Higher-Order Being and Time

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Abstract

Higher-order metaphysicians take facts to be higher-order beings, i.e., entities in the range of irreducibly higher-order quantifiers. In this paper, I investigate the impact of this conception of facts on the debate about the reality of tense. I identify two major repercussions. The first concerns the logical space of tense realism: on a higher-order conception of facts, a prominent version of tense realism, dynamic absolutism, turns out to conflict with the laws of (higher-order tense) logic. The second concerns our understanding of the positions occupying this logical space: on a higher-order conception of facts, an attractive interpretation of the central tense realist notion of 'facts constituting reality' becomes unavailable. I discuss these results in the context of the more general project of higher-order metaphysics and the (meta)metaphysics of time, drawing out their implications for the nature of the disputes both between realists and anti-realists about tense and between different tense realist factions.

1 Higher-Order Facts and the Metaphysics of Time

First-order quantification is quantification into the syntactic position of singular terms. Higher-order quantification is quantification into other syntactic positions, including that of predicates, sentences, and operators. Higher-order metaphysicians take higher-order quantification to be a self-standing and useful instrument in our logico-metaphysical toolbox: self-standing in that it is intelligible without being reducible to or explainable in first-order terms; useful in that it allows for fruitful ways of engaging with some of the most puzzling questions in metaphysics.[1]

The questions that will take centre stage in this paper belong to the metaphysics of time. More specifically, they concern the reality (or otherwise) of tense, the logical space of tense realist positions, and the nature of the views occupying that space. It is natural to wonder what becomes of such questions when they are viewed through the lens of higher-order metaphysics. For these questions often concern the nature and existence of facts (tense realists, for instance, embrace tensed facts, while anti-realists reject them). And higher-order metaphysicians disagree with first-order metaphysicians on how to think about facts.

[1]See Skiba (2021) and Fritz and Jones (2024) for recent overviews of higher-order metaphysics.

First-orderists think of facts as first-order beings. That is, they regard facts as entities in the range of first-order quantifiers, i.e., quantifiers binding variables that occupy the syntactic position of singular terms (such as, e.g., 'the fact that Biden is president'). In order to say that there is a fact which is ϕ, they will assert the first-order existential quantification $\exists x(x \text{ is a fact} \wedge \phi(x))$. Here, x is a singular term variable, 'is a fact' is a predicate, and ϕ a (simple or complex) expression which, likewise, combines with singular terms and corresponding variables.[2]

Higher-orderists, in contrast, think of facts as higher-order beings.[3] That is, they regard facts as entities in the range of higher-order quantifiers, in particular quantifiers binding variables that occupy the syntactic position of sentences (such as, e.g., 'Biden is president'). In order to say that there is a fact which is ϕ, they will assert a higher-order existential quantification, such as $\exists P(P \wedge \phi(P))$ or $\exists P(\Diamond P \wedge \phi(P))$. Here, P is a sentence variable, $\Diamond$ is a sentential temporal operator (to be read as 'it is sometimes the case that'), and ϕ a (simple or complex) expression which, likewise, combines with sentences and corresponding variables. In many theoretical contexts, in which questions of time and tense are often explicitly or implicitly set aside, higher-orderists take facts to simply be the worldly correlates of sentences that are true. Quantification over facts is then best understood as sentential quantification restricted to what is true, as per the first option. For reasons that will emerge soon, it will be more natural in this paper to regard facts as the worldly correlates of sentences that are true at some time or another. Quantification over facts is then best understood as sentential quantification restricted to what is sometimes true, as per the second option.

We will understand higher-orderism about facts as the view that higher-order claims, along the lines described, give you everything you could want from a theory of facts and that it would accordingly be a mistake to *additionally* postulate first-order facts.[4] We will understand first-orderism about facts as the view that, on the contrary, a theory of facts is unsatisfactory unless it postulates first-order facts. A first-orderist about facts thus need not reject higher-order quantification *per se*. What they will

[2]When mentioning formal or semi-formal expressions I will often omit quotation marks provided that context disambiguates between use and mention.

