

What is metaphysical necessity?

Research Project for a Post-doctoral Position

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Abstract¹

Since at least the writings of Kripke, it is common to speak of a special sort of necessity and possibility which one could label *metaphysical*. Thus alongside *logical* necessities, such as instances of $\ulcorner p \vee \neg p \urcorner$ ²; perhaps *physical* necessities, such as that nothing travels faster than light; and even still *normative* necessities, such as that one should not do to others what one would not allow others to do to oneself; we would have accordingly necessary claims of a distinctive *metaphysical* sort, such as that water is H₂O, that bachelors are male, that Socrates = Socrates, and similar cases. (Each of these domains of necessities would, of course, be accompanied by a corresponding domain of possibilities which is correspondingly labelled.) Metaphysicians of our days not only seem to work on the assumption that this is an intelligible notion, but that it plays an important part in defining the very subject matter of their field.

Its central role notwithstanding, and in spite of some efforts to this end in the heyday of *Naming and Necessity*, no general consensus or clarity emerged concerning what exactly should the notion of *metaphysical* necessity amount to.

The aim of the research proposed in this project is twofold. Firstly, to map the terrain, that is, to lay bare the credentials of existing positions in the debate. Secondly, to provide new insights on the issue by incorporating elements from current debates on the fashionable notions of *grounding* and *essence*.

¹ Given that the bibliography is predominantly in English; the candidate has recently submitted his doctoral thesis in English; and material developed in the course of the proposed research is meant to be published in English, candidate and supervisor opted for writing this research project in English.

²“ $\ulcorner$ ” and “ $\urcorner$ ” are devices of quasi- quotation à la Quine. Not to overload notation, outside of the context of such quotations I use italicized sentential letters as symbols for sentences.

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Presentation

Our everyday means of expressing necessities and possibilities are importantly indicative of a diversity. Consider, for example, the question: Is it possible for a human to walk through a wall? A reasonable take on this is that an answer should, first, disambiguate the question. For, in *a* sense of possibility, namely as accord with the laws of physics, the correct answer is probably “No”. But in a somewhat more permissive sense of possibility, say what is left open by the laws of logic, the correct answer is surely “Yes”. To wit another example, if the child asks her mother “Can I have some ice cream?”, the answer could vary between what is allowed by her mother to take place – since the mother disallows it, the child *cannot* – and what is allowed in a somewhat broader sense, say, again by the laws of physics –, in which case surely the answer would be an expected “Yes”. Corresponding to each of these senses of possibility, there is of course a sense of necessity to be gained from what is not left open by the possibilities under consideration – with respect to the former example, since it is not possible according to the laws of physics that humans walk through a wall, it is in this sense necessary that humans do not.

Whichever senses of possibility and necessity there might be, since at least the writings of Kripke³ metaphysicians have grown fond of talking of a sense which is of special interest to the field. Paradigmatic examples of distinctive metaphysical necessities, according to those enthusiastic about the idea, would be cases such as that Socrates is human, that Quine is identical to Quine, that water is H₂O, that Saul is the son of Dorothy and Myer, and so on. For those who allow for a more restrictive sense of necessity, it is close to a consensus that these metaphysical necessities are not necessities in this latter sense. Thus if we may speak of a distinctive sort of logical necessity, the mentioned claims are usually taken to fall short of being logically necessary.

Once we take metaphysical necessity and possibility on board, it is natural to apply it to other, probably more controversial metaphysical theses, so as to render them more precise and ideally more plausible claims. That there could be nothing, for instance, should be understood in accordance with this sense of possibility. Similarly, that what there is is a necessary matter, or that abstract objects necessarily exist, should be interpreted along the same lines.

³ To be sure, nowhere in Kripke (1980) does he use the term “metaphysical necessity”. However, it is clear that the idea lurks in the background of the text. Be that as it may, the text has often been interpreted as a source of the notion since then.

The notion of metaphysical necessity is then at the center of the stage in metaphysical inquiry. For it provides us with a sense for evaluating more precisely positions in the area, and thereby helps even justify there being a distinctive subject of metaphysics in the first place.⁴

However, in the final analysis the success of the work of any notion should be evaluated relatively to the clarity of the notion itself. With respect to metaphysical modalities, surprisingly little has been said to settle the matter, and though there are glimpses of a debate around this, no one thus far has brought together the available positions in logical space and put them under scrutiny. Of course, it might turn out that our best and perhaps sole take on the notion of metaphysical necessity consists in pointing to examples, and that we already have by now enough justification from the fruitfulness of its applications. But one should not rest content with this without first trying harder.

The main purpose of this research is to sort out and explain the map of positions concerning the question “what is metaphysical necessity?”. Now to many readers, this question may sound somewhat outdated. And not without some justice, since in part the positions are already well-known: Lewisian realism of possible worlds, Armstrong’s combinatorialism, to name a few. It is our conviction, however, that recent developments on the notions of *essence* and *ground* may throw new light on these old and still murky waters. By now, these notions are already established and part of the metaphysician’s toolkit. And not only it is to be expected that they help reassess these old stances on such a fundamental issue, but that they enable new ones which surely will be of interest to the overall debate.

