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SUTTON'S SOLUTION TO THE GROUNDING PROBLEM AND INTRINSICALLY COMPOSED COLOCATED OBJECTS

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SUMMARY: In Sutton 2012, Catherine Sutton offers a new and very interesting solution to the most challenging problem facing *colocationism*: *the grounding problem*. However, if I am right in rejecting her thesis that lumps or pieces of matter are *extrinsically composed*, then her proposal is no longer a complete answer to the *grounding problem*, and it is difficult to see how it might be supplemented.

KEY WORDS: colocationism, sortal property, lump or piece of matter, non-living natural objects, extrinsically composed colocated objects

RESUMEN: En Sutton 2012, Catherine Sutton presenta una nueva e interesante solución al mayor problema al que se enfrenta el *co-ubicacionismo (colocationism)*: el *problema de la fundamentación*. Sin embargo, si es correcto rechazar (como se defiende en este artículo) la tesis defendida por Sutton según la cual los trozos o pedazos de materia están *extrínsecamente compuestos*, entonces su respuesta al *problema de la fundamentación* resulta incompleta. Además, es difícil ver cómo podría completarse.

PALABRAS CLAVE: co-ubicacionismo, propiedad sortal, trozo o pedazo de materia, objetos naturales inanimados, objetos co-ubicados extrínsecamente compuestos

1. *Introduction*

In Sutton 2012, Catherine Sutton considers one of the most challenging questions for colocationism. Colocationism claims that two or more non-identical objects can be composed, at the same time, of the same parts. This would be so for, at least, one level of decomposition of the objects into parts.[1] Therefore, the colocated objects would also

[1] This qualification is necessary because colocationism is compatible with the claim that, for example, a statue and the piece of clay with which it is colocated share all their parts at a certain level of decomposition, but they do not share all their parts at another level of decomposition. For instance, the statue and the piece of clay can share all their parts at the level of decomposition of the objects into particles without sharing all their parts at the level in which the statue has a nose, a mouth... but the piece of clay does not. Lynne Rudder Baker (2000) claims that, for example, a statue can have a head that the colocated piece of marble does not have. However, the piece has it derivatively, i.e., in virtue of constituting the statue.

See Sutton's paper for references to colocationist positions. See also Baker's recent book *The Metaphysics of Everyday Life: An Essay in Practical Realism*. I propose a modification of Baker's proposal in Campdelacreu 2015.

share, at that given time, the matter of which they are made and the region where they are situated.

Let me present the case-study in terms of which the question is usually formulated. Imagine an artist who creates a statue, STATUE, from a piece of clay, CLAY, which comes into existence at the same time as STATUE (cf. Gibbard 1975): imagine that the artist has moulded the two future parts of STATUE (from the top of the statue to the middle, and from the middle to the bottom) separately and that she assembles them thus creating STATUE and CLAY at the same time. Imagine, as well, that STATUE and CLAY cease to exist at exactly the same time. Then, STATUE and CLAY have exactly the same parts (at least at a certain level of decomposition) and share their matter and spatial location. However, colocationists think that they are different objects: they have different properties and, by Leibniz's Law, they are different objects. The properties which they do not share, and which are usually mentioned in the literature with regard to the problem, are modal properties and sortal properties (see, for example, Fine (2003) for more examples of non-shared properties that could also be used in the formulation of the problem). Here I am going to focus on sortal properties, as Sutton does most of the time (Sutton also uses "kind properties" but I assume that this is another way to refer to sortal properties). STATUE is a statue and might lose some of its matter without ceasing to exist. CLAY is a piece of clay and cannot lose a relevant portion of its matter without ceasing to exist.

One of the most challenging questions for this position is the so-called "grounding problem". Sutton formulates it in the following way. What is it that grounds the difference in properties (for example, in sortal properties or in modal properties) of STATUE and CLAY? For, Sutton says, they "are in the same environment and inherit properties from the same composing parts. But differences in properties should be grounded" (2012, pp. 703–704).[2]

In this paper I would like to consider Sutton's answer to the grounding problem and argue that one of its theses is not correct. But then, if I am right in my criticisms, the proposal can no longer be considered a complete answer to the grounding problem. And it is not obvious how it might be supplemented in order to achieve this.

