

# Essence, Necessity, and Non-Generative Metaphysical Explanation

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## *Abstract*

Finean essentialists take metaphysical necessity to be metaphysically explained by essence. But whence the explanatory power of essence? A recent wave of criticism against the Finean account has put pressure on essentialists to answer this question. Wallner and Vaidya (2020) have responded by offering an *axiomatic* account of the explanatory power of essence. This paper discusses their account in light of some recent criticism by Bovey (2022). Building on work by Glazier (2017), Bovey succeeds in showing that Wallner and Vaidya's account is in need of modification and clarification. In this paper, I take up Bovey's challenge and argue that Wallner and Vaidya have the resources available to incorporate the necessary modifications. I discuss the details of this modification, specifically, the question of *what kind of metaphysical explanation* is at work in the explanation of the necessity of essence itself. To get clear on this, I will introduce the distinction between *generative* and *non-generative metaphysical explanation*. In this way the paper contributes to both, the debate about whether essences can explain necessity and to the ongoing debate about metaphysical explanation.

*Keywords:* Essence, Necessity, Metaphysical explanation, Grounding.

## 1. Introduction

According to Finean essentialists, essence is the metaphysical source or ground or explanation of metaphysical necessity. Fineans hold that metaphysically necessary facts are *metaphysically explained* by facts about essence. Recently, there has been a wave of criticism against Finean essentialism. According to Casullo (2020), Leech (2018, 2021), Mackie (2020), Noonan (2018) and Romero (2019) essences by themselves are incapable of explaining necessity. The critics believe there to be an explanatory gap between essence and modality and charge the Finean essentialist with the task of accounting for *why* and *how* precisely essences are supposed to explain necessity. More specifically, those critics maintain, that in order for the Finean essentialists to be able to account for the explanatory power of essence, they have to be able to account for the necessity of essentialist facts in essentialist terms.

Wallner and Vaidya (2020) have responded to this kind of criticism.<sup>1</sup> According to Wallner and Vaidya, both the explanatory power of essences with regard to modality and the necessity of essence are part of the real definition, i.e., the nature or essence of *essences themselves*. In other words, their answer to the question “In virtue of what do essences have the capacity to explain necessity?” is simply: “in virtue of the essence of essence”.

However, this account has recently been criticized by Bovey (2022). Bovey argues that Finean essentialists cannot explain the necessity of essence. In this paper I assess Bovey’s criticism. I accept that Bovey’s objection shows that the metaphysical explanation of the necessity of essence cannot be a *grounding* explanation. While this indeed forces Wallner and Vaidya to modify their account, I shall argue that they have the resources to do so, such that the objection is avoided and the Finean essentialist spirit of the approach is preserved. Nonetheless, Bovey’s result puts pressure on Wallner and Vaidya to explain exactly what kind of metaphysical explanation is at play in their account of the necessity of essence, if not grounding explanation. I respond by distinguishing two kinds of metaphysical explanations: those that are *generative* and those that are *non-generative*. While generative explanations have received the most attention (especially grounding), there are also examples of non-generative explanations: examples include Glazier’s (2017) *essentialist explanation* and Bertrand’s (2019) *explanation by constraint*. I will argue that Wallner and Vaidya’s explanation of the necessity of *essence* also should be considered non-generative.

By arguing for this strategy, the present paper wishes to contribute to the ongoing debate between Fineans and their critics about whether essences are capable of explaining necessity, as well as to the debate about metaphysical explanation in general.

After a brief note on some terminology and formalism (section 1.1), I will start by sketching the initial criticism against Finean essentialism (section 2), Wallner and Vaidya’s response (section 3) and Bovey’s (2022) worry concerning this response (section 4). Then, I’ll respond to Bovey’s worries by introducing the notion of *non-generative explanation* and further qualify the specific kind of non-generative metaphysical explanation at work in Wallner and Vaidya’s so-called axiomatic solution (section 5). Section 6 concludes.

### 1.1. A Note on Terminology and Formalism

I will be using ‘ $\triangleleft$ ’ to denote metaphysical explanation in general. ‘ $p \triangleleft q$ ’ reads: ‘ $p$  metaphysically explains  $q$ ’ or: ‘ $q$  is metaphysically explained by  $p$ ’. The most discussed kind of metaphysical explanation is either identical to, or underwritten by, metaphysical grounding.<sup>2</sup> I will call this kind of explanation ‘grounding explanation’ and I will write ‘ $p \triangleleft_g q$ ’, which reads: ‘ $p$  grounding-explains  $q$ ’ or: ‘ $q$  is grounding-explained by  $p$ ’. I will use similar symbols with different indices for other kinds of metaphysical explanations. There is a debate over whether  $\triangleleft$  connects sentences, claims, truths, propositions, or facts. I wish to remain neutral on

<sup>1</sup> See also Correia and Skiles (forthcoming) for an alternative attempt to respond to the criticism.

<sup>2</sup> I wish to remain neutral as to whether metaphysical grounding *qua* determination relation is identical to a specific kind of metaphysical explanation (unionism) or whether it backs grounding explanation (separatism). For discussion, see, e.g., Raven 2015.

this matter. I switch between talk of claims, truths, propositions, and facts figuring in metaphysical explanations.

I will use ' $\Box$ ' to denote metaphysical necessity, as is standard. ' $\Box p$ ' reads: 'it is metaphysically necessary that  $p$ '. I will use ' $E_x$ ' to denote the indexed essentiality operator. ' $E_x p$ ' reads: 'it is true in virtue of the essence of  $x$  that  $p$ ' (or: 'it is essential to  $x$  that  $p$ '). While  $x$  ranges over entities, it is debatable as to whether  $p$  should be taken to be a sentence, claim, truth, proposition, or fact. I wish to remain neutral on this matter, too. I switch between talk of claims, truths, propositions, and facts embedded in the essentiality operator.

If ' $E_x p$ ' is true, I will call  $p$ , i.e., the claim/proposition/fact embedded in the essence operator, an '*essential claim/proposition/fact*'. In contrast to that, ' $E_x p$ ', i.e., the claim with the essence operator, I will call '*essentialist claim*' or, alternatively, '*essence claim*' or '*essentiality claim*'. ' $x$ ' in ' $E_x p$ ' is called the 'bearer' of the essence, the entity whose essence the essentialist claim is concerned with.

It helps to draw a similar distinction in the realm of necessity. If ' $\Box p$ ' is true, (and the kind of modality at issue is metaphysical modality) we can call  $p$ , i.e., the claim/proposition/fact embedded in the necessity operator, a '(metaphysically) *necessary claim/proposition/fact*'. In contrast to that, ' $\Box p$ ', i.e., the claim with the operator, can be called a '(metaphysical) *necessity claim/truth/proposition/fact*'; or a '(metaphysical) *necessity*', for short.

Returning to essences, claims of the form ' $E_y E_x p$ ' are '*iterated essentialist* (or '*essentiality or essence*) claims'. (Sometimes I'll just speak of '*iterated essence*' for the sake of brevity.) Depending on whether  $x$  and  $y$  in ' $E_y E_x p$ ' are identical or distinct, I shall speak of an '*iterated essentiality claim with or without bearer identity*', respectively. I will call an essentiality claim of the form ' $E_x p$ ', where  $x$  is essence or essentiality itself (i.e., ' $E_E p$ ') a '*higher-order essence claim*'. Note that ' $E_E$ ' does not count as an iteration of the essentiality operator. The subscripted ' $E$ ' in ' $E_E$ ' does not itself function as an operator binding formulas in its scope; it rather denotes essence itself as the bearer of the higher-order essence. Hence, such higher-order essences like ' $E_E p$ ' are not automatically iterated essences like ' $E_y E_x p$ '.

## 2. Essence Cannot Explain Necessity

Numerous authors have recently expressed doubt as to whether Finean essences can indeed explain metaphysical necessity. Casullo (2020), Leech (2018, 2021), Mackie (2020), Noonan (2018) and Romero (2019) all hold that since Fine is endorsing a definitional notion of essence, according to which essentiality pertains to *real definition* and is not reducible to (de re) necessity, it is unclear how such essences affect the modal profile of their bearers. According to Fine's definitional or "non-modal" account of essence, all essential properties of  $x$  are necessary properties of  $x$ . However, the converse does not hold. There are some necessary properties of, say, Socrates, that are not, in the definitional sense, essential to Socrates. It is necessary for Socrates, as the famous example goes, to be a member of the singleton set {Socrates}. However, it is plausible that this property does not belong to the constitutive essence of Socrates, i.e., to his real definition, since the constitutive essence does not "know" anything about sets. Mathematical objects like sets are not among the things that are most directly and basically definitive of what Socrates is in its "innermost core". In the eyes of the critics, this "divorce of

essence and necessity” makes it questionable or even implausible that Finean essences can indeed *explain* necessity.