[3]See Trueman (2021: Chs. 11-13, 2022) for a detailed account of higher-order facts along the lines described and, among others, Williamson (2013: Ch. 6, §5), Dorr (2016), Goodman (2017), Jones (2019), Deasy (2023b), and Bacon (2024) for closely related accounts of higher-order propositions.

[4]Higher-orderists about facts (or propositions or properties) do not always make the rejection of the corresponding first-order entities an *explicit* part of their doctrine. It can, however, typically be taken for granted, since the higher-order conception of facts (or propositions or properties) is often motivated in part by arguments that presuppose the absence of the corresponding first-order entities. Consider for example arguments to the effect that higher-orderism allows us to reject as unintelligible certain awkward questions, such as the question of whether facts (or propositions or properties) are spatiotemporally located (Trueman, 2021: Ch. 10; Jones, 2018: §4, 2019: 172). What is supposed to make such questions unintelligible is not the mere presence of the relevant higher-order entities but the absence of the corresponding first-order entities.

reject, though, is the idea that higher-order resources render talk about first-order facts theoretically dispensable.

Higher-orderist tenets are historically well entrenched in the area of metaphysics we will be focusing on, with Arthur Prior (arguably the first higher-order metaphysician of time) being a famed advocate of both irreducible higher-order quantification and tense realism.[5] Nevertheless, I will argue that the higher-order conception of facts has several important and as yet unnoticed consequences for two recent disputes among tense realists.

The first dispute focuses on the trilemma which Fine (2005, 2006) famously extracts from McTaggart's (1908) arguments concerning the reality of time. Fine takes McTaggart to have shown that any form of tense realism needs to regard temporal reality as being either centred on the present, standpoint-relative, or incoherent. Opting for the third option leads Fine to endorse fragmentalism, according to which temporal reality decomposes into a multitude of jointly incoherent tensed fragments. In response to this, Correia and Rosenkranz (2011, 2012) have argued that the logical space of tense realism is richer than Fine makes out and that the trilemma should be avoided by embracing dynamic absolutism, according to which temporal reality is made from one coherent piece but comprised of facts with ever-changing tensed contents.

The second dispute concerns the notion of facts *constituting reality*, which we will encounter in each of the principles constituting the (putative) trilemma and which is thus crucial for an understanding of any tense realist position characterized with respect to these principles. While Fine conceives of it as a primitive notion, others have tried to analyze it in terms of more familiar or less objectionable concepts, with a particularly tempting proposal identifying the notion of facts constituting reality simply with the notion of facts existing (Correia & Rosenkranz, 2012).

To bring out the impact of higher-orderism on these disputes I will investigate them first against the background of a first-order conception of facts and then against the background of a higher-order conception of facts. The investigation will require casting the views embroiled in the disputes, usually formulated in somewhat informal terms, in a more precise fashion, paying special attention to the type of quantification involved. This will allow us to see that the choice between a first-order and a higher-order conception of facts is absolutely crucial for adjudicating the disputes: the attempts to avoid a primitive notion of facts *constituting reality*, while viable in a first-order setting, will turn out to be unavailable in a higher-order setting. And the dynamic absolutists' defining claim that facts change their contents over time, again relatively unproblematic in a first-order setting, will turn out to conflict,

[5] See Prior (1971: Ch. 3) on the former, and Prior (1968) on the latter. See Deasy (2023a) for a recent discussion and clarification of the interaction of these two Piorian themes.

in a higher-order setting, with the temporal analogue of the necessity of higher-order identity. The higher-order conception of facts thus has a substantial impact on the logical space of tense realism as well as on the nature of its occupants.