The plan of the paper is as follows: in section 2, I present Sutton's solution to the grounding problem. In section 3, I discuss her claims

[2] For other formulations and previous proposals for solving the grounding problem, see Sutton's paper and the references contained there. As I explain in the main text, in this paper I focus on Sutton's proposal.

regarding lumps or pieces of matter, and argue that, if I am right in my analysis, her solution to the grounding problem is no longer complete. Finally, I briefly consider, but reject, a possible way to supplement it.

2. *Sutton's Answer to the Grounding Problem*

Let me present Sutton's general solution to the grounding problem. First, she defines intrinsic and extrinsic composition in the following way (p. 709):[3]

> Extrinsic Composition: an object O is extrinsically composed iff O's being composed (and thus O's existence) is grounded in part by relations that O's parts stand in to things that are not parts of O.
>
> Intrinsic Composition: an object O is intrinsically composed iff O's being composed (and thus O's existence) is not grounded, even in part, by relations that O's parts stand in to things that are not parts of O.

Sutton's general proposal is the following. The two colocated objects share their parts, but at most one of them is intrinsically composed. There is, always, at least one of the objects whose composition, whose existence, is grounded (at least in part) in the extrinsic relations in which its parts stand to external things. Moreover, when the two objects are extrinsically composed, then the relations that their shared parts stand in to other external things are different. But then, for every two colocated objects, the relations that their shared parts enter into and ground their respective compositions are different. These different relations that the two objects' shared parts enter into ground the difference in their sortal properties. In more detail:

Firstly, in cases in which one of the objects is intrinsically composed and the other extrinsically composed, the relations in which their shared parts stand and which ground their composition are different. For one of the objects is extrinsically composed and so has its composition grounded, at least in part, in relations that its parts stand in to external things. However, the other object, which is intrinsically composed, does not have its composition grounded in any extrinsic relation. This difference in the relations that the objects' shared parts stand in grounds the difference in their sortal

[3] If I do not say otherwise, all page and section references are to Sutton 2012.

properties. This is the case, for example, of masses of matter colocated with diamonds. For Sutton claims that masses of matter (if, in the end, they exist, which she doubts) are extrinsically composed (section 2.6), as their existence is grounded in relations that their parts stand in to human intentions about masses of matter, and that diamonds are intrinsically composed (section 3). Also, this is the case of lumps or pieces of matter colocated with other non-living natural objects. For Sutton argues that lumps or pieces of matter are extrinsically composed (p. 712) (their composition is grounded in the relations that their parts stand in to human intentions about lumps or pieces of matter) and that, in general, non-living natural objects are intrinsically composed (section 3).

Secondly, there are cases in which the two objects have their composition, and thus their existence, grounded (at least partly) in extrinsic relations in which their shared parts stand to external things (both of them are extrinsically composed). In these cases, the two (sets of) extrinsic relations are different. The difference in these relations grounds the difference in the objects' sortal properties. For example, in Sutton's opinion, this is what happens in the case of STATUE and CLAY. She claims that both objects are extrinsically composed and that their existence and composition are grounded in different extrinsic relations whose shared parts stand in to external things. In the case of STATUE the parts stand in an extrinsic relation to human intentions about statues, and in the case of CLAY they stand in an extrinsic relation to human intentions about lumps. Other cases that can be analysed along the same lines are, for example, those of artefacts (whose composition is grounded in the relations that their parts stand in to human intentions about the relevant sort of artefact) and the pieces or lumps of matter with which they are colocated (for all these cases, see section 2, especially pp. 707–710) or those of animals and the lumps of tissue with which they are colocated. In this latter case the animals would be extrinsically composed because their composition is grounded, at least in part, in the extrinsic relations in which their parts stand in to other members of the species in question (p. 724).

3. *A Problem for Sutton's Solution*

I agree with many of Sutton's claims regarding the extrinsic composition of certain objects. For example, I entirely agree with her that our STATUE, and other artefacts, are extrinsically composed. It seems plausible to think that the existence and composition of STATUE (or

of other artefacts) is grounded, in part, by the relation in which the object's parts stand to human intentions about statues (or about the sort of artefact in question).[4] In general, it seems plausible to think that there would not be all the variety of artefacts there in fact are if humans didn't exist.