It bears mentioning that interesting issues orbit the question posed and the strategy just announced. Virtually any author working on the notion of *ground* would agree that some interesting connection holds between *ground*, *metaphysical* necessity and *essence*.⁵ What exactly are these connections is a matter of an ongoing dispute. Of course, inasmuch as we intend to engage with the question of whether ground and essence might cast light upon the notion of metaphysical necessity, we will also investigate the available stances on these connections. Furthermore, it is still an open dispute in the philosophy of modality what *logic* should metaphysical necessity and possibility be taken to satisfy. It is to be expected that the morals of our discussion carry over to this matter as well, that is, that answers to this question may be bolstered by a more careful analysis of metaphysical modality. Thus by addressing a

⁴ See, for instance, Lowe (1998), chapter 1, in which the task of metaphysics is described as the determination of what is metaphysically possible.

⁵ I ignore here the subtlety that some authors would conceive of different notions of ground. Cf. Fine (2012). For simplicity, I will employ “ground” without qualification, meaning *metaphysical* ground. The notion of essence is to be read along the lines of Fine (1994), i.e. as objectual, essences, undefinable by modal means (to be clarified in due course).

long-standing issue this research will inevitably take a stand on significant contemporary debates.

Professor Batchelor's expertise, both in the *grounding* and the *modal logic* fronts will be of extreme importance in the realization of this research. Besides, the candidate has worked recently on the notion of ground in his PhD thesis, has forthcoming publications in this field, and the research would give him opportunity to continue in developing his thoughts on this topic more thoroughly.

The proposed research would also enable the implementation of a new group of studies on metaphysics and philosophy of language, under the guidance of the candidate with support by the supervisor in the University of São Paulo. This group will offer undergraduate and graduate students the opportunity to discuss both published texts and texts stemming from their own research in these fields.

I. 1. Research Question(s)

The question "What is metaphysical necessity?" might admit of distinct types of answers. In the following, we intend to get clearer on these and thereby on the sense of the question itself.

As already indicated, one could of course resort to examples by way of an answer. In many cases, this seems a perfectly satisfying way of making a notion clearer. However, part of the disagreement on what should metaphysical necessity be turns on the acceptance of some of the examples, and it is far from clear that any would qualify as paradigmatic so as to justify this procedure. In addition, even if we could come up with consensual examples, it is desirable that an account be given as to what makes them count as examples in the first place.

Once we set aside clarification via examples, different sorts of answers might be demanded. Firstly, in posing our question, we might just be interested in a way for determining the *extension* of metaphysical necessity (in terms other than metaphysical necessity itself).⁶ Secondly, we might be interested in what would be a *reason why*, for each metaphysical necessity expressed by a sentence p , is it metaphysically necessary that p holds. Third and finally, we might be interested in a *reductive analysis* of metaphysical necessity. No doubt other types of answers could be admitted, but these three suffice for present purposes.

These types of answers are intertwined. Plausibly, by giving a reductive analysis of a notion, we give a satisfying answer satisfying both of the other requirements. Similarly, by

⁶ Since we assume that what is necessarily the case is necessarily necessarily the case, determining the (actual) extension coincides with determining the intension, that is extension across possible scenarios, of what is metaphysically necessary.

giving the reason why a metaphysical necessity counts as such we plausibly provide means for determining the extension of the notion. Also plausibly enough, these containments do not seem to hold in the other direction, that is, there are some ways of specifying the extension of metaphysical necessity which fall short of providing reasons why in the sense intended, let alone of giving a reductive analysis of the notion.

In this research, we will not restrict ourselves to any of the three groups of answers. In other words, we will consider an appropriate answer to our question any answer conforming to at least one of the senses described. Indeed, some of the answers to be examined shortly may be interpreted according to each of the three senses described. To illustrate, take the Lewisian realist's stand. For her, it is metaphysically necessary that p if and only if for every possible world w , it is true in w that p . The "strength" of this biconditional will correspond to the groups of answers just outlined. In the first sense, it might be just a way of determining the extension of metaphysical necessity. In the second sense, it is intended as the claim that it is metaphysically necessary that p *because* it is true in every possible world that p , where "because" expresses the notion of grounding. In the third sense, the "if and only if" holds place for a reductive analysis operator, which could perhaps be otherwise stated as the claim that what it is to be metaphysically necessary *just is* for it to be true in every possible world. Different considerations might speak for or against the proposal according to which version we are looking at. For instance, it might be contended that the proposal fails in the last reading, since the notion of a possible world should itself be analyzed in terms of metaphysical necessity, and no circular analysis should be admitted.