The investigation has important further implications, to be discussed along the way, both for our broader understanding of the (meta)metaphysics of time and tense and for the general project of higher-order metaphysics. As for the former, it brings out an underappreciated way in which the disagreements among different tense realist factions are connected to disagreements about the formal framework in which the nature of time and tense is to be discussed. It also shows that Finean positions in the metaphysics of time are more closely tied up with Finean metametaphysics than is often thought, in particular with his construal of realism vs. anti-realism disputes concerning various subject matters (Fine, 2001, 2005). As for the latter, it applies the higher-order approach (recently widely employed in the metaphysics of modality (see, e.g., Williamson, 2013; Bacon, 2018; Fritz, 2023) and ground (see, e.g., Fritz, 2020, 2021b, 2021a; Goodman, 2023)) to an area which has so far received less attention by contemporary higher-orderists but which profits no less from the systematic study of facts which the higher-order framework affords.[6] That this framework helps not only to clarify but also to decide the two disputes under consideration further illustrates its potential, often cited in its favour (see, e.g., Jones, 2018), to resolve metaphysical debates not easily settled otherwise. The investigation thereby adds to the general abductive case for higher-order theories as a useful framework for metaphysical theorizing.

The paper is structured as follows. After introducing, in §2, the relevant tense realist preliminaries, §3 considers the tense realist disputes on a first-order conception of facts, with §3.1 devoted to the logical space of tense realism and §3.2 to the constitution of reality. §4 moves to the higher-order conception of facts, introducing, in §4.1, some key characteristics of higher-order facts which we will then see to impact the dispute about the constitution of reality, in §4.2, and the dispute about the logical space of tense realism, in §4.3. §5 concludes by drawing out some broader implications of this investigation.

2 Tense Realism

According to realists about tense, tense is not merely projected onto reality by the (temporal) perspective we take on it but belongs to reality itself. On an influential way of fleshing out what this means (Fine, 2005, 2006), the crucial realist claim is that reality consists at least partly of tensed facts, such as the past-tensed fact that

[6] Less attention but not none: in addition to Deasy's aforementioned discussion of Priorianism, Banfi and Deasy (2021: §4) discuss a conception of times as higher-order entities.

Trump *was* president or the present-tensed fact that Biden *is (currently)* president. On this conception, temporal reality is *dynamic*: a tensed fact may obtain now but may fail to obtain the next second. According to anti-realists about tense, in contrast, reality consists entirely of untensed facts. On a natural way to spell this out, all facts have built-in time parameters, so that reality contains only facts such as the fact that Trump is president at t_{-1} (some specific past time) or the fact that Biden is president at t_0 (the present time). On this conception, temporal reality is *static*: untensed facts obtain always if they obtain ever.

The dynamicity offered by tense realism is often regarded as one of its main advantages. It is taken to allow, for instance, for a better account of the passage of time (see, e.g., Correia & Rosenkranz, 2020). The advantage may come at a price. According to Fine, every tense realist faces a trilemma, consisting of three principles which are individually plausible, prima facie at least, but conflict with one another against the background of tense realism:

> **(Neutrality)** No time is privileged, the tensed facts that constitute reality are not oriented towards one time as opposed to another.
>
> **(Absolutism)** The constitution of reality is an absolute matter, i.e., not relative to a time or other form of temporal standpoint.
>
> **(Coherence)** Reality is not contradictory, it is not constituted by facts with incompatible content. (Fine, 2005: 271)

Three clarifications may help to better understand these principles. First, note that Fine's formulation of these principles (as well as our initial characterisation of tense realism) make generous use of nominal expressions to talk about facts (e.g., 'the fact that ...'). They thus presuppose, when taken literally, a first-order conception of facts. As we will see shortly, the ensuing disputes are likewise consistently conducted in first-order terms. This does not mean, however, that either party in these disputes intends to base their position on a first-order conception of facts. In fact, Fine takes formulations such as, e.g., 'the fact that P constitutes reality' to be reducible to statements involving a sentential operator along the lines of 'it is constitutive of reality that P' (Fine, 2005: 268, 319); a construction more congenial to the higher-order conception of facts as the worldly correlates of sentences. Correia and Rosenkranz (2012: 307, n. 2) regard Fine's reductive ambitions as orthogonal to their disputes with Fine, in which case they ought to regard the first-order conception of facts as no more essential to their position than it is to Fine's. As we will see in §4, the intended independence of their position of the first-order conception of facts is not actually borne out. For now, we will follow the literature in helping ourselves to first-order formulations, before making the views more precise in the ensuing sections.