This being so, it seems plausible to believe that, in general, these relations of an object's parts to other objects can play a role in solving the grounding problem in which one of the two colocated objects is extrinsically composed and the other intrinsically composed, or when the two are extrinsically composed but the relevant extrinsic relations are different.

However, I do not agree with Sutton that, like statues, lumps or pieces of matter are extrinsically composed (section 2.5). But then, if I am right in my criticisms, her solution will no longer be a complete answer to the grounding problem. For there would be cases of colocated objects which are both intrinsically composed; for these cases, Sutton does not offer any solution to the grounding problem.

Now, before arguing this, let me make the following two remarks.

First remark. I am going to focus my attention on what, I will argue, are actual cases of intrinsically composed colocated objects because, as far as I can see, Sutton considers only actual cases of colocation. In her paper, she considers all types of actual cases and defends, case by case, that at least one of the colocated objects is extrinsically composed. However, she does not offer any general argument for the thesis that a case of two intrinsically composed colocated objects is not possible either.

This implies that her considerations leave open questions like the following one. She seems to accept that planets and diamonds are intrinsically composed (section 3). But is the existence of a planet colocated with a diamond not possible (even if not actual)? Or one colocated with an emerald? Or, instead of a planet, another heavenly body? Or other non-living natural objects which Sutton seems to accept are, in general, intrinsically composed (section 3)? What about a mountain colocated with a ruby?

But then, even if Sutton were right in all her arguments, this would not mean that we have a solution for all actual and possible

[4] Even if, following many philosophers, I think the grounding relation is a relation between facts and not, as Sutton seems to understand it, a relation that takes as *relata* more types of entities, I have assumed here Sutton's proposal for the sake of the argument, as for my present purposes nothing depends on this. See, for an introduction to this subject, Schaffer 2009, Rosen 2010, Audi 2012, Correia and Schnieder 2012 or Trogdon 2013.

cases of colocation. It would remain to be shown that cases like the ones I have mentioned in the last paragraph are not, in the end, possible. I think this constraint, by itself, is an unattractive feature of her proposal.

Second remark.[5] In the section specially devoted to solving the grounding problem affecting non-living natural objects, Sutton says:

> Non-living natural kinds, such planets and diamonds, can be colocated with collections or masses of matter [...].
>
> The diamond seems a good candidate for intrinsic composition. The existence of diamonds does not depend on human intentions about diamonds. Diamonds were discovered, not invented. My solution to the grounding problem does not dispute the putative intrinsic composition of non-living natural kinds. But earlier I argued that lumps and masses are extrinsically composed [...] (2012, pp. 719–720)

But in a previous passage she says: "I do not know if *any* things are intrinsically composed. But all that matters to solving the grounding problem is to show that for any group of colocated objects, at most one is intrinsically composed" (2012, p. 709).

Now, the two passages seem to be in tension. In the section devoted to solving the grounding problem for non-living natural objects, Sutton seems to accept that these objects are intrinsically composed. But then, why does she say in the second text that she does not know if any object is intrinsically composed?

One possibility is that Sutton did not realize the two passages were in tension. Another possibility is the following. As we have seen above, she argues that to solve the grounding problem we just need that, for any two colocated objects, at most one is intrinsically composed (as she says in the second quoted text). Also, she argues (section 2.6) that masses of matter, with which non-living natural objects are colocated (and which we might suspect to be intrinsically composed), are extrinsically composed (as she says in the first text). Then, apparently (but see below), for the purpose of solving the grounding problem, she does not need to engage in the discussion of what seems to be the most plausible proposal regarding the composition of non-living natural objects: i.e., they are intrinsically composed. So, she just accepts it. This would explain what she says in the first quoted text. However, as she does not fully discuss reasons for and against the view, perhaps she believes she cannot *really*

[5] Thanks are due here to an anonymous referee who drew my attention to the point I now develop.

say that she *really* knows that they are intrinsically composed. This would explain the sentence in the second text.

Be this as it may, accepting what Sutton also seems to consider the best proposal about the composition of non-living natural objects (given what she says in the first quoted text, and since she does not offer any argument against it) raises the worry I have presented in the first remark.