In the context of this exposition, we bypass the important question as to how is metaphysical necessity ultimately *expressed*.⁷ Is it expressed by a sentential operator? Is it a predicate modifier? Or is it a modifier of the copula? Is it perhaps something *else*? Or is there a plurality of metaphysical necessities corresponding to these different devices? Admittedly, much of our main debate should hinge on an answer to these and related questions as well. Though they will be addressed in the course of the research, for reasons of space we leave them aside for now, stipulating in the following that the relevant notions of necessity and possibility are expressed by the sentential operators "it is necessary that..." and "it is possible that...".

I.2. Core Issues

In the following, we present a succinct and most probably provisional list of the positions in the debate we are engaging in. After stating each position, a comment on it follows. For reasons of space and interest, we make more extended comments only on some of these.

⁷ Cf. Wiggins (1976).

1. *Metaphysical necessity is a primitive notion.*

It might of course turn out that no informative answer to our research question is forthcoming. Relatively to the different understandings of the question, as mentioned above, the absence of an answer might be differently interpreted. It might turn out that we just cannot come up with a reductive analysis of metaphysical necessity in more primitive terms. But this is of course consistent with the availability of means of determining the extension of the notion – of us being able to determine what holds of metaphysical necessity – and arguably also with a successful account of the reasons why metaphysical necessities fall under this rubric. I take it that the primitivity of metaphysical necessity is most plausibly and frequently understood this way.

That we need rest content with the idea that metaphysical necessity is a primitive notion in this sense is far from fatal. However, many would consider this position as some sort of a consolation prize, since much of its attractiveness, so the thought goes, comes only from the failure of the other alternatives on the table. But it should be granted that, once weighed against the other alternative notions by means of which it should be defined – such as essence, possible worlds, metaphysical laws, grounding (see below) – it is far from clear that we understand these better than we understand metaphysical modalities by themselves. In light of this sort of observation, the position that metaphysical necessity is a primitive might become more attractive in itself.

2. *Metaphysical necessities are truths with respect to all scenarios.*

The thought that necessities should be modelled as truth relative to *all* points of evaluation, or scenarios, to avail ourselves of a neutral term, has already become commonplace in semantics. Once this is acknowledged with respect to necessities in general, there are two main ways of accounting for the distinctive metaphysical character of metaphysical necessity. On the one hand, one might say that metaphysical necessity is absolute, or the broadest necessity, in the sense that the universal quantification modelling it should be read unrestrictedly, or in an absolutely general way. On the other hand, one might track those scenarios which somehow matter for metaphysical purposes and say that the universal quantification modelling metaphysical necessity is restricted to these scenarios. As a matter of fact, a difference between these approaches significant for our purposes only arises if it be contended that there are scenarios which should be left out of consideration in determining

metaphysical necessities. For this preliminary project, we might conflate these two ways of specifying the account we are considering.⁸

In spite of the semantical idea having been first laid down by Kripke, the most famous position taking points of evaluation at face value, i.e. as *entities* in their own right, is, of course, Lewis's.⁹ Accordingly, metaphysical necessity *just is* truth in all *possible worlds*. In symbols:

It is metaphysically necessary that $p \leftrightarrow_{\text{df}} \forall w \text{ (it is true in } w \text{ that } p)$

(Where the quantifier ranges over possible worlds.)

What are possible worlds? Though Lewis had a more specific story to tell on this, at a minimum it is commonplace to regard them, in a sense, as *complete* and *consistent* entities: that is i) for any w , any p , it is either true in w that p or it is true in w that $\neg p$ (truth relative to these entities is always a determinate matter); and ii) for any w , and any p , if it is true in w that p , then it is not true in w that $\neg p$ (worlds do not render inconsistencies true).¹⁰

The familiar virtues of the Lewisian idea aside, the main point speaking against it is that it is far from clear that we should countenance possible worlds in the first place. Not only has the ontological commitment to these entities earned the incredulous stare, but some, notoriously D. Kaplan, have pointed to paradoxes stemming from some of the work possible worlds are supposed to do. With respect to the former point, many so-called proxy reductions of possible worlds have since then been proposed, and we intend to re-examine some of the related issues in the course of this research.¹¹

3. *Metaphysical necessities are truths which lie in the essence of things.*

Already in Kripke, considerations of essence, or natures, play an important role in determining the domain of metaphysical possibilities. Thus it being the case that, if Socrates is human, then it lies in his nature that he is so, seems to play an important role making it the case that, given that he is indeed human, he is so necessarily. Or it being the case that if Kripke's table is made of a particular chunk of wood, then it lies in its nature that it is made of that chunk, makes it

⁸ Some authors, such as Kripke and Hale, have stressed that metaphysical necessity is absolute, or broad, by which they seem to mean something along the former suggested lines, and would reject the latter. The intelligibility of unrestricted quantification itself is not generally accepted. This famously held characterization of metaphysical necessity brings with it, then, the need to address this debate as well. See Rayo and Uzquiano (2006) and Bacon (2018).

⁹ Kripke is explicitly reluctant in regarding the truth-condition of the metaphysical necessity operator as a reductive analysis. See the footnote in Kripke (1980), p. 19.