Second, while higher-orderists and first-orderists about facts will understand the Finean principles quite differently, we can improve our initial grasp of them by considering some of the tense realist positions that are supposed to result from their selective endorsement. Thus, the rejection of (Neutrality) is the characteristic mark of presentism which thereby gets to preserve (Absolutism) and (Coherence). In denying the reality of the past and future, presentists privilege the present time. In regarding all tensed facts to obtain at present, they regard these facts as oriented towards the present. Contrast this with Fine's fragmentalism, which preserves (Neutrality) and (Absolutism) at the expense of (Coherence). Fragmentalists take past and future times to be as real as the present. And just as they take there to be present-tensed facts that obtain at the present time, they take there to be present-tensed facts that obtain at past and future times. For instance, they take the present-tensed fact that Trump is (currently) president to obtain at some suitable past time t_{-1}. So, where presentists regard a presently obtaining past-tensed fact (the fact that Trump was president) as constitutive of reality, fragmentalists take reality to be instead constituted by a present-tensed fact which obtains at a past time. As a result, fragmentalists take reality to consist of facts which are, in a robust sense, incompatible with one another. According to them, the fact that Trump is president and the fact that Biden is president count as entirely equal constituents of reality, although they cannot possibly co-obtain. Reality is thus taken to decompose into a series of individually coherent but mutually incoherent temporal fragments (Fine, 2005: 281).[7]

Third, as the discussion so far illustrates, the Finean framework operates with a broad notion of fact. On this broad notion, it is *not* a tautology that something is a fact at a given time if and only it obtains at that time. Finean facts must obtain at some time or another, but the framework leaves open, e.g., that there currently are facts which do not currently obtain, as fragmentalists will insist is the case (by recognizing, for instance, the currently non-obtaining fact that Trump is president). This is why, as indicated in §1, a higher-orderist interpretation of the Finean framework must construe quantification over facts as sentential quantification restricted to what is sometimes true, not to truths simpliciter.

With these clarifications in place, we may now turn to the debates to which Fine's trilemma has given rise.

[7] Versions of fragmentalism have since been developed and defended, e.g., by Lipman (2015, 2018, 2020, 2023), Loss (2017), Simon (2018), and Iaquinto and Torrengo (2022).

3 First-Order Tense Realism

3.1 The logical space of tense realism

Fine tells us that (Neutrality), (Absolutism), and (Coherence) conflict with one another. But how exactly does the conflict arise? Dynamic absolutists argue that it does so only in combination with a tacit background premise, which they seek to reject instead of any of the three attractive principles (Correia & Rosenkranz, 2012: §3). What is the hidden premise? To detect it, first note that (Neutrality) guarantees, given suitable temporal change, the truth of pairs of claims such as the following:

(1) at t_{-1}, reality is constituted by the fact (call it α) that Trump is president.

(2) at t_0, reality is constituted by the fact (call it β) that Biden is president.

Now, (Absolutism) tells us that the constitution of reality is not itself time relative. Dynamic absolutists take this to entail that any fact which constitutes reality at any one time constitutes reality at every time.[8] In particular, then, the fact α constitutes reality at t_0 as much as at t_{-1}. This allows us to infer:

(3) at t_0, reality is constituted by the facts α and β.

Crucially though, and this is the dynamic absolutists' central observation, (3) does not yet conflict with (Coherence). What (Coherence) should be understood as precluding, they argue, is that there is one time at which there are two facts which *at that time* have incompatible contents. But (3) itself does not say this. What conflicts with (Coherence) is only the following, stronger claim:

(4) at t_0, reality is constituted by the facts α and β and at t_0, α is the fact that Trump is president, and β is the fact that Biden is president.