According to Leech (2021: 888), Finean essentialism owes us an answer to the following two questions:

(L1) What is essence?

(L2) Why should essence generate necessity?

The answer to (L1) should ground the answer to (L2).<sup>3</sup> Canonically, the answer to (L1) involves talk of “real definitions” (that I will also be alluding to). But Mackie voices a general worry about Finean essentialism:

I do not see how it is possible to isolate a notion of real definition that will generate a conception of essence that delivers the result that essential properties are necessary properties, unless we appeal to modal notions—in particular, to the notion of metaphysical necessity—in explaining what the relevant notion of real definition is. It looks as if the account of essence in terms of real definition is intended to deliver a modal rabbit out of a non-modal hat. And I do not see how this can be done (Mackie 2020: 252).

Mackie’s point here is that definitional essences *alone* do not have an effect on the modal profile of their bearers. To assume that effect, i.e., to assume that essence generates (or gives rise to) necessity, is to presuppose the notion of metaphysical necessity rather than to explain it. Finean essentialists are accused of begging the question: they presuppose that essences explain necessity rather than accounting for *why or how* they do so. This circularity worry is also present in Casullo and Noonan. Due to reasons of space, I will concentrate on Romero’s criticism, who puts an interesting spin on the question-begging objection.

Romero argues that Finean essences are incapable of explaining necessity. Being definitional, rather than modal, essences have lost their modal oomph, so to speak. For essences to be able to explain or generate necessity, a “modal posit” is needed. What does he mean, exactly? The modal posit in question might consist in the claim that essences, i.e., essentialist facts, are themselves necessary ( $E_x p \rightarrow \Box E_x p$ ). However, any modal posit is crucially external to Finean definitional essences, according to Romero. Ever since Fine’s “divorce of essence and necessity”, an *explanatory gap* between essence and modality has emerged, which can only be bridged by a modal posit such as the assumption that essences are themselves necessary. Romero (2019: 125) concedes that if there were an obvious problem with the claim that a thing could have a different essence or nature (than it actually has), essences would indeed be capable of explaining necessity. In other words, if it could be shown that the necessity of essence ( $E_x p \rightarrow \Box E_x p$ ), i.e. the needed modal posit, would be *built into* Finean essences, the purported explanatory gap between essence and modality would not arise and Finean essentialism would be out of the woods. Romero interprets a passage in Hale 2013 (133) as an attempt to provide an argument precisely to the effect that there is an obvious problem with the claim that a thing could have a different essence or nature (than

<sup>3</sup> Leech goes on criticizing Correia and Skiles (2019), by arguing that their answer to (L1) (essence = generalized identity) cannot deliver the right answer to (L2). I won’t pursue this line of discussion, since I am interested in a different strategy: to answer (L2) based on a different answer to (L1).

it actually has), i.e., for the conclusion that essences are themselves necessary. Wallner and Vaidya (2020: 421-22) reconstruct the argument as follows:

- (H1) Suppose,  $\alpha$  might have had a different nature.
- (H2) So, possibly there is a  $\beta=\alpha$ , such that  $\beta$  has a different nature than  $\alpha$ .
- (H3) Yet, the nature of  $\alpha$  tells us what it is for  $\alpha$  to be  $\alpha$ .
- (H4) So,  $\beta$  lacks what it takes to be  $\alpha$ .
- (H5) But, then, it is not possible that  $\beta=\alpha$ .
- (H6) Thus, we have to reject the supposition that  $\alpha$  might have had a different nature.

Romero thinks that this argument fails. Most importantly, he holds that there is a gap between (H3) and (H4). Wallner and Vaidya (2020: 422) have dubbed this the *essence-modality-gap* (EMG):

- (EMG) Essences are what it is for something to be what it is; it doesn't follow that they are what it must be (Romero 2019: 126).

The only way that this gap can be filled, according to Romero, is by adding the *assumption* that *essences are necessary*. However, since this is what Hale's argument is supposed to establish, this would make the argument viciously circular. So, Romero's criticism is that this argument is either invalid (due to (EMG)) or viciously circular. Romero remains convinced that Finean essences cannot explain necessity, for the modal posit needed for this (i.e., what I've called the modal oomph) cannot be established as belonging to Finean essence.<sup>4</sup>

Leech, Mackie, Noonan, Casullo and Romero, all complain that Fineans beg the question of *why* or *how* essences explain or generate necessity, i.e., (L2). The spin Romero puts on the argument is that he seems to concede that if it could be shown that the necessity of essence would be built into Finean essences, Fineans would have a non-question-begging answer to (L2). Hence, the crucial point that needs to be shown by essentialists is that the necessity of essence, i.e., the needed "modal posit", is built into essences. However, so goes Romero's criticism, rather than showing or proving that essences are necessary, Hale *presupposes* this very assumption, hence begging the question. So, there is, again, a question-begging objection that is supposed to show that Finean essentialist cannot account for how or why essences explain necessity. But the exact question that is purportedly begged, according to Romero, is slightly different.

### 3. Essence Can Explain Necessity

There is a standoff of contrasting intuitions as to whether the modal oomph is built into the notion of essence. In an attempt to tip the scale in favor of Finean essentialism, Wallner and Vaidya (2020) offer an account of what it means for essence to have such modal oomph built in: i.e., they propose that both, the necessity of essence and the power to explain necessity lies in the *essence of essence*.

While Romero and other critics hold that the entirely non-modal Finean essences need an *additional modal posit* to explain necessities, Wallner and Vaidya defend the intuition that this very "modal posit" is *built into* the notion of essence.<sup>5</sup>

<sup>4</sup> Note that this criticism of Hale is only part of Romero's paper. Romero criticizes the claim that Finean essences are capable of explaining necessity from many different angles. However, his discussion of Hale will suffice for the purposes of this paper.

<sup>5</sup> For a somewhat similar view, see Wilsch 2017.

What does that mean, precisely? It is in virtue of the very *essence* of Fine's notion of essence that essentialist truths hold as a matter of necessity and that essentialist truths have the bearing on the modal profile of the entities they are about. So, when the critics ask *why* essences are necessary and *why* essences have this bearing on the modal profile of their bearers, Wallner and Vaidya simply respond: because it is *essential to essences* that they are necessary and have this modal bearing.<sup>6</sup> Wallner and Vaidya are aware that rather than being the substantive answer that the critics might have expected, this, admittedly *non-substantive*, answer, in the eyes of the critics, might be a mere statement of the very intuition they reject. The point of their so-called *axiomatic solution*, however, is that expecting a substantive answer to questions like *why* and *in virtue of what* essences explain necessity misses the point about what dialectical role essences in the Finean sense are supposed to play. This is best illustrated in analogy to Schaffer's (2016) assessment of Lewis's criticism against non-Humean accounts of lawhood.

According to the Dretske-Tooley-Armstrong (DTA) view, laws of nature are *fundamental necessitation relations* of the form  $N\langle F, G \rangle$ , which is to be read: 'being  $F$  necessitates being  $G$ '. Being critical of (DTA), Lewis (1983: 366) complains that he "cannot see how it could be absolutely impossible to have  $N(F, G)$ , and  $Fa$  without  $Ga$ ", thereby claiming that it is *unclear why and how* such a fundamental necessitation relation can entail the claim that  $\forall x (Fx \rightarrow Gx)$ , i.e., the regularities that it is supposed to govern. Schaffer remarks that Lewis's complaint rests on a confusion. (DTA) is positing a fundamental notion 'N' in order to capture their notion of a law, according to which *it is the business of laws to govern* (Schaffer 2016: 582). Since 'N' is a fundamental posit, (DTA) should be allowed to equip their notion of 'N' with the appropriate axioms for it to be able to do the work it is intuitively supposed to do. If (DTA) wishes to capture the intuition that governing is what it is for laws to be laws, it should be allowed to simply add the axiom that  $N\langle F, G \rangle$  entails  $\forall x (Fx \rightarrow Gx)$ . Analogously, if Finean essentialists wish to capture the intuition that essences are themselves necessary and that they have modal bearing and the explanatory power to explain (metaphysical) necessities, they should be allowed to equip their notion of essence with the appropriate axioms. Note that it is very plausible for Fineans to take essence to be a basic, primitive notion and a fundamental posit in much the same sense that (DTA) takes 'N' to be.<sup>7</sup>

Yet, this also means that, against the background of this axiomatic solution, it is a mistake, a confusion, to expect a *substantive* explanation as to *why* or *in virtue of what* essences have modal bearing and explain necessity. Just like Lewis was

<sup>6</sup> Note that the claim that essentialist facts have modal bearing, i.e., that they are capable to explain, give rise to, or ground necessity facts ( $E_x p \triangleleft_g \Box p$ ), is different from the claim that essentialist facts are themselves necessary ( $E_x p \rightarrow \Box E_x p$ ). The precise relation of these two claims is subject of debate. Wallner and Vaidya (2020) endorse Hale's non-transmissive picture, according to which the necessity of the essentialist claim in the explanans does not itself play an explanatory role in explaining the respective necessity claim in the explanandum, but rather a higher-order explanatory role in explaining why essences have modal bearing and are capable of explaining necessity. However, since this paper is mainly focused on the necessity of essence, I don't see a reason to commit to any specific view concerning the relation of the two claims here.