¹⁰ For simplicity, I am being sloppy here about quantification in the position of sentences. This might be interpreted as a *sui generis* quantificational device, along the lines of Prior (1971), or as substitutional quantification (as long as we ignore possible restrictions in the language under consideration for the substitutions).

¹¹ See Kaplan (1995). An overview of this and related paradoxes is given in Uzquiano (2015).

necessarily the case that the table is made of that chunk of wood, since this is also the case in actuality. Though these exact statements might differ in details with Kripke's official wording, something along these lines seems to be in the background of his text.

In his seminal paper, after presenting reasons against modal definitions of essence, Fine (1994) proposes that, instead, metaphysical necessity should be defined in essentialist's terms. Thus it being metaphysically necessary that Socrates is identical to Socrates should be seen as somehow derivative of the truth that it lies in the essence of Socrates that he is self-identical.

In this exposition, we cannot give a detailed description of the different ways of implementing Fine's idea. In the following, we present a summary of some of the core issues surrounding each of these ways. A version of the idea might be expressed by the following scheme:

It is metaphysically necessary that $p \leftrightarrow_{df} \exists xx$ (it lies in the essence of xx that p)

(Where “ xx ” are variables for (possibly existing) pluralities of objects.) We take for granted that an object taken alone is also a plurality in this sense. To allow for collective or plural essences, that is, essential claims pertaining to a group of objects, is demanded by requirements on relevance in play in Fine's critique of the modal definition of essence, and for the essentialist definition to apply across the board. To illustrate, consider the necessary truth that Socrates is distinct from the Eiffel tower. According to Fine, it is not part of the essence of Socrates that this holds, “for there is nothing in his nature which connects him in any special way to it.” Fine (1994), p. 5. For parallel reasons, it is no part of the essence of the tower either. To account for this necessity, the most natural move is then to say that it lies in the nature of Socrates and the Eiffel tower taken collectively that they are distinct.^{12 13}

One of the core problems with this account turns on it clashing with the following claims:

Contingent existence. $\exists xx(\exists yy(xx=yy) \wedge \Diamond \neg \exists yy(y=xx))$

¹² Correia (2006) argues that we should make room for generic essentialist statements, i.e. statements of the essences of ways for things to be, in order to account for some necessities. Thus one might hold that it lies in the essence of what is to know something that one believes it to be the case. Correia makes a plausible case for statements of this sort not being reducible to claims of the essences of things referred to by singular-terms. While being sympathetic to the idea, for simplicity we ignore this subtlety here.

¹³ To be sure, Fine explicitly claims that metaphysical necessity should be defined in terms of the essence of *all objects whatever*. Fine (1994), p. 9. By Fine's lights, the formulation in the text is extensionally equivalent with the latter, since he takes the following monotonicity principle for granted:

If it lies in the essence of Δ that p and $\Delta \subseteq \Gamma$ then it lies in the essence of Γ that p

(Where “ Δ ” and “ Γ ” are plural terms referring to objects, and “ $\subseteq$ ” expresses containment defined in the obvious way via membership to a plurality.)

S4 Axiom. $\Box p \rightarrow \Box \Box p$

Necessity. $\exists p \exists xx (\Box p \wedge (xx \text{ are the only objects such that it is essential to } xx \text{ that } p) \wedge \Diamond \neg \exists yy (xx = yy))$

A brief comment on each of these is in order. *Contingent existence* states that some objects exist contingently. *S4 Axiom* is a scheme expressing that whatever is necessary is necessarily necessary. *Necessity* claims that there is a necessity the only source of which is/are contingent existent/existents. Each of these, I take it, has an air of plausibility to it.

If we accept the essentialist definition together with these claims, we derive a contradiction. For take the necessity, say, that Socrates is human, instantiating *Necessity*. According to the definition, there is some object or plurality of objects such that it lies in its nature that Socrates is human, namely Socrates himself. Again according to *Necessity*, Socrates exists contingently. But consider the possible scenario w' where Socrates does not exist. According to *S4 Axiom*, it is necessary that Socrates is human in w' too. But the right hand side of essentialist definition is not satisfied in w' , since by assumption nothing is there whose essence accounts for it being the case that Socrates is human. Thus this truth is not necessary in w' , which contradicts *S4 Axiom*.¹⁴

Let us set aside views which deny *Contingent existence* or *S4 Axiom*. Though surely available moves, arguably the definition of metaphysical necessity should not rule these out. We are then left with the definition itself and *Necessity*. Something should be dropped.¹⁵

Supposing we are working on the side of the essentialist and stubbornly insist on the definition as it stands, we must then reject *Necessity*. Indeed, there are considerations on essences which might be independently motivated and speak against this claim. In what follows, we develop two of these.

First, one might claim that essential statements do not depend on the existence of the objects whose essence they pertain to. This view is paradigmatically, though with some details of its own, to be encountered in Plantinga (1976). However, since the operator used to state essential statements *refers* to the entities, one cannot help but raise the suspicion that this move turn out incredibly ad hoc.

¹⁴ In the course of this argument, I have assumed that the definition is meant to be itself necessary, which is readily acceptable.