[8] From this *omnitemporality* of facts we may distinguish the *atemporality* of facts, understood as the claim that any fact which constitutes reality at any one time constitutes reality simpliciter (i.e., not relativized to any time). Correia and Rosenkranz's discussion oscillates somewhat between the two claims. They are explicit in taking the omnitemporality of facts to be an upshot of (Absolutism) (see 2012: 309). At other points, however, their discussion suggests that they take (Absolutism) to (also?) imply the atemporality of facts (310). In any case, it is (Absolutism)'s entailing the *omnitemporality* of facts on which their argument for dynamic absolutism relies. For otherwise (Neutrality), (Absolutism), and (Coherence) would not even conflict when combined with the hidden premise which dynamic absolutism rejects. This is because, as Correia and Rosenkranz point out (310), for there to be a counterexample to (Coherence) there needs to be a time at which two incompatible facts constitute reality. And to generate such a counterexample from (Absolutism) and the other principles, one needs to rely on the omnitemporality of facts. I do not consider this a weakness of their argument. For (Absolutism) does seem to require the omnitemporality of facts, at least as soon as one takes facts to constitute reality at some times (as all parties do). If one were then to allow for facts that constitute reality at some times but not at others, then the constitution of reality would be in a very clear sense 'relative to a time or other form of temporal standpoint', contrary to what (Absolutism) demands.

However, (4) does not follow from (1), (2), and (Absolutism). (Absolutism) only ensures that α constitutes reality at t_0 as much as at t_{-1}. But nothing ensures that at t_0 α still has the content it used to have at t_{-1}. On dynamic absolutism, facts do not have such temporally fixed contents. Rather, facts undergo a continuous qualitative change as they persist through time, altering their contents with every passing temporal unit. Suppose that t_0 is 1 temporal unit after t_{-1}. Then, according to dynamic absolutism, the fact α has at t_0 no longer the content that Trump is president. Instead it then has the content that Trump was president 1 temporal unit ago. So all that (Neutrality) and (Absolutism) allow us to infer in the dynamic absolutist setting is the following claim, which is perfectly consistent with (Coherence):

(5) at t_0, reality is constituted by the facts α and β and at t_0, α is the fact that Trump was president 1 time unit ago, and β is the fact that Biden is president.

Where Fine sees a trilemma, dynamic absolutists thus see a tetralemma with the assumption that facts have fixed contents as a neglected fourth component. And the characteristic mark of dynamic absolutism is the rejection of just this assumption, which Correia and Rosenkranz formulate as follows (see 2012: 310):[9]

(Fixed-Content) If at time t, f both constitutes reality and is the fact that p, then for every time u, if f constitutes reality at u, then at u, f is the fact that p.

In its official formulation, the principle—and thus the position of dynamic absolutism defined with reference to it—presupposes a first-order conception of facts. For the variable ranging over facts, f, occupies the syntactic position of a singular term. To generate a well-formed instance of the principle, f must be replaced with a singular term, such as 'the fact that Trump is president'. Replacing it with a sentence instead would result in a grammatically ill-formed expression. Notice, however, that the principle—and thus dynamic absolutism—presupposes a higher-order conception of the *contents* of facts. For the variable ranging over contents, p, occupies the syntactic position of a sentence. To generate a well-formed instance of the principle, p must be replaced with a sentence, such as 'Trump is president'. Replacing it with a singular term instead would result in a grammatically ill-formed expression. Syntactically, the construction '... is the fact that ...' is therefore what Künne (2003: 68) calls a *prenective*: an expression that functions like a predicate on the left-hand side but like a sentential connective on the right-hand side. It is a relational expression of mixed type, ascribing to a first-order fact (to be referred to with a singular term and quantified over with a first-order quantifier) a higher-order content (to be specified by a sentence and quantified over with a higher-order, sentential quantifier).

[9]Correia and Rosenkranz formulate this as a principle restricted to tensed facts but dropping this restriction does not make the principle any less plausible.