<sup>7</sup> For a recent discussion of (DTA) in essentialist terms, see Hirèche et al. 2021. For a recent critical assessment of Schaffer's axiomatic solution, see Coates (forthcoming).

confused when he did not see the impossibility “to have  $N(F, G)$ , and  $Fa$  without  $Ga$ ” (Lewis 1983: 366), Romero and other critics of Finean essentialism are confused when they see a gap between essence and modality. It is part of the very notion, i.e., of the essence of Finean essences that there is no such gap.

So, Wallner and Vaidya answer Leech’s two crucial questions. Their answer to (L1) is: essences are essentially such that they are themselves necessary and that they have modal bearing such that they are capable of explaining necessity. Their answer to (L2) is: essences generate/explain necessity because it is *essential* to essences to generate/explain necessity; this is just what essences do; it is the business of essence to explain necessity. Granted, these responses might not exactly be what the critic was after, but, according to the axiomatic solution, it is a mistake to expect answers mores “substantive” than those.

To Mackie’s (2020: 252) worry, according to which Fineans seem to “deliver a modal rabbit out of a non-modal hat”, Wallner and Vaidya respond that the hat is not actually a non-modal one. If we understand essences as being *essentially* necessary and as *essentially* having that modal bearing on their bearers, it is plausible that essences, even if they are definitional and *not reducible* to (de re) necessity, still belong to the family of modal notions in the broad sense.<sup>8</sup> This point gives rise to Wallner and Vaidya’s *non-reductive* interpretation of Finean essentialism.<sup>9</sup>

In this paper I don’t want to dwell on whether the axiomatic solution is dialectically appropriate, whether it can indeed tip the scales or satisfy the critics. Rather, I want to discuss a direct problem for the axiomatic solution in itself, from Bovey 2022. So, in what follows, I wish to move away from the broadly metaphysical question as to whether the axiomatic solution is dialectically viable and towards a more first-order question: does the axiomatic solution even fit the bill?

With regard to this latter question, Bovey (2022) has put pressure on the axiomatic solution. Rather than insisting on a rival intuition concerning essence and necessity, Bovey objects that Wallner and Vaidya’s attempt to explain the necessity of essence in terms of the *essence of essence* is in conflict with other claims and principles concerning modality, essence, grounding, and explanation that Wallner and Vaidya themselves endorse.

#### 4. Essence Cannot Explain All Necessities

Bovey (2022) argues that the appeal to the essence of essence in order to explain the necessity of essence must fail. While Bovey’s main arguments revolve around some alleged regress or circularity charges against the Finean essentialist, in my opinion his strongest argument builds on recent work by Glazier (2017). Due to space limitations, I will concentrate on the argument that I think succeeds in showing that essentialist accounts like Wallner and Vaidya’s are in need of qualification and clarification.

Bovey takes this principle, (Source), to be the main idea of Finean essentialism:

<sup>8</sup> For the distinction between a narrow and a broad sense of modal notions see Vetter 2011 (and also Vaidya and Wallner 2021).

<sup>9</sup> For more discussion see Wallner and Vaidya 2020, sect. 3.

(Source) If some  $p$  is (metaphysically) necessary, then this modality fact that  $p$  is (metaphysically) necessary will be metaphysically explained by the fact that there is some  $x$ , such that it is true in virtue of the essence of  $x$  that  $p$ .

*More formally:*  $\forall p (\Box p \rightarrow \exists x (E_x p \triangleleft \Box p))$

He argues that (Source) must fail in its generality, since the essentialist is incapable of explaining the necessity of essence. That essences are necessary, as we have seen, is a very common (and crucial) assumption in essentialist theories, call this principle '(NE)'.<sup>10</sup>

(NE) If it is true in virtue of the essence of some  $x$  that  $p$ , then this very essentialist fact/proposition/claim is itself necessary.

*More formally:*  $\forall x \forall p (E_x p \rightarrow \Box E_x p)$

According to (Source), for any necessity,  $\Box p$ , there is some  $x$ , such that  $\Box p$  is metaphysically explained by the fact that it is true in virtue of the nature of  $x$  that  $p$ . If we allow ourselves to be somewhat sloppy with quantification the explanation looks like this:

(1)  $E_x p \triangleleft \Box p$ .

If, as (NE) says, essentialist facts are themselves necessary, what is the explanation of their necessity? According to (Source),  $\Box E_x p$  is metaphysically explained by the fact that, for some  $y$ , it is true in virtue of the nature of  $y$  that  $E_x p$ . Again, being sloppy with quantification we get:

(2)  $E_y E_x p \triangleleft \Box E_x p$ .

Since (Source) is supposed to be valid for all  $p$ , this explanatory structure goes on indefinitely. Yet, the mere fact that this structure is infinite is not a problem by itself.<sup>10</sup> At least, it is not what Bovey identifies as the problematic aspect. The problem for Bovey is rather that in (2) we are alluding to an *iterated essence claim* of the form ' $E_y E_x p$ ' in the *explanans*. As mentioned, Bovey has several arguments against this move. The one I wish to concentrate on here concerns the question as to whether any such iterated essence-claims of the form ' $E_y E_x p$ ' can even be true.

In an iterated essence claim, like ' $E_y E_x p$ ', what could  $y$  even be, such that its essence contains the essentialist claim that some  $x$  is essentially such that  $p$ ? Glazier (2017: 2886-88) discusses this question in detail. He appeals to an intuitively plausible principle he calls 'Sources are Constituents' (SaC):

(SaC) If  $E_x p$ , then  $x$  is a constituent of  $p$ .

"According to this principle, the 'essentialist source' of a proposition, that in whose nature the proposition lies, must itself be a (Russellian) constituent of the proposition" (Glazier 2017: 2887). Note that what Glazier calls the 'essentialist source' of a proposition is just what I have called the 'bearer' of the essence.<sup>11</sup>

It is plausible to think that an essence contains only claims/propositions/facts that contain the bearer of this essence as a constituent. Now, what does this say with regard to iterated essence claims of the form ' $E_y E_x p$ '? According to (SaC), if  $E_y E_x p$ , then  $y$  must be a constituent of  $E_x p$ . There are three ways in which  $y$  can be a constituent of  $E_x p$ :

<sup>10</sup> For a detailed discussion of this point, see Wallner 2020.

<sup>11</sup> Wilsch (2017) argues for the same principle under the heading 'bearer constraint'.



- (i)  $y$  is a constituent of  $p$
- (ii)  $y$  is the essentialist operator  $E$
- (iii)  $y=x$ .

Let's start with (iii). Remember Fine's (1995b) distinction between *constitutive* and *consequential* essence. The constitutive essence of some  $x$  expresses what  $x$  is in its most core respects. In other words, the constitutive essence contains the propositions that are directly and most basically definitive of  $x$ . The consequential essence of  $x$  contains all the propositions the constitutive essence of  $x$  contains and everything that follows logically from those propositions. Take this as an example. If it is constitutively essential to Taylor Swift that she is human, it is consequentially essential to her (but not constitutively) that she is human or feline. Hence the consequential but not the constitutive notion of essence is closed under logical consequence.

When it comes to explanatory purposes, the constitutive notion of essences seems to be more suitable than the consequential one. However, it is plausible that no claim of the form ' $E_y E_x p$ ' where  $x=y$  can be true, under the constitutive notion of essence. The propositions that are directly and most basically definitive of  $x$ , are likely about  $x$  and not about the *essence of  $x$* . Fine's (1995a) logic of essence allows to derive  $E_x E_x p$  from  $E_x p$ . However, Fine is clear that this logic captures the consequential, not the constitutive, notion of essence. If, as is plausible, the notion of essence at issue is the constitutive one, no claim of the form ' $E_y E_x p$ ' where  $x=y$  can be true, and, hence, (iii) is not an option.