¹⁵ Note that tweaking the definition by conditionalizing on existential claims will not do. If we add the condition to the essential statement itself, we obtain:

* It is metaphysically necessary that $p \leftrightarrow_{\text{df}} \exists xx$ (it lies in the essence of xx that if xx exist(s) then p)

For one, presumably it lies in the essence of anything that if it exists, then it exists. But then existential claims are in general necessary, contrary to *Contingent existence*.

As a second and more promising move, one might deny that any necessity depends on a contingent existent, in the sense relevant to the present discussion. Hale (2013) sketches a view of this sort. Every necessity is to be accounted for by the essences of ways for things to be, or properties, which, for Hale, exist necessarily. The case for this necessary existence is arguably less surprising than in the case of individuals. To put it in other terms, it seems intuitively acceptable that most ways for things to be – at least those, which do not involve any specific individual -- are just there, no matter what.¹⁶

A difficulty for this view immediately arises. For we seemed to take as our starting point that some necessities pertain to individuals, such as Socrates, his singleton, and the Eiffel Tower. Thus it is necessary that Socrates is human, and presumably it lies in his nature that he is human. If not this latter essentialist claim, what claim, mentioning only ways for things to be, should account for this and related cases?

Two candidates suggest themselves. On the one hand, one could point to the claim that it lies in the nature of being human that anything which is human is necessarily so. On the other hand, one could point to the claim that it lies in the nature of being human that anything which is human has as part of its essence that it is so. In symbols:

- i) it lies in the nature of being human that $\forall x (x \text{ is human} \rightarrow \Box x \text{ is human})$
- ii) it lies in the nature of being human that $\forall x (x \text{ is human} \rightarrow \text{it lies in the nature of } x \text{ that } x \text{ is human})$

Let us comment briefly on the views which might be taken to support each of these. According to the first, the essentialist definition should be regarded as defining only *base* necessities, that is, the claims the necessity of which explains all other necessities. It is, for example, a base necessity that $\forall x (x \text{ is human} \rightarrow \Box x \text{ is human})$. That this is necessary explains why it is necessary that Socrates is human. To wit another example, take the base necessity that $\forall x \forall y (x \neq y \rightarrow \Box x \neq y)$. According to the view we are considering, $\Box \forall x \forall y (x \neq y \rightarrow \Box x \neq y)$ explains why it is necessary that Socrates $\neq$ Eiffel Tower.¹⁷

The second route has the virtue that it leaves the essentialist definition as it stands. However, it pays the price of buying into the ontological neutrality of individualist essentialist statements once again. For we derive individualist essential claims via a harmless modus ponens: since Socrates is human, and ii), then it lies in the nature of Socrates that he is human. Since being human exists necessarily, and ii) holds of necessity as well, the latter statement

¹⁶ Williamson (2015) discusses the derivation of the Barcan formulas in second-order modal logics. An argument for (first-order) necessitism via these formulas presupposes that our second-order quantifiers quantify over haecceities, or individual essences – e.g. to be identical to Socrates –, an assumption which might be questioned by the (first-order) contingentist along the lines we just stated.

¹⁷ Note that in both cases the explanandum is not the unnecessitated claim, which might be explainable in wholly different terms.

pertaining to the essence of Socrates is true even in worlds where he does not happen to be around. This commitment notwithstanding, one might hold that the individualist essential statements, and the necessities which they underwrite, are ultimately explained by generic essential statements standing at the bottom of the layered structure of explanations. And that this might mitigate uneasy feelings towards such a commitment. To speak more dramatically, fundamentally, Socrates is dispensable with, as far as the necessities in which he takes part go. Put in other terms, every necessity is traced back to wholly qualitative essences, i.e. essences aptly formulated without reference to individuals. Though in need of a more careful development, this is surely an interesting view.

In conclusion of this section, let us note that another way out would be simply to deny that such individualist's truths are necessary in the first place.¹⁸ This might be perhaps justifiably regarded as cheap game, but it is worthy of mention that it has an important precedent in the writings of A. Prior. Leaving once more details aside, confronted with the infamous Barcan formulas, Prior dropped the *Rule of Necessitation* in S5, which results in his system Q for modal logic. As a consequent contingentist, he conceived of propositions as contingently existing. In a point of evaluation where Socrates does not exist, that Socrates is human is *unstatable*, that is, neither true nor false. The classification of sentences relative to points of evaluation as either true, false or unstatable provides us then with a *weak* and a *strong* notion of necessity. Accordingly, p is weakly necessary if and only if in every point relative to which p is statable, p is true (equivalently, it is not possible that p is false). In turn, p is strongly necessary if and only if p is true in all points of evaluation. Using this framework, one might perhaps make sense of weak and strong essentialist's claims, corresponding to the criterium just stated, which would, according to the essentialist's definition, account for the correlated necessities. The sole result that Prior's system Q is friendly to the essentialist framework (perhaps it is even, to state it with confidence, the best way for the essentialist to go) would be interesting to be brought into the debate and deserves a closer examination.