Moreover, let me connect the two remarks with what I said, just before I made them, I would argue for (which is the main purpose of this paper). We have just seen that, for example, diamonds seem to be intrinsically composed. Moreover, as I said before the remarks, and as I will argue now, Sutton's argument for the extrinsic composition of lumps or pieces of matter (section 2.5) is not convincing. But then, as I will also show now, there are not only possible, but also actual, cases of intrinsically composed colocated objects. This being so, Sutton's proposal can no longer be considered a complete answer to the grounding problem.

Let us look at all this in detail.

Sutton defends that the composition and existence of a lump or piece of matter (like our CLAY colocated with STATUE) is, at least in part, grounded in the extrinsic relations in which its parts stand in to human intentions about lumps or pieces of matter. I think that, intuitively, lumps or pieces of matter are not objects whose existence is grounded in human intentions, but objects whose existence (composition) does not depend upon us. After all, wouldn't the world be full of lumps or pieces of different materials even if humans had never existed? These are my intuitions and I think they are shared by many of us. In fact Sutton herself recognizes that her proposal is controversial and this is why she offers an argument to support it. As she says: "In the statue and lump case, most philosophers agree that if the statue exists, it does so by convention (in some manner or other). What is more controversial, which I would like to press here, is that the lump is conventional as well" (Sutton 2012, p. 712).

Let us see, then, what Sutton's argument is and then I will explain why I think it is not convincing.

Sutton asks herself why we would think that, for example, our lump of clay, CLAY, is not a conventional entity (an extrinsically composed object), in the sense in which artefacts are. The answer is the following: "Perhaps we think that because the parts of the lump are stuck together and are moved as a unit, the existence of the

lump depends only on being stuck together and requires no human conventions" (2012, p. 712).
But she continues: "We are in the habit of recognizing that things can be stuck together yet fail to compose anything, so it is far from obvious that being stuck together is sufficient for composition prior to human interests or conventions" (Sutton 2012, p. 712).

To exemplify this habit Sutton asks us to imagine we are back at school and own a sticker-free lunch box to which we attach a sticker that cannot be (easily) removed (even if we would like to). In such a case, she affirms, when the sticker is stuck on the lunch box, we do not recognize the coming into existence of a new object that has the sticker and the lunch box as proper parts. From this Sutton concludes:

> Sticking together is insufficient grounds for the existence of an object. Thus the lump cannot exist purely based on having its parts stuck together. We need some other ingredient for composition to occur. I suggest that human convention about what qualifies as a lump or piece fits the bill. (2012, p. 712)

I have several doubts about Sutton's argument.

Firstly, I believe that here it is very important to take into account that there are different colocationist positions. There are those which affirm that the two colocated objects share all their parts at all levels of decomposition of the objects into parts, and those which affirm that the two colocated objects share all their parts but just at a certain level of decomposition of the objects into parts. We have seen this in the introduction (see footnote 1, as well).

But then, I believe that if Sutton wants to have an argument which applies to all colocationist positions her question should be slightly different. Sutton's question is about the existence of (at least) a new lump or piece of matter which has as proper parts the lunch box and the sticker. My doubts concern the requirement that the lunch box and the sticker have to be proper parts of this new lump or piece of matter, for the following reason. Colocationists who think that two colocated objects share all their parts but just at a certain level of decomposition, claim that, for example, STATUE has proper parts that CLAY does not have (at least non-derivatively):[6] for example, its

[6] This qualification is necessary because, for example, Baker (see footnote 1 for references to her work) thinks that even if, for instance, CLAY does not have STATUE's nose as a non-derivative part, it has the nose as a derivative part, in virtue of STATUE and CLAY being in the constitution relation.

head, nose, mouth, etc. But then they can claim that lumps or pieces of matter do not have as (non-derivative) proper parts objects like our lunch box and sticker. Therefore, for these colocationists, Sutton's case is not adequate for studying the conditions of composition, of existence, of lumps or pieces of matter: lunch boxes and stickers, and their mutual relations, are irrelevant for determining the conditions of composition of objects like lumps or pieces of matter which do not have them as proper parts.

This being so, I believe that Sutton's question should be slightly different, if it is to be relevant for all colocationists. Something along the lines: when we stick together the lunch box and the sticker, is there a further object which has as proper parts the lunch box, or at least the piece of matter out of which it is made, and the sticker, or at least the piece of matter out of which it is made?