Glazier argues that (i) cannot be an option either, i.e., that  $y$  can't be a constituent of  $p$ : If  $y$  is a constituent of  $p$ , then the essence of  $x$  involves  $y$ . If  $E_y E_x p$ , however, the essence of  $y$  involves  $x$ . Since the essence of some entity *explains what that entity is*,  $y$  would be explained by  $x$  and *vice versa*. Hence,  $y$  can't be a constituent of  $p$  on pain of the circularity of essentialist *what-explanations*.<sup>12</sup>

What about (ii)? Can  $y$  be the essentiality operator  $E$ ? This would amount to  $y$  being *essence or essentiality itself*. I take this to be the most interesting option among the three that Glazier discusses. Can  $E_x p$  be essential to *essence itself*? Can a claim of the form ' $E_E E_x p$ ' be true? If we want this claim to be about constitutive essence,  $x$  cannot be  $E$ . And if Glazier is right about (i),  $E$  can also not figure as a constituent in  $p$ . Hence, ' $E_x p$ ' must be the claim that some proposition/fact,  $p$ , not involving essence, lies in the essence of something other than essence. The crucial question is whether such a claim could be true in virtue of the *essence of essence*. Glazier admits that he does not have a knock-down argument against the truth of claims of that form but he also notes that he is "unable to think of an example with any plausibility" (Glazier 2017: 2887).<sup>13</sup> Building on Glazier, Bovey (2022: 14) argues that the attempt to explain the necessity of essence claims (like ' $\Box E_x p$ ') by appeal to the essence of essence (i.e., in virtue of ' $E_E E_x p$ ') must fail. On this proposal, all essence claims are true in virtue of the essence of essence. Hence, it must be true in virtue of the essence of essence, that Socrates is essentially human, that {Socrates} essentially contains Socrates, that triangles are essentially such that their interior angles sum up to 180 degrees, that gold is

<sup>12</sup> See also Fine (2015: 296-97) who argues for the principle that if  $x$  is a constituent of the explanans in a what-explanation of  $y$ ,  $y$  cannot be a constituent of the explanans in a what-explanation of  $x$ .

<sup>13</sup> For a recent criticism of Glazier's argument, see Ditter (ms).

essentially the element with atomic number 79, ... etc. However, this cannot be the case, according to Bovey:

[I]t does not seem that we are in the business of characterizing what Essence [itself] is if we say that Essence [itself] is such that Socrates/Plato are essentially human. Intuition suggests that Essence [itself] knows nothing of the particular other essences (and, by the same token, of the entities they are about). It seems clear that the propositions that are essential to Socrates do not characterize what the nature of Essence [itself] is (Bovey 2022: 14).

So, if Glazier already has considerable doubts as to whether there is any  $x$  and  $p$  such that a claim like ' $E_E E_x p$ ' can be true, Bovey has all the more reason to doubt that for *all*  $x$  and  $p$  ' $E_E E_x p$ ' is true, if ' $E_x p$ ' is. But this, says Bovey, would be the consequence of (Source) and (NE) on the best available  $y \neq x$  option, i.e., the one where we take  $y$  in ' $E_y E_x p$ ' to be essence itself.

I think that this objection really stings. I will refer to this as the 'Glazier/Bovey-objection'. I think this objection is not easily fended off by the essentialist. Importantly, it seems to attack the appeal to the essence of essence, which is an integral part of Wallner and Vaidya's account. In the next section I will elaborate on how exactly the Glazier/Bovey-objection affects Wallner and Vaidya's account and how their account needs to be clarified and qualified in order to avoid the objection. Luckily, it will turn out that Wallner and Vaidya's approach has all the resources it needs to do so. I will argue that the best way to see this is to introduce the notion of *non-generative metaphysical explanation* to the debate.

## 5. The Axiomatic Solution and Non-Generative Metaphysical Explanation

What are the consequences of the Glazier/Bovey-objection for Wallner and Vaidya's view? Wallner and Vaidya (2020: 419) endorse a version of (Source) that is formulated in terms of grounding:

(Source<sub>wv</sub>) Every metaphysical necessity truth is grounded in one or more essentialist truths.<sup>14</sup>

As part of their axiomatic solution, they also endorse (NE). Hence, if all metaphysical necessities are grounded in essentialist facts and if essentialist facts are themselves metaphysically necessary, we get the following explanatory structure:

- (1<sub>g</sub>)  $E_x p \triangleleft_g \Box p$
- (2<sub>g</sub>)  $E_y E_x p \triangleleft_g \Box E_x p$
- ...

Since Wallner and Vaidya take the necessity of essence (i.e., ' $\Box E_x p$ ') to be true in virtue of the essence of essence, it seems obvious that they endorse a grounding explanation like in (2<sub>g</sub>) above where ' $y$ ' in the iterated essence claim on the left hand side is supposed to be essence or essentiality itself:

- (2<sub>g'</sub>)  $E_E E_x p \triangleleft_g \Box E_x p$

<sup>14</sup> In Wallner and Vaidya 2020, (Source<sub>wv</sub>) is called '(FE)'.

Wallner and Vaidya's version of (Source) together with (NE) and their appeal to the essence of essence runs straight into the Glazier/Bovey-objection, so one of those needs to give. Which one? Given the importance of the *axiomatic solution* for their account, they cannot give up (NE), nor the appeal to the essence of essence itself. Hence, their version of (Source) needs to be altered, just like Bovey (2022: 7 fn. 16) expects. Luckily, their account provides the resources for such a modification or qualification of (Source). Their repeated emphasis that the explanation of the necessity of essence in terms of the essence of essence, that the axiomatic solution provides, is *non-substantive* is, as we will see shortly, best interpreted as the claim that this is *not* a grounding explanation. However, Wallner and Vaidya fail to spell this out explicitly. With that failure goes hand in hand their oversight that (Source<sub>wv</sub>) needs to be modified. In this section I will discuss the details of this modification. I will argue that, generally, it can be maintained that essences *ground* necessity, but the explanation of the necessity *of essence* is different, since it is *not* a grounding explanation. To make this plausible, I will provide answers to these two questions:

- (Q1) What kind of explanation is at play in the relation between the essence of essence and the necessity of essence? What is this *non-substantive* explanation, precisely?
- (Q2) Why is such a modification of (Source<sub>wv</sub>), according to which the necessity of essence is special, not unacceptably *ad hoc*?

The answers to these two questions will provide important insights for the general debate about metaphysical explanation and touch upon what we are to expect from a metaphysical theory in principle. More specifically, the answers to these questions will make it clear that Wallner and Vaidya's explanation of the necessity of essence does not allude to iterated essences at all, such that they can avoid running into the Glazier/Bovey-objection.

Let's start with (Q1). How should Wallner and Vaidya's explanation of the necessity of essence be understood, precisely? Since Wallner and Vaidya (2020: 430) hold that "the question of why essences are necessary (and in turn the question of why essences can explain necessity) does not have a substantive answer", their explanation of the necessity of essence in terms of the essence of essence, is, as they emphasize, a "non-substantive" one. The best interpretation of this is that this explanation does *not* provide a substantive metaphysical source or ground of the necessity of essence. The point about the axiomatic solution is precisely to convey that we don't need any substantive source or ground for the necessity of essences or essentialist claims/propositions/facts, since their necessity is "built into" the very nature of what essence is. This interpretation leads to a distinction between two basic kinds of metaphysical explanation: those that provide substantive metaphysical sources or grounds for the truth of some claim or proposition, or the obtaining of some fact, or the existence (or being) of some entity, and those that do not. I call the former category '*generative metaphysical explanation*', since their explanantia *metaphysically generate* their explananda. Grounding is the most paradigmatic example of this generative kind of metaphysical explanation. The ground makes the grounded exist, or obtain, or have being, it is the metaphysical

and ontological source of the grounded.<sup>15</sup> This, of course raises a question concerning the relation between the explanans and the explanandum in *non-generative metaphysical explanation*. If this relation is not generative, what is it?

The paradigmatic case for non-generative metaphysical explanation (though not the only one, as I will argue later) is Glazier's essentialist explanation. According to Glazier (2017), there is an explanatory connection between a given essentialist claim/proposition/fact and its prejacent claim/proposition/fact. In other words, if  $E_x p$ , then there is a sense of explanation—*essentialist explanation*—according to which  $p$  is explained by  $E_x p$ . E.g., {Socrates} contains Socrates as a member because it is essential to {Socrates} to contain Socrates as a member. Since those explanations are metaphysical in nature, they are a kind of metaphysical explanation. However, this kind of explanation is importantly different from grounding explanation.

Glazier's argument that essentialist explanation is crucially distinct from grounding clearly shows that the former is non-generative in the sense that it does not provide a substantive metaphysical source or ground for its explanandum. Glazier (2017: 2875) invites us to think of a fact that is fundamental, such that it is ungrounded and no grounding explanation of that fact could be given. His example is the fact that electron  $e$  has negative charge. For some such fundamental facts at least, so Glazier argues, we can still have an essentialist explanation. It is plausible that [it is essential to  $e$  that  $e$  has negative charge] explains [ $e$  has negative charge]. This shows that essentialist explanation is crucially different from grounding explanation.