4. *Metaphysical necessities are truths preserved across variations, or recombinations, of selected parts of reality.*

The underlying idea of this approach is familiar enough. We start off by some permissible combinations between pieces of reality, and the sentences rendered true in every such combination are then the metaphysical necessities. In other words, metaphysical necessity consists in truth-preservation across permissible recombinations.

¹⁸ This denial seems to be Hale's final take on this.

Of course, distinct views might fall under this rubric, corresponding to different ways of conceiving of what these pieces of reality and their permissible recombinations should be. A familiar position has it that individuals and simple qualities are combined into atomic facts which are responsible for making atomic sentences true. Formally, this core idea might be expressed thus:

It is possible that $p \leftrightarrow_{df} \exists XX \exists R (RXX = [p])$

It is necessary that $p \leftrightarrow_{df} \forall XX \forall R (RXX \neq [\neg p])$

(Where ‘ $[p]$ ’ abbreviates ‘the fact that p ’. ‘ p ’ is, in these schemes, a place-holder for atomic sentences. The variable “ R ” ranges over recombinations, which we treat here as expressed by singular-term forming operators; The variable “ XX ” is plural and ranges over qualities and objects.)

The necessity of logically complex statements derives from the necessity of the embedded statements in the expected way. One might label this view *Combinatorialism*.

Combinatorialism is in tension with the S5 axiom, and the claim that possibly there is a fact whose constituents contingently exist.

S5 Axiom. $\Diamond p \rightarrow \Box \Diamond p$

*Contingency**. $\Diamond \exists f \exists XX (\Box (f \text{ obtains} \rightarrow XX \text{ are constituents of } f) \wedge \Diamond \neg \exists YY (XX = YY))$

To see this, take a fact f instantiating *Contingency**, say the fact that Socrates is roman. Assume that, though f does not obtain in actuality, its constituents exist, though combined into other facts. Thus f (more precisely, its corresponding combination of elements) accounts for a possibility expressed by a sentence p in the actual world, namely “Socrates is roman”. But in a world where some constituent of f does not exist -- a world where Socrates does not exist, for instance --, it is not possible that Socrates is roman. For to be able to access the fact that Socrates is roman, as it were, we need the materials from which it is built. Thus instantiating “Socrates is roman” in *S5 Axiom* gives us a false claim.

Again, a natural move would be to claim that the elements whose recombination accounts for the relevant necessities exist necessarily. But is far from clear how this might go. Once we dispense with individuals from the start, it is not clear how to regain them simply by recombining other elements of reality. Some views in this vicinity might shed light on this, but by now the view seems pressed to withdraw some of the claims from which the contradiction is derived.¹⁹ But no candidate suggest itself: on the one hand, once we allow for contingently existing objects, *Contingency** seems to come along effortlessly. On the other hand, *S5 Axiom*

¹⁹ The view that the base facts are wholly qualitative is outlined and defended, for instance, in Dasgupta (2009).

is on firm footing. The combinatorialist seems committed to either embrace Necessitism, the view that everything necessarily exists, or to retract from the usual claim that the logic of metaphysical necessity is as strong as S5. Either way, it seems a noteworthy high price to pay.

5. *Metaphysical necessities are explained by grounding connections.*

In some sentential contexts, “because” can express grounding, i.e. a non-causal explanatory connection between what is expressed by the sentences flanking the connective. In this sense, if p because q , that q is the case is said to *account for*, or *ground* that p is the case. Following the literature on this, it is allowed that a plurality of sentences express a ground. Let us speak neutrally of what is expressed by a sentence as a proposition. One might then distinguish between *partial* and *full* grounds of a proposition. According to a widely held definition, the proposition that p is a partial ground of the proposition that $q \leftrightarrow_{\text{df}}$ the proposition that p , alone or alongside other truths is a full ground of the proposition that q . Since we will deal here only with full grounding, we assume that “because” expresses this variant, unless otherwise stated.

One can use grounding to devise an answer to the question of why are metaphysical necessities necessary. In a nutshell, the idea is this: necessities are explained by grounding connections between truths. To formulate this more precisely, we distinguish three steps on which the view is based:

5.1. *Explanatory Necessitarianism:*

Full grounding is usually taken to obey the following principle:²⁰

Necessitarianism: p because $\Delta \rightarrow \Box (\wedge \Delta \rightarrow p)$

Now this principle suggests a way for us to gain a new insight into what explains metaphysical necessities. Namely, that the grounding connection between “ p ” and “ Δ ” not only implies, but is *explanatory* of the necessary entailment holding between them. In symbols:

Explanatory Necessitarianism (EN henceforth)

If p because Δ , then $\Box (\wedge \Delta \rightarrow p)$ because $(p$ because $\Delta)$

²⁰ Henceforth, I use “ Δ ” and “ Γ ” as schematic variables for pluralities of sentences (possibly, just one sentence and, as will soon be clarified, no sentence at all); “ p ” and “ q ” for sentences. The symbol resulting from a concatenation of “ $\wedge$ ” and a schematic variable for a plurality stands for the conjunction of every member of the plurality in question.