Secondly, I have some doubts concerning the adequacy of the context in which Sutton situates her case in order to assess our intuitions about lumps or pieces of matter and their conditions of composition, of existence. Let me explain.

In different ordinary, everyday contexts the objects (and their features) which are salient in the context, which are relevant for the participants taking part in them, are not always the same. When the participants taking part in such a context talk and think about the objects there are and their features, they typically refer just to these salient objects (and salient features). Correspondingly, typically, their mental and linguistic representations are evaluated with respect to these salient objects (and salient features). For example, imagine that, when setting the prices for the summer sales, the owner of a clothes shop and his shop assistant are talking about the high quality of, as they put it, *everything in the shop*. In this context the shop's clothes and the properties relevant for their quality, are salient, relevant; however, for example, the shop's furniture and the subatomic structure of the clothes are not. So, what they say is interpreted and evaluated correspondingly (taking into account the shop's clothes but not the shop's furniture, for example). But, in a different context, when they are talking about the easiest way to repaint, as they put it, *everything in the shop*, exactly the same furniture which was not salient before now becomes so, together with its features relevant to their purpose; but clothes are not. And what they say is interpreted and evaluated correspondingly.

Now, in order to assess our intuitions about the coming into existence of a new object having as proper parts the lunch box, or at

least the lump or piece of matter out of which it is made, and the sticker, or at least the lump or piece of matter out of which it is made, Sutton introduces the case in the following context: "Imagine owning a new lunch box in the third grade. You decorate your lunchbox with a sticker. In the fourth grade, you decide the sticker is simply too third-grade and so must be replaced. But, alas, the sticker is stuck and will not come off the lunchbox" (2012, p. 712).

Lumps or pieces of matter (and their conditions of composition, of existence) are not salient, relevant, in many ordinary, normal contexts. This does not mean, however, that they are not salient in any ordinary, normal context —just that this does not happen very often. In any case, the context Sutton offers does not seem one in which they are salient: think about the relevance of, for example, the lumps or pieces of matter of which the sticker or the lunch box are made. They do not seem to be of any relevance in the context, nor lumps or pieces of matter in general. This is why I agree here with Sutton that, in this context, when talking and thinking (and so expressing our intuitions) about the objects there are we may not recognize the coming into existence of a new object: no new object of the kinds which are contextually salient comes into existence.

Even if this is so, however, if I am right about Sutton's context, this is not adequate to assess our intuitions about the coming into existence of a new lump or piece of matter (when the sticker is stuck on the lunch box). In order to determine what our intuitions state, the lunch box and the sticker, along with their respective pieces of matter, must be placed in a context in which lumps or pieces of matter and their conditions of composition, of existence, are salient, relevant, and so, when thinking and talking (and so expressing our intuitions) about the objects there are and their features, we take them into account (against what happens, I believe, in Sutton's context).

Here is a not very usual, but nonetheless ordinary context, in which this is the case. Imagine we stuck the sticker on the lunch box in the following context. Suppose we are participating in a build-with-recycled-material course and that a certain day's activity consists in building a big structure of the form of the capital letter of our choice. In the workshop there are all sorts of old artefacts which no longer function properly, with some parts which are not in their original place or are missing. In fact, given our purpose what is relevant in the context are not these old, unusable objects, but the lumps or pieces of matter out of which they are made. Some of these lumps or pieces of matter are homogeneous, made entirely of the same

material. Others are heterogeneous, as they contain parts made of different materials. For example, there are lumps or pieces of matter of which certain figurines are made which are homogeneous, but there are other lumps or pieces of matter of which certain other figurines are made which are heterogeneous. Also, there are some pieces or lumps of matter of which some old boxes are made which are homogeneous and some which are heterogeneous, and so on. Moreover, imagine that to make the activity more challenging the teacher adds the restriction that we can use just ten items, ten (maximal) lumps or pieces of matter —not one more!

In this context, lumps or pieces of matter, and their conditions of composition, of existence, are relevant, salient and, I believe, in it, we would consider the heterogeneous lumps or pieces of matter of which the figurines and boxes mentioned above are made and what would be a new heterogeneous lump or piece of matter coinciding with the sticker and the lunch box as comparable lumps or pieces of matter. All of them would count as one! This new lump or piece of matter would have as parts, at least, the (possibly heterogeneous) lump or piece of matter out of which the lunch box is made and the (possibly heterogeneous) lump or piece of matter out of which the sticker is made.