Being a generative kind of explanation, grounding depicts the layered structure of the world, from the fundamental to the increasingly derivative.<sup>16</sup> Glazier's essentialist explanation is best captured to not have this connection to fundamentality. One reason for this is that it is a substantive issue which of the two facts ' $p$ ' and ' $E_x p$ ' is more fundamental or whether they are on the same fundamentality level. Essentialist explanation captures the intuition that the latter explains the former while being neutral about that substantive issue. This substantive issue, or so the standard story goes, revolves around whether there is a generative grounding explanation between those two facts. If we were to build a connection to fundamentality into the form or structure of essentialist explanation, this substantive issue would be settled by the mere form of this explanation. On top of that, the difference to grounding explanation would be undermined. Glazier's point about essentialist explanation is precisely to introduce an explanatory relation between  $p$  and  $E_x p$  that does not entail anything concerning grounding or fundamentality.

So, grounding explanation and essentialist explanation differ from each other in as much as that the former is generative, while the latter is not. But again, if the explanantia in non-generative explanation do not provide a substantive metaphysical source or ground of their explananda, what do they do, precisely? I contend that they provide a *reason* for the explanandum to be true, to exist, or to obtain that is not a substantive metaphysical source or ground of its truth, existence, or obtaining. The reason in a non-generative metaphysical explanation does not generate the truth of the explanans. Non-generative metaphysical explanations

<sup>15</sup> This is in line with Bennett's (2017: 57-59) verdict that grounding *qua* building relation is generative. Besides grounding, Bennett knows more building relations, which license talk of generative metaphysical explanation of the kind I am sketching here.

<sup>16</sup> See, e.g., Bennett 2017, Correia 2021a, 2021b, and Werner 2020.

do not provide sources that *make* explananda true, but they explain an explanandum by conveying *that* and in some sense *why* it *must* be true. This distinction will become clearer when I introduce Bertrand's non-generative metaphysical *explanation by constraint*. For now, we can use an admittedly imperfect but perhaps helpful analogy to a certain kind of mathematical explanation to somewhat clarify the distinction. Some (though not all) mathematical proofs are considered to be explanatory. They do not only prove but they *explain* their result.<sup>17</sup> Some of the paradigmatic examples of explanatory proofs (though not all) involve certain pictures and/or diagrams that are supposed to make us "see" *that* and *why* the theorem at issue is (and must be) true. Indeed, those pictures are considered to *be* the proof (Brown 1997). Hence, the proof, i.e., the picture is the explanans. However, the picture-proof does not (*metaphysically*) *generate* the mathematical truth it proves. It is not as if the proof (in this case of explanatory *picture*-proofs) makes the result true.<sup>18</sup> Rather the explanatory proof conveys *that* and *why* the result *must* be true.

The distinction between generative and non-generative metaphysical explanation is vital to understand how precisely Wallner and Vaidya's explanation of the necessity of essence works and how their account escapes the Glazier/Bovey-objection. However, this distinction alone does not seem to be sufficient as a response to this objection. One might object that it does not matter, how exactly we interpret Wallner and Vaidya's explanation of the necessity of essence in  $(2_g')$ .  $(2_g')$  will be problematic, regardless of whether the explanatory connection between the explanans and the explanandum is generative or non-generative. The problem about  $(2_g')$ , and what makes Wallner and Vaidya susceptible to the Glazier/Bovey-objection, is the fact that the explanans in  $(2_g')$  is an iterated essence claim of the form ' $E_E E_x p$ '. Glazier's and Bovey's point is that such claims are highly unlikely to be true, such that they cannot figure in any kind of explanation of the necessity of essence. The solution to this will lie in the fact that Wallner and Vaidya's non-generative explanation of the necessity of essence does not take the form of  $(2_g')$ . Most importantly, as will become clear shortly, their explanation does not appeal to an iterated essence claim of the form ' $E_E E_x p$ ', nor of any other form, for that matter.

The way Wallner and Vaidya can escape the Glazier/Bovey-objection is by refraining from any kind of iterated essence claim whatsoever. But what then is the connection to the fact that their explanation of the necessity of essence is of a *non-generative* kind? If the solution to the Glazier/Bovey-objection lies in the kind of *claim* involved in the explanation, what matters the kind of explanation? As it will become clear below, it is precisely the fact that the explanation of the necessity of essence is of a non-generative kind that allows Wallner and Vaidya to refrain from iterated essence claims in their explanation. If the necessity of essence would have to be grounding-explained à la  $(2_g')$ , the explanans would include an iterated essence.

<sup>17</sup> See, e.g., D'Alessandro 2019 for an introduction to and some nice examples of mathematical explanation.

<sup>18</sup> Note that since proofs involving certain pictures and diagrams are not the only proofs considered to be explanatory, the characteristic (and kind of explanation) of other explanatory truths might be different. Also, I expect (some or all?) mathematical intuitionists to disagree with the verdict that the proof does not generate the result. If this is so, I am willing to premise my point here on the falsity of mathematical intuitionism.

I will be returning to this point later, for now it is important to see how the axiomatic solution can dodge reference to any iterated essence claim. To see this, remember the analogy between Schaffer's axiomatic solution in the Humeanism/Non-Humeanism-debate about laws and Wallner and Vaidya's axiomatic solution to the necessity of essence. Just like in Schaffer's axiomatic solution, where the axiom that  $N\langle F, G \rangle$  entails  $\forall x (Fx \rightarrow Gx)$  was added to the real definition or essence of the primitive necessitation relation 'N', it makes sense that the axiom to be added to the real definition or essence of essence in Wallner and Vaidya's axiomatic solution is the following:

$$(A) \quad \forall x \forall p (E_x p \rightarrow \Box E_x p).$$

According to the axiomatic solution, the non-substantive answer to the question as to why essences are necessary, consists the fact that (A) is true in virtue of the essence of essence. Hence, rather than the iterated essence claim ' $E_E E_x p$ ', the explanans in Wallner and Vaidya's explanation of the necessity of essence is this:

$$(\text{Explanans}) E_E (\forall x \forall p (E_x p \rightarrow \Box E_x p)).$$

While (Explanans) is a claim about the *higher-order essence of essence itself*, it does *not* appeal to *iterated essence claims* at all. This is how Wallner and Vaidya's non-generative explanation escapes the Glazier/Bovey-objection. The problem Glazier and Bovey had was with *iterated essence claims involving the higher-order essence of essence, not with the higher-order essence of essence itself*. An iterated essence-claim like ' $E_E E_x p$ ' is very plausibly false for it seems that the essence of essence "knows nothing of the particular other essences (and, by the same token, of the entities they are about)" (Bovey 2022: 14). But for (Explanans) to be true, the essence of essence does not need to know anything about *specific other essences or the entities they are about*. What is said to be in the essence of essence here is a maximally general claim about essences or essentiality as such, namely that all essentialist claims are necessary. It is not at all implausible, at least not for the reasons that Glazier and Bovey endorse with respect to *iterated essence*, that *this*, i.e., (A), is true in virtue of the essence of essence.<sup>19</sup>

Summing up, we now know that (Explanans) is the actual explanans in Wallner and Vaidya's explanation of the necessity of essence. We also know that the relevant kind of explanation is a non-generative one. But what is the explanandum? Indeed, what exactly we take to be the explanandum will determine the kind of non-generative metaphysical explanation that is at work.

Concerning the explanandum, there are two options. What precisely is the question that the axiomatic solution wants to provide a non-substantive answer to? We have been talking about the question of why essence claims are themselves necessary but are we to understand this question as a general one, asking why *all* essences are themselves necessary, or as an individual one, asking why a specific essence claim is necessary? Accordingly, we have two possible explananda.

$$(\text{Explanandum 1}) (\forall x \forall p (E_x p \rightarrow \Box E_x p))$$

$$(\text{Explanandum 2}) \Box E_a p^{20}$$

But, wait, why is ' $\Box E_x p$ ' not a possible explanandum? Have I not repeatedly emphasized that the axiomatic solution is supposed to explain the necessity of

<sup>19</sup> For a different problem concerning the higher-order essence of essence, see Lowe 2008, 2012. See Spinelli 2018 for a response to Lowe, and Wallner 2020 for some discussion.

<sup>20</sup> Note that (Explanandum 2) contains an individual '*a*', instead of a variable '*x*'.

essence, i.e., claims of the form ‘ $\Box E_x p$ ’? So, really this should be the explanandum. Note, that in stating this claim about the necessity of essence as ‘ $\Box E_x p$ ’, I have just been sloppy with quantification. ‘ $\Box E_x p$ ’ clearly contains an open variable that needs either to be bound by a quantifier (Explanandum 1) or replaced by a constant (Explanandum 2). So, the question is whether the axiomatic solution is supposed to explain the general claim that all essences are necessary or the individual claim that some specific essence claim is necessary.