For instance, take a scarlet ball a . The ball is red because it is scarlet, and necessarily, if a is scarlet, then it is red. The account just stated has it that this necessity holds *because* a is red because a is scarlet.²¹

Regarding this scheme, two difficulties seem to arise, if we expect it to account for every metaphysical necessity this way. For, first, not every necessary truth has the form of a conditional ($\ulcorner p \rightarrow q \urcorner$). Second, conditionals of the forms $\ulcorner p \rightarrow p \urcorner$ and $\ulcorner (p \wedge q) \rightarrow p \urcorner$, for instance, must seemingly be left outside EN's scope, since grounding is asymmetric.

A way out of these difficulties is to allow for an empty plurality to instantiate " Δ ". In this, we make room for because- statements in which the explanans is the empty plurality, i.e. because-statements expressing what Fine calls *zero-grounding*. According to Fine (2012), there is a distinction to be made between truths which are *ungrounded*, or fundamental, and truths which are grounded in the empty plurality of truths. Though Fine does not endorse the examples explicitly, he mentions the truth that Socrates is identical to Socrates, or that Socrates belongs to $\{\text{Socrates}\}$ as potential candidates. To get a better grip on the distinction between ungrounded and zero-grounded truths, it is helpful to conceive of grounds as sufficient conditions which bring their groundees about. The weakest of such conditions, namely the one expressed by the empty plurality of sentences, suffices to make a zero-grounded proposition hold, as opposed to an ungrounded truth, which, though true, is *not brought about* in the first place. In this sense, zero-grounded propositions, in contrast to ungrounded ones, are true 'no matter what', as in the examples mentioned. Therefore the claim that a truth is zero-grounded has a bearing on modal status which the claim of ungroundedness lacks.²²

Now having " $\emptyset$ " as a symbol expressing the empty plurality of truths, one might then hold that the proposition expressed by $\ulcorner (\emptyset \rightarrow p) \urcorner$ is in general grounding- equivalent, that is, shares the same grounds and groundees, with the proposition expressed by p itself.²³ Taking the foregoing examples for granted, the following turns out an instance of EN:

²¹ There are some intricate issues related to necessary truths involving merely possible objects (objects which do not exist but could have). Without going into the details, a fix is to read "because" non-factively, that is, as not implying the claims flanking it, in the account.

²² To state this in more precise terms, under the assumption of *Necessitarianism*, every zero-grounded truth is necessary, that is, if $\ulcorner p \text{ because } \emptyset \urcorner$ is true, then $\ulcorner \Box p \urcorner$ is true. This follows either from the equivalence between p and $\ulcorner \emptyset \rightarrow p \urcorner$, or from the claim that the empty plurality of truths holds of necessity. To put this in terms of the main text, since " $\emptyset$ " expresses the weakest condition, i.e. the one most easily satisfied in any circumstance, a zero-grounded truth cannot fail to hold. In contrast, lack of grounds is perfectly compatible with contingency of the proposition in question.

²³ Plausibly, Fine's truth-maker semantics for ground, presented in (Fine 2012), (Fine 2017), (Fine forthcoming) and elsewhere, which models the empty plurality of truths via the empty state, i.e. the state which is part of every state, underwrites this equivalence. (Note that Fine uses the symbol " $T\Box$ " to express the empty plurality of sentences in our sense. See Fine 2017 p. 630.) To illustrate this in the simplest case in which sentences are modelled by the set of their exact verifiers, note that a conditional is verified by the verifiers of the consequent and the verifiers of the negation of the antecedent. Ex hypothesi, the negation of the empty sentence (" $F\Box$ " in Fine's symbols) has no verifiers. Thus the verifiers of $\ulcorner (\emptyset \rightarrow p) \urcorner$ are just the verifiers of p itself. Similar considerations show the equivalence to carry over to the conception of propositions which takes falsifiers into account.

If Socrates = Socrates because $\emptyset$, then ($\Box$ (Socrates = Socrates) because (Socrates = Socrates because $\emptyset$)).

Assuming the antecedent holds, we then arrive at an explanation of the necessity of Socrates being identical to himself.

EN (and EN⁺) provides us with the essentials of a promising account of the grounds of necessities. As a consequence of the account suggested, the necessity of every necessary truth is grounded in the truth's being zero-grounded. The account just outlined will be deepened and more thoroughly discussed in the development of this research.²⁴

6. Metaphysical necessities are truths with respect to all scenarios consistent with metaphysical laws.

Physical possibility might be seen as defined by logical consistency with the laws of physics. That is, p is physically possible $\leftrightarrow_{df}$ $\neg p$ is not a consequence of the laws of physics.

Recently, some authors have shown sympathy to the idea that there are *metaphysical* laws.²⁵ A purported example of these would be, for example, that whenever the whole exists, its parts exist as well. Leaving subtleties concerning the exact form of these laws, one might then define metaphysical possibility in the obvious parallel way.