In conclusion, if all this is correct, against what Sutton claims, in the lunch box/sticker case there really is a further object —not one of a kind relevant in many ordinary, everyday contexts but nonetheless relevant in some ordinary contexts such as the one I have just described. But then Sutton has not offered any reason to reject what she also recognizes is the less controversial position, the one further in accordance with our intuitions —i.e., that lumps or pieces of matter are intrinsically composed.

Now, before considering the consequences of the intrinsic composition of lumps or pieces of matter for Sutton's answer to the grounding problem, let me briefly compare the strategy I have used above with the strategy that is sometimes used to defend unrestricted composition from intuitive counterexamples.[7] This may help to delineate better my own position as well.[8]

As we have seen above, there are ordinary contexts, where lumps or pieces of matter (and their conditions of composition, of existence) are not salient, in which the participants do not recognize the coming into existence of a new object when a sticker is stuck on a lunch

[7] See, for example, Lewis 1986 (section 4.3) and Rosen and Dorr 2002.

[8] Thanks are due here to an anonymous referee of this journal.

box. This does not mean that no new object has, in fact, come into existence (a lump or piece of matter has), just that no new object of a contextually salient kind has. Moreover, it does not mean, either, that what the participants say and think in the context about the objects there are and their features cannot be true. For, as I said, this has to be interpreted and evaluated taking into account just the objects (and their features) which are contextually salient.

Similarly, some defenders of unrestricted composition argue, broadly speaking (here I cannot pay attention to different precisions of similar strategies), that the fact that participants in an ordinary context do not recognize (for example) the existence of an object having as proper parts the Sun and the Moon does not mean that, in fact, this *extraordinary fusion* does not exist (it does), just that *extraordinary fusions* are not contextually salient. Moreover, it does not mean, either, that what they say and think in this ordinary context about the objects there are and their features cannot be true. For, this has to be interpreted and evaluated taking into account just contextually salient objects (not including *extraordinary fusions*). Typically, participants in ordinary contexts use quantifiers restrictedly.

This notwithstanding, I believe the two strategies are relevantly different. Broadly speaking (again), defenders of unrestricted composition also appeal to non-ordinary, ontological contexts, in which, in contrast to ordinary contexts, all objects, *extraordinary fusions* included, are salient and their participants use quantifiers unrestrictedly. As in the two types of context contextually salient objects (to interpret and evaluate what they say and think) are different, no contradiction follows when the participants in the non-ordinary context recognize the existence of an *extraordinary* object having as proper parts the Sun and the Moon. Now, referring back to the strategy I have used, I have argued that there are also contexts in which lumps or pieces of matter, and their conditions of composition, of existence, are salient, in which the participants do recognize the coming into existence of a new object (when a sticker is stuck on a lunch box). But these other contexts are also ordinary contexts. Moreover, the two ordinary contexts I have appealed to are entirely compatible because the salient objects (and salient features) relevant to interpreting and evaluating what the participants in them say and think about the objects there are and their features are relevantly different: one including lumps or pieces of matter and their conditions of composition, of existence, and the other not.

This is why, as far as I can see, my strategy is neutral with respect to the different answers that difficult questions, which have recently

been posed to the other strategy, may receive. Just to cite a couple of them:[9] it has been questioned that the notion of unrestricted quantification is coherent. It has also been questioned that the distinction, in the terms that this strategy formulates it, between ordinary and non-ordinary, ontological, contexts really exists or, at least, that we recognize it.

This clarification being made, let us see what, if I am right about lumps or pieces of matter, are the consequences for Sutton's answer to the grounding problem. If lumps or pieces of matter are intrinsically composed, Sutton's proposal will be subject to the following difficulty: there are intrinsically composed objects that are colocated with lumps or pieces of matter. For example, as we have already seen, and as Sutton also seems to accept, diamonds seem to be intrinsically composed (section 3). But it seems clear to me that diamonds are colocated with lumps of the adequate material (i.e., composed of carbon atoms). Therefore we have here a case of two intrinsically composed colocated objects. But Sutton's solution cannot be applied to these cases. This means that her proposal can no longer be considered a complete answer to the grounding problem.