Consider (Explanandum 1) first. On this account, the axiomatic solution offers the following explanation:

$$(Ex1) E_E(\forall x \forall p (E_x p \rightarrow \Box E_x p)) \triangleleft_{NG} (\forall x \forall p (E_x p \rightarrow \Box E_x p))^{21}$$

Note that (Ex1) has exactly the right form to be an essentialist explanation *à la* Glazier, ‘ $E_x p \triangleleft p$ ’. Why are essences necessary? Because it is essential to essence that essences are necessary. So, opting for (Explanandum 1) might allow us to view the specific kind of non-generative metaphysical explanation at work in the axiomatic solution to be Glazier’s essentialist explanation.<sup>22</sup>

$$(Ex1_c) E_E(\forall x \forall p (E_x p \rightarrow \Box E_x p)) \triangleleft_c (\forall x \forall p (E_x p \rightarrow \Box E_x p))^{23}$$

I do not see any obstacle for interpreting (Ex1) in terms of (Ex1<sub>c</sub>), i.e., of taking the axiomatic solution to provide an essentialist explanation of the fact that all essences are necessary in terms of the higher-order essentialist fact that it is true in virtue of what essences themselves are, that all essences are necessary.

What about (Explanandum 2)? On that account, the axiomatic solution offers the following explanation:

$$(Ex2) E_E(\forall x \forall p (E_x p \rightarrow \Box E_x p)) \triangleleft_{NG} \Box E_a p^{24}$$

But what is the precise kind of non-generative metaphysical explanation here? (Ex2) cannot be a Glazier-style essentialist explanation. It does not have the right form. For it to have the right form the explanandum would have to be identical to the claim/proposition/fact that is embedded in the essentiality operator ‘ $E_E$ ’ in the explanans, like it is the case in (Ex1). (Ex2) can also not be a grounding

<sup>21</sup> ‘ $\triangleleft_{NG}$ ’ denotes non-generative metaphysical explanation.

<sup>22</sup> One might worry that (Ex1) is at odds with what Glazier (2017: 2884) calls the ultimacy of essentialist explanations (UoE). Yet, it isn’t. (UoE) says that no explanans in an essentialist explanation, i.e., no essentialist claim, has itself an essentialist explanation. (Explanandum 1) does not have the right form to function as an explanans in an essentialist explanation. It is a universally generalized conditional, not an essentialist claim. It might contain essentialist claims but just like containing a conjunction does not make ‘ $p \rightarrow (p \wedge q)$ ’ itself a conjunction, containing an essentialist claim does not make (Explanandum 1) itself an essentialist claim. Hence, since (UoE) does not speak against the possibility for (Explanandum 1) to have an essentialist explanation and, thus, it does not speak against the possibility of taking (Ex1) to be an essentialist explanation.

<sup>23</sup> ‘ $\triangleleft_c$ ’ denotes Glazier’s essentialist explanation.

<sup>24</sup> Note that, as it stands, (Ex2) can only be a partial explanation of (Explanandum 2). The point is that for (Ex2) to be a full explanation of (Explanandum 2) we have to assume that  $p$  is indeed essential to  $a$ . So, the full explanation of (Explanandum 2) would have two explanantia:

$$(Ex2^*) E_E(\forall x \forall p (E_x p \rightarrow \Box E_x p)), E_a p \triangleleft_{NG} \Box E_a p$$

However, I will omit this in the main text for the sake of readability. The reader should either supplement (Ex2) in the appropriate way (to (Ex2\*)) or read (Ex2) as providing a partial explanation of (Explanandum 2).

explanation. Despite the fact that the axiomatic solution calls for a non-generative metaphysical explanation and grounding is generative, the explanans in (Ex2), as will become clear shortly, does not seem to have the right form to be the *ground* of (Explanandum 2).<sup>25</sup> If we stick with the standard “recipe” in (Source), a (grounding) explanation of (Explanandum 2) in terms of the essence of essence would take the following form: ‘ $E_E E_a p \triangleleft_g \Box E_a p$ ’. This, however, would make us slip right back into the Glazier/Bovey-objection.

So, is there a kind of non-generative metaphysical explanation that has the right form, such that the axiomatic solution could be understood in terms of (Ex2), i.e., as being concerned with an explanation of the necessity of a *specific* essentialist claim? I think there is. I am talking about Bertrand’s (2019) *metaphysical explanation by constraint*. Looking at this kind of explanation will help us to get clearer about some features of non-generative metaphysical explanation in general.

Bertrand (2019: 1327-28) observes that there are, broadly, two different kinds of *scientific* explanations on offer. Those that function from the bottom up, like causal-mechanical explanations, explain the explananda by identifying particular underlying mechanisms that *produce* the explananda. In contrast to those, there are also explanations that function from the top down, like scientific explanations by constraint, which explain their explananda by subsuming them under some principles, showing that they must be the case. Those top-down scientific explanations often do not even cite causes at all. Bertrand extends this distinction to metaphysics. He makes a compelling case that also in metaphysics there are bottom-up and top-down explanations. Grounding explanations are the paradigmatic examples for bottom-up metaphysical explanations. Analogous to causal-mechanical explanations in science,

[g]rounding explanations explain why something exists or has the features it does by identifying the metaphysical mechanisms that give rise to it: the more fundamental bits of the world in which it is grounded (Bertrand 2019: 1329).

Bertrand takes the distinguishing feature of bottom-up metaphysical explanations like grounding to be that they describe “the way in which their explananda were *generated*” (Bertrand 2019: 1330). This, as we shall see shortly, is not the case for top-down metaphysical explanations, such as metaphysical explanation by constraint.

Bertrand offers the following example of a metaphysical explanation by constraint:

Dishes: Imagine five dishes in a sink, one stacked on top of the other, and suppose that exactly these dishes taken together sum to form an object. Call the resulting object a stack. The fact that composition is unique explains the fact that there are not two distinct stacks composed of exactly our five dishes (Bertrand 2019: 1330).

<sup>25</sup> That the explanatory relation between ‘ $E_E(\forall x \forall p (E_x p \rightarrow \Box E_x p))$ ’ and ‘ $\Box E_a p$ ’ is best interpreted to be different from (even partial) grounding will become clear shortly, when I discuss Bertrand’s metaphysical explanation by constraint and the way in which it differs from grounding explanation.



Let ' $\triangleleft_c$ ' denote metaphysical explanation by constraint, then we get the following:

(Dishes) Composition is unique  $\triangleleft_c$  there are no two distinct stacks composed of exactly our five dishes.

We can call the explanans in (Dishes) 'uniqueness'. If uniqueness is supposed to be able to function as the explanans of the claim/proposition/fact that there are no two distinct stacks composed of exactly our five dishes in the way envisioned, we have to think of uniqueness as a *limiting constraint* on all instances of composition.<sup>26</sup>

Intuitively, metaphysical explanations by constraint, like (Dishes), do not seem to share the features of prototypic instances of grounding explanations. While the grounds in grounding explanations can be seen as

making up, bringing about, generating, or producing groundees [...] [t]he fact that if  $x$  and  $y$  have exactly the same proper parts then  $x$  is identical to  $y$  [i.e., uniqueness] does not seem to bring about, generate, or produce the fact that there are not two distinct stacks composed of exactly our five dishes (Bertrand 2019: 1334).

Bertrand makes it clear that while grounding explanations are bottom-up, explanations by constraint are top-down. This difference seems to fall in line with the

<sup>26</sup> For this to be the case, Bertrand (2019: 1331) argues, those constraints need to be explanatorily prior to the individual instances of, say, composition, that are their explananda. But Bertrand seems to think that for constraints to be explanatorily prior to their instances, the former cannot be taken as (formulated in terms of) universal generalizations, since it is standard to take universal generalizations to be metaphysically explained by their instance. On this account, the idea that metaphysical explanations by constraint flow from universal generalizations to their instances is bankrupt on pain of a violation of the asymmetry of (metaphysical) explanation. However, I think there is a rather easy solution to this. Arguably the kind of metaphysical explanation at play in an explanation of the universal generalizations in virtue of their instances is generative, bottom-up grounding explanation, while the explanation flowing from the universal generalizations to their instances is non-generative, top-down metaphysical explanation by constraint. Bertrand's own account makes grounding explanation significantly different from explanation by constraint. So much so that it is plausible that universal generalizations being grounding explained by their instances will not be at odds with there being a metaphysical explanation by constraint running from the generalizations to their instances. This view has the somewhat surprising consequence that while all specific kinds of metaphysical explanations might indeed be asymmetric, the generic notion of metaphysical explanation does not obey asymmetry. I contend that there is no such principle like "generic asymmetry" (GA):

$$(GA) (p \triangleleft_{\phi} q) \rightarrow \neg(q \triangleleft_{\phi} p).$$

Specifically, (GA) does not hold if the kinds of explanation on the LHS and the RHS are different. There being a generative, bottom-up explanation of  $q$  in virtue of  $p$  does not seem to automatically preclude there being a non-generative, top-down explanation of  $p$  in virtue of  $q$ . (GA) does not necessarily hold across different kinds of metaphysical explanation, even though it might hold within any kind of metaphysical explanation. (Whether (GA) holds across different kinds of non-generative metaphysical explanation is a different, very interesting question that I cannot tackle here.) What is important here is that the failure of (GA) across the difference generative and non-generative metaphysical explanation seems to resolve the problems we might have with treating metaphysical constraints as (law-like) universal generalizations.

distinction between generative and non-generative metaphysical explanation.<sup>27</sup> Hence, explanations by constraint and grounding explanations come apart and the former can be seen as a kind of non-generative metaphysical explanation in the sense described above: it does not provide the source of its explanandum. It rather explains its explanandum by providing a reason that (and in a sense why) it must be true. As Bertrand (2019: 1326) puts it, “correct metaphysical explanations by constraint explain their targets by showing them to result from constitutive parts of some suitably chosen nature”.

