fact that the phenomenal level ‘floats on top’ of the substantial world means that physics is an autonomous science. As Detlefsen (2014) remarks: “while it is certainly true that there is some connection between the metaphysics and physics [...] physics does enjoy significant autonomy from metaphysics”.

Understanding Du Châtelet’s account of extension and space is thus an important step in characterising her broader views. I hope this paper has fulfilled its aim of showing that Du Châtelet’s views on these matters are both interesting and unusual, and therefore worth further consideration.

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