Let me point out that Sutton presents the case of the diamond in terms of the diamond being colocated with a mass of carbon atoms instead of a lump or piece of the adequate material, but I think that it is also correct to talk here about a lump or piece of the adequate material, composed of carbon atoms.[10] Let me give a reason for the claim that a diamond is colocated with a lump or piece ultimately made of carbon atoms. Perhaps the diamond is also colocated with Sutton's mass of carbon atoms. But I think that, if, intuitively, we claim that, for example, a clay statue is colocated with a lump or piece of clay (as Sutton also accepts), then we have to claim, also, that a diamond is colocated with a lump or piece of the adequate material. The only differences between the two cases that we might think could be relevant and could determine there exists a lump or piece

[9] For discussion of these issues, see, for example, Rosen and Dorr 2002, Florio 2014, Korman 2015, chapter 5 and Rayo and Uzquiano 2006.

[10] After presenting the case in terms of the diamond being colocated with a mass of carbon atoms, she reminds us that she has already argued that masses are extrinsically composed (or, alternatively, they do not exist at all) (section 2.6 and section 3). This is why she does not have a case here of two intrinsically composed colocated objects. However, even if she is right in her arguments about masses, this does not affect the fact that, if I am right in claiming that diamonds are also colocated with lumps or pieces of carbon atoms, we still have cases of intrinsically composed colocated objects.

of matter in the first case but not in the second, are the following: the materials out of which the lumps or pieces are made, and that one of the objects with which one lump or piece is colocated is extrinsically composed and the other is intrinsically composed. But I do not really see how this could be so. First, there seem to exist lumps or pieces of a great variety of materials; why not of carbon atoms? Second, in general, lumps or pieces are just contingently colocated with the objects with which they, in fact, happen to be colocated (or at least this is what happens in our two cases. In the case of the lump of carbon atoms, this could present a different internal configuration and not be colocated with any diamond). So, in principle, it seems reasonable to assume that their existence does not depend upon the objects with which they are, simply, contingently colocated; even less, then, upon whether these are extrinsically or intrinsically composed.

Finally, I would like to analyse briefly a possible way to supplement Sutton's answer to the grounding problem. Her solution for cases of colocated objects both of which are extrinsically composed appeals to their different extrinsic relations to objects that are not parts of the colocated objects. The analogous move (the only one possible?) for cases of two intrinsically composed colocated objects would be to appeal to different relations between their shared proper parts. The problem with this proposal is that, for example, in our case of the diamond and the lump of carbon atoms the following happens. The diamond has as its internal structure what is called a "diamond lattice". The lump of carbon atoms could have had a different internal configuration, like that of graphite, but in this world it seems to have, too, the diamond lattice as its internal configuration. But then, the diamond and the lump of carbon atoms have, in this world, the same internal configuration. Therefore, we cannot appeal to this internal configuration to ground the different sortal properties of the diamond and the lump of carbon atoms. Moreover, to appeal to the fact that the lump (but not the diamond) could have had a different internal configuration would just lead to a restatement of the grounding problem, now not in terms of sortal properties but in terms of modal properties.

4. *Conclusion*

The grounding problem is a serious problem for colocationism. Relying on her characterization of intrinsic/extrinsic composition, Sutton offers an appealing solution to it, arguing that in all cases of colocation at least one of the objects is extrinsically composed. I find some

of her claims very convincing (for example, in relation to the conventionality of statues, or artefacts in general). Nonetheless, I have argued here that there are good reasons for accepting the existence of intrinsically composed colocated objects. And with regard to these cases, unfortunately, Sutton's answer is silent.

My reasoning has been the following. First, I have shown that Sutton's argument against the intrinsic composition of lumps or pieces of matter (the most plausible proposal, as she acknowledges) is not convincing. Second, I have shown that diamonds, which also seem to be intrinsically composed —as Sutton also seems to accept, like for other non-living natural objects— are colocated with lumps or pieces of the adequate material. In my opinion, this type of case still raises a really serious grounding problem for colocationism and it is not obvious how this position can deal with it.[11]

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