So, can we interpret (Ex2) in terms of such an explanation by constraint? Does (Ex2) have the right form to be interpreted along the lines of (Ex2c)?

$$(Ex2c) E_E(\forall x \forall p (E_x p \rightarrow \Box E_x p)) \triangleleft_c \Box E_a p$$

We know that ‘ $\triangleleft_c$ ’ is a non-generative kind of explanation, so that bit should be fine. Also, just like in Bertrand’s metaphysical explanations by constraint, the explanandum in (Ex2c) (i.e., (Explanandum 2)) is an individual claim/proposition/fact.<sup>28</sup> Yet, it does not seem as if the explanans in (Ex2) is of the right form. The explanans here is an essentialist claim. Prototypical explanations by constraint à la Bertrand do not appeal to essentialist facts in their explanans. Just consider (Dishes). However, I will argue that allowing for essentialist facts in the explanantia of explanations by constraint is in the spirit of Bertrand’s idea of those explanations. I will do so by alluding to Bertrand’s own definition of constraints and by dispelling a particular worry one might have with explicitly allowing essences in the explanantia. I think we can establish that explanations like (Ex2c) with essentialist facts in the explanans are perfectly fine explanations by constraint à la Bertrand, or, at least, that such explanations form a kind that is a very plausible extension of Bertrand’s category of explanations by constraint.

So, what does Bertrand think constraints are? Where do they come from? This is what Bertrand (2019: 1336) offers as a definition of metaphysical constraints:

(Constraints) “For some (worldly) fact  $F$  and entity  $x$ ,  $F$  counts as a metaphysical constraint on  $x$  if and only if that  $F$  is the case is part of what it is to be  $x$ ”.

This definition neatly squares with essentialism. The metaphysical constraints on things flow from the very nature of those things. Metaphysical constraints are exactly those facts that are true in virtue of the essence of some  $x$ . However, the constraints, i.e., the explanantia of explanations by constraint are not the essentialist facts themselves but the essential facts, so to speak, i.e., the facts embedded

<sup>27</sup> It seems that the reasons what makes an explanation bottom-up for Bertrand coincide with the reasons I have given for an explanation to be generative. In addition, the reasons Bertrand gives for his brand of explanation to be top-down would be the same reasons I would give to characterize it as non-generative. So, do these distinctions coincide? I am not sure. In particular, while I am confident that Glazier’s essentialist explanation is non-generative, I am not certain that ‘top-down’ would be the best label for this kind of explanation. This is why I will stick with my terminology. Anyway, I will take reasons that an explanation is bottom-up to be reasons that it is generative and reasons that an explanation is top-down to be reasons that it is non-generative.

<sup>28</sup> However, there might be a wrinkle. It seems that the explananda in Bertrand’s metaphysical explanations by constraint are all negative claims/propositions/facts, ‘ $\Box E_a p$ ’, however, is not negative. This problem might be circumvented simply by pointing to the logical equivalence between ‘ $\Box E_a p$ ’ and ‘ $\neg \Diamond \neg E_a p$ ’.

in the essentiality operator. (Explanans), i.e., ‘ $E_E(\forall x \forall p (E_x p \rightarrow \Box E_x p))$ ’, then, is not itself a constraint. If true, however, (Explanans) makes ‘ $(\forall x \forall p (E_x p \rightarrow \Box E_x p))$ ’ a metaphysical constraint. So, since (Explanans) is an essentialist claim, it is not fit to figure as the explanans in an explanation by constraint. But why not, one might ask. If constraints are all true in virtue of the essence of some entity anyway, why not include the essentiality operator into the explanans of explanations by constraint?

I think Bertrand’s reason for this has to do with his discussion of Glazier. Bertrand (2019: 1337) correctly observes that despite all similarities, Glazier’s essentialist explanation and his explanation by constraint are different in at least two respects:

- (a) the explicit appeal to essence in the explanans
- (b) the demand for the explanandum to be part of some relevant thing’s immediate constitutive essence.

Concerning (a), (Dishes) should make it clear that no explicit mention of essence in the explanans is required for metaphysical explanations by constraint. But does this also mean that no such explicit mention is allowed? Again, since all constraints are true in virtue of the essence of some entity anyway, maybe we might not *need* to include the essence, but *could* we?

One reason why Bertrand is hesitant here might concern (b). Bertrand (2019: 1337) takes note that in Glazier’s essentialist explanations the explananda must be parts of some relevant thing’s immediate constitutive essence. However, the explananda of explanations by constraint are not plausibly part of the constitutive essence of the entities figuring in the explanantia. Take (Dishes). The constitutive essence of composition “knows” nothing about the specific five dishes in the sink. So, clearly, there is a difference concerning (b). Note, however, that this does not entail that there *must* be also a difference concerning (a). Allowing for an explicit appeal to essence in the explanans of explanations by constraint (i.e., relaxing difference (a)), does not automatically amount to giving up the difference concerning (b). Even if we allow for the essentiality operator to figure in the metaphysical constraint, i.e., in the explanans, the explanandum would not need to be part of the immediate constitutive essence of the thing mentioned in the explanans. To see what I mean, let’s modify Bertrand’s initial example:

(Dishes\*) *It is essential to composition that composition is unique*  $\triangleleft$  there are no two distinct stacks composed of exactly our five dishes.

My point is that we can relax difference (a) without making explanation by constraint identical to essentialist explanation. Relaxing (a) does not force us to change the explanandum in (Dishes). I do not want to force the explicit appeal to essence in the explanans on to Bertrand’s explanation by constraint. I am just saying that, given the definition of constraints at play here, I do not see what stands in the way of such an explicit mention of essence in the explanans. Hence, I contend that, even if it is not required, explicitly mentioning essence in the explanans is in the spirit of Bertrand’s explanation by constraint or, at least, constitutes a very natural and plausible *essentialist* extension of explanations by constraint, which could be called ‘*explanation by essentialist constraint*’. Let ‘ $\triangleleft_{ec}$ ’ denote that kind of explanation, then, even if (Ex2<sub>c</sub>) fails, (Ex2<sub>ec</sub>) seems to hold.

(Ex2<sub>ec</sub>)  $E_E(\forall x \forall p (E_x p \rightarrow \Box E_x p)) \triangleleft_{ec} \Box E_a p$

Even if explanation by essentialist constraint is different from explanation by constraint, it should be clear that both are top-down explanations in Bertrand's sense and, hence, *non-generative* explanations in my terminology. I conclude that there is a kind of non-generative metaphysical explanation, either  $\triangleleft_c$  or  $\triangleleft_{ec}$ , such that either (Ex2<sub>c</sub>) or (Ex2<sub>ec</sub>) are true. Together with the fact that (Ex1<sub>c</sub>) holds, we can conclude that Wallner and Vaidya's axiomatic solution can, in principle, provide a (non-substantive) answer to both questions; to the one about (Explanandum 1), i.e., why all essences are necessary, and the one about (Explanandum 2), i.e., why a specific essentialist claim is necessary, both in terms of the essence of essence.