7. Metaphysical necessities are those truths which would be true, were anything the case.

Some authors suggest that counterfactuals are constitutive of the way we conceive of modalities.²⁶ Accordingly, they propose the following definition:²⁷

It is metaphysically necessary that $p \leftrightarrow_{df} \forall q (q \Box \rightarrow p)$.

(Where " $\Box \rightarrow$ " is the counterfactual operator, to be read "if it were that case that..., then it would be the case that...".)

²⁴ The account is exposed in more detail and completed with two more principles for the explanations of necessities in De Rizzo (forthcoming - b).

²⁵ Wilsch (2015), Schaffer (2017).

²⁶ Stalnaker (1968), Williamson (2010), Hale (2013), chapter 4.

²⁷ On the quantification in the position of sentences, see footnote 10 above.

Though one might perhaps justifiably suspect that this involves a case of trading six of one for a half dozen of the other, these authors would argue otherwise. To put this view under scrutiny is also among the tasks in this research.

II.1. Expected results

1. Activities

During this research, with the support of the supervisor, the candidate will:

1.1. coordinate a new group of studies, hosted at the University of São Paulo, centered on topics in Metaphysics and Philosophy of Language, open to undergraduate, graduate students and faculty members, both for readings of published texts as well as for presentations of works in progress by the participants;

1.2. offer, together with the supervisor, courses on the metaphysics of ground and related topics (both in the regular as well as in the extension programs);

1.3. organize two international events on metaphysics and related topics, hosted by the University of São Paulo (to be agreed upon by the faculty);

1.4. present preliminary results in conferences and meetings;

1.5. establish international connections, possibly leading to the visit of scholars at the University of São Paulo. A cooperation with the research groups Phlox, directed by Prof. Dr. Benjamin Schnieder and the Emmy Noether Research Group on Relevance, directed by Dr. Stephan Krämer, both hosted in Hamburg, Germany, is intended.

2. Publications.

The candidate intends to send at least one long paper per year of the study (see the timetable below) to top-ranking philosophy journals, such as *Nous*, *Philosophy and Phenomenological Research*, *The Philosophical Quarterly*, *Synthese*, and others. Short papers are also envisaged, which shall be submitted to the journals *Analysis*, *Thought*, *Philosophical Studies*, and similar ones.

II. 2. Timetable

The research will be divided in four phases, of a semester each.

1. First phase, first semester:

1.1. Research topic: *The varieties of modality*.

Modalities might be distinguished along several axes. It is commonplace to distinguish physical or nomological modalities from metaphysical, epistemic, logical, normative, and so on. Even among these sorts of modality, one might conceive of different notions. For instance, one might conceive of a metaphysical modality which is actualist in the sense that the necessities are sensitive to the starting point of evaluation, and a non-actualist, in the sense that we conceive of distinct starting points of evaluation in order to determine what is possible and necessary.

How do these modalities differ? What makes something into a “genuine” modality? How are these modalities related? These and related questions will be addressed in this early phase of the research.

1.2. Activities:

- Set up of the group study on metaphysics and the philosophy of language of the University of São Paulo. Coordination of the group will continue throughout the research's period.
- Teaching: course on *metaphysical grounding*. (depending on the needs of the department)

2. Second phase, second semester:

2.1. Research topic: *Mapping the debate*.

The debate around the notion of metaphysical modality is intricate. In this phase, we intend to bring some structure to the terrain by distinguishing systematically the possible positions.

2.2. Activities:

- Organization of a meeting on metaphysical necessity and metaphysical grounding, hosted at the University of São Paulo.
- Presentation of preliminary results in at least two conferences in Brazil or abroad.
- Submission of a paper related to this research to a top-ranking philosophy journal.

3. Third phase, third semester:

3.1. Research topic: *Modality, ground and essence*.

That ground, essence and modality have *something* to do with each other is close to a consensus. But what exactly are these connections? More specifically, can one come to a better understanding of what metaphysical modality is by means of the notions of essence and ground? This phase of the research addresses the interplay between these three core metaphysical notions.

3.2. Activities:

- Teaching: course on *essence and modality* (depending on the needs of the department)
- Presentation of preliminary results in at least two conferences in Brazil or abroad.
- Submission of a short paper to a top-ranking philosophy journal.

4. Fourth phase, fourth semester:

4.1. Research topic: *The logic of metaphysical modality*.

Since the heyday of modal logics, the question of which principles should we take metaphysical modality to obey stands at the center of the stage. In this phase, while bringing together results of the previous research topics, we aim at putting under scrutiny the arguments for and against the system of quantified S5 as *the* logic of metaphysical modality. Special attention will be paid to the discussion around Necessitism and Contingentism, and the new elements grounding and essence, and the reduction of metaphysical necessity in terms of them, might bring to this debate.

4.2. Activities:

- Organization of a conference on metaphysical grounding and essence hosted at the University of São Paulo;
- Submission of a paper related to this research to a top-ranking philosophy journal.

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