Let's take stock. I have argued that Wallner and Vaidya escape the Glazier/Bovey-objection by taking the explanation of the necessity of essence to be a non-generative metaphysical explanation different from grounding, whose explanans does not contain an iterated essentiality claim. I have answered (Q1) and discussed precisely what kind of explanation might be at play in the axiomatic solution. My answer included three different moves. First, I presented the *kind of explanation* in the axiomatic solution to be non-generative. Second, I provided the precise form of the *explanans* in this explanation. Third, I distinguished two different interpretations of the *explanandum* in this explanation, resulting in different types of non-generative explanation. I concluded that among those different types of non-generative explanation we find enough resources for the axiomatic solution to provide non-generative explanations of both explananda. According to the Glazier/Bovey-objection, any (generative) grounding explanation of the necessity of essence (i.e., the claim ' $\Box E_x p$ ') in terms of essence will allude to iterated essentiality claims, which are problematic. In my response, I did *not disagree* with that assessment. I did not try to *ground* the necessity of essence in some claim not involving iterated essence. Rather, I argued that *because* the *kind* of explanation of the necessity of essence (interpreted as two different explananda) is different from grounding, the explanans is also different. While it does allude to a higher order essence claim, it does *not* involve iterated essences.

We can now more clearly see why the first step, i.e., the point about the *kind* of explanation (non-generative) is needed to escape the Glazier/Bovey-objection, even if what actually disarms the worry about iterated essence is the precise form of the explanans (without iterated essence claims), i.e., the second step. The point is that the form of both, the explanans and the explanandum is intimately tied to the kind of explanation. Just like the kind of explanation in (Ex1) or (Ex2) could not be generative, it seems that any (generative) *grounding* explanation of the necessity of essence (i.e., of ' $\Box E_x p$ ') in terms of essence would involve iterated essence claims like in (2<sub>g'</sub>).<sup>29</sup> This is why I do not propose the necessity of essence

<sup>29</sup> This, of course, presupposes that Finean essentialism is true. If the metaphysical source of necessity would not lie in essences at all, essence facts might still be necessary, but it would not be necessary for the ground of ' $\Box E_x p$ ' to involve iterated essences. But still, even if we grant that essences figure in the ground of necessity, why must iterated essences figure in the ground of the necessity of essence? This has to do with the precise "recipe" that is given in (Source). Providing a grounding explanation of ' $\Box E_x p$ ' in terms of something other than an iterated essence claim would be too big of a digression from (Source) and Finean essentialism in general. More specifically, an attempt to reinterpret (Ex2) in a generative way, as relating its explanans ' $E_E (\forall x \forall p (E_x p \rightarrow \Box E_x p))$ ' and its explanandum ' $\Box E_a p$ ' by way of grounding, would be implausible, since the explanandum does not seem

to be *grounded* in something other than an iterated essence but that the entire explanation is of a different kind (involving a difference in the explanans).

However, taking the explanation of the necessity of essence to be non-generative and, thus, special, comes with a price. As indicated, (Source<sub>wv</sub>) needs to be restricted or modified. In this regard, I am yet to answer (Q2) from before, i.e., why is such a modification of (Source<sub>wv</sub>), according to which the necessity of essence is special, not unacceptably *ad hoc*. To this I shall now turn.

Remember, according to (Source<sub>wv</sub>), every metaphysical necessity truth is *grounded* in one or more essentialist truths. In the light of the interpretation of the axiomatic solution as providing a non-generative explanation of the necessity of essence, (Source<sub>wv</sub>) has to be modified. But how? There are, broadly, two options. Either (Source<sub>wv</sub>) can be *restricted*, such as to not apply to the necessity of *essence*, or it can be *modified*, so as to not be formulated in terms of grounding, but maybe a more generic notion of metaphysical explanation, that also encompasses non-generative explanation.

Which of these options seems best? Which is less *ad hoc*? Let's start with *restriction*.

(Source<sub>R</sub>) All and only those metaphysical necessity truths/propositions/facts that do not concern essentialist truths/propositions/facts (i.e., that do not have the form ' $\Box E_x P$ ') are *grounded* in one or more essentialist truths/propositions/facts.

Such a restriction of (Source) is at work in Hale 2013. Like Bovey, Hale thinks that the necessity of essence cannot be explained.<sup>30</sup> So, he concludes that the necessity of essence is beyond the scope of Finean essentialism. However, such a view might fall short of what Wilsch (2017: 432) calls the "explanation challenge" imposed on the metaphysics of modality: "We must accommodate explanations of necessity-truths through sources and avoid implausible unexplained necessity-truths". What is more, however, we have seen that the necessity of essence can be *explained* in terms of essence, just not in the way the rest of the necessities are explained. This seems to speak against *restriction* and for *modification*.

(Source<sub>M</sub>) Every metaphysical necessity truth/proposition/fact is *metaphysically explained* by one or more essentialist truths/propositions/facts.

Note that the notion of metaphysical explanation in (Source<sub>M</sub>) must be generic such that both generative and non-generative kinds fall under it. But still, even if we can formulate such a principle using a generic notion of metaphysical explanation, isn't it *ad hoc* that some necessities are explained by appeal to essence via generative grounding explanations and others via non-generative explanations?

At this point we have to ask: why not think that all necessities are *non-generatively* explained by essence? I think this undermines the intuition that most necessities indeed have their *metaphysical source* in essentiality, as well as the intuition that the necessity of essence is special in this sense.<sup>31</sup> The question at issue here is

to have the right form to act as a ground for the necessity of essence. The reasons for this have been detailed by Bertrand and discussed above. Thanks to an anonymous reviewer for pushing me on this point.

<sup>30</sup> For discussion and criticism of his argument, see Wallner 2020.

<sup>31</sup> Since Wallner and Vaidya's axiomatic solution not only provides a non-substantive, i.e., non-generative explanation of the necessity of essence, but, as has been indicated before, a

about the relative weight of theoretical virtues like unity and simplicity on the one hand and being true to the intuitive “data points” on the other.

The axiomatic solution in Wallner and Vaidya rests on the intuitive pull of the idea that what an entity is *essentially* has bearing on the modal profile of that entity. This is where the intuitive appeal of the essentialist thesis in modal metaphysics comes from. Modal facts seem to be plausibly explained by facts about essence. Now, granting that intuitive appeal, what should we do if we detect a wrinkle in the theory? What if not all metaphysical necessities can be explained by essence *in the same way*? Should we give up the appeal to essence in general in favor of an entirely different theory about the source of modality, X, that is simpler or more unified in the sense that there is no such wrinkle, and *all* necessities can be explained in terms of X *in the same way*? Well, if such a simpler and more unified theory *with an intuitive appeal comparable to essentialism* were to come forward, I would strongly consider trading it for essentialism. Yet, I am not aware of any theory that fulfills those criteria. This is why I am prepared to defend essentialism, especially since there might be reasons to think the wrinkle can be smoothed out by formulating (Source) in terms of a more generic notion of metaphysical explanation (Source<sub>M</sub>). Of course, some caveats remain: First, even if the universal claim is true that all metaphysical necessities are metaphysically explained (in the more generic sense, incorporating both generative and non-generative metaphysical explanation) by facts about essence, it still will be the case that some necessities are explained by essence in a different way than others. Second, and interrelated, due to the fact that the generic sense of metaphysical explanation also encompasses non-generative metaphysical explanation, i.e., metaphysical explanation that does not provide a metaphysical *source* of the explanandum, we might need to find a better name for that principle. Third, since (Source<sub>M</sub>) allows for exceptions from the familiar Finean “recipe” that for every necessity there is an essence fact that grounds it (the exception being the necessity of essence), some might think that a brand of essentialism championing (Source<sub>M</sub>) no longer deserves the qualification “Finean”. This, though, is largely a dispute about labels.

## 6. Conclusion

I have argued that thanks to the recognition of non-generative explanation in essentialist modal metaphysics, Wallner and Vaidya can evade the Glazier/Bovey-objection by modifying (Source<sub>wv</sub>) to a principle we could call ‘(Essentialism)’.

(Essentialism) All metaphysical necessities are metaphysically explained in terms of essence facts.

This preserves the essentialist spirit that every necessity is explained in terms of essence. While necessities that are not about essentialist facts have generative

non-substantive, i.e., non-generative explanation of the power of essences to explain necessity, one might worry whether their account can even accommodate the intuition that most necessities are (generatively) grounded in essence but that the necessity of essence is special. Unfortunately, I lack the space to deal with this in detail. However, the short story is that I think that this worry might rest on a conflation between the explanation of the power of essence to explain necessity and the explanation of necessity in terms of essence. The fact that the former explanation is non-substantive, i.e., non-generative, does not preclude the latter from being generative (for the most part). Thanks to an anonymous reviewer for pushing me on this point.

grounding explanations in terms of essence, the necessity of essence is special. The necessity of essence is non-generatively explained by the essence of essence, both the necessity of essence in general (Ex1) and the necessity of each essence fact in particular (Ex2).<sup>32</sup>

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<sup>32</sup> Interestingly, note while (Ex2) type explanations have necessities for their explananda. (Ex1) does not. Hence, while (Ex2)-explanations have direct bearing on (Essentialism), (Ex1) is not actually entailed by (Essentialism). Nevertheless, according to Wallner and Vaidya, (Ex1) is an integral part of Finean essentialism.

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