While dynamic absolutism, as officially formulated, thus incorporates a first-order conception of facts, it does not in any way deny the intelligibly of higher-order, sentential quantification. In fact, it relies on sentential quantification in order to generalize over what it construes as the contents of facts. It just treats facts themselves as entities ranged over by first-order quantifiers.[10] We can make this more apparent by giving a more formal formulation of the idea that facts have fixed contents. In particular, we make quantifiers explicit and use upper case letters for higher-order, sentential variables, while following Correia and Rosenkranz in using lower-case f as a variable restricted to (first-order) facts. We then use $Con(f, P)$ for the content-ascription 'f is the fact that P', and $R(f)$ for 'f constitutes reality'.[11] Finally, we use the operator $\Box$ ('it is always the case that') instead of quantifying explicitly over times. The principle which dynamic absolutists need to reject can then be put as follows:[12]

(Fixed-Content$_{FO}$) $\forall f \forall P \Box\Big((R(f) \wedge Con(f, P)) \rightarrow \Box(R(f) \rightarrow Con(f, P))\Big)$

It is worth stressing that dynamic absolutists are not merely rejecting this principle because they take it to have the occasional false instance. Rather, they take continuous content change of facts to be an absolutely pervasive feature reality. Whenever a fact has a tensed content at any one point in time (e.g., by having, at t_0, the content that

[10] Is there room for a version of first-order dynamic absolutism that avoids higher-order quantification altogether? This is a tricky question that goes beyond the scope of this paper, but see Trueman (2021: Ch. 13, 14) for some arguments suggesting that first-orderists about facts cannot ultimately evade higher-order quantification altogether as long they want to systematically account for certain platitudes regarding their first-order facts. For example, they will want to regard the truth of claims such as 'the fact that snow is white obtains $\leftrightarrow$ snow is white' as guaranteed by a general principle. And the most natural way to formulate this general principle will involve universal sentential quantification (into the position of 'snow is white'). See also Jones (2019) for related arguments. In any case, Correia and Rosenkranz explicitly embrace sentential quantification in their formulation of dynamic absolutism (2012: 310, n. 5).

[11] R is a *predicate* and thus to be distinguished from Fine's *operator* $\Re$ which was alluded to in §2 and will feature prominently in higher-order interpretations of the principle to be discussed in §4.

[12] Formulating the principle in terms of temporal operators will allow for a better integration with the debate about the permanence of identity (§4.3) which is usually conducted in terms of operators. Given the equivalence of '$\Box\phi$' and '$\forall t$ at t: ϕ', (Fixed-Content$_{FO}$) is tantamount to:

(Fixed-Content$_{FO}$') $\forall f \forall P \forall t$ at t:$\Big((R(f) \wedge Con(f, P)) \rightarrow \forall u$ at u:$(R(f) \rightarrow Con(f, P))\Big)$

Using explicit quantification over times, we can give a formulation even closer to the letter of (Fixed-Content) by having 'at t:' range only over the antecedent of the main conditional:

(Fixed-Content$_{FO}$") $\forall f \forall P \forall t\Big($at t:$(R(f) \wedge Con(f, P)) \rightarrow \forall u$ at u:$(R(f) \rightarrow Con(f, P))\Big)$

For our purposes, however, the choice between these formulations does not matter since dynamic absolutists cannot accept (Fixed-Content$_{FO}$') any more than (Fixed-Content$_{FO}$"). To see this let A stand for 'Trump is president', and note that (Fixed-Content$_{FO}$') entails

(6) at t_{-1}:$\Big((R(\alpha) \wedge Con(\alpha, A)) \rightarrow \forall u$ at u:$(R(\alpha) \rightarrow Con(\alpha, A))\Big)$

By assumption, at t_{-1}:$(R(\alpha) \wedge Con(\alpha, A))$. This and (6) entails that at t_{-1}:$\Big($at t_0:$((R(\alpha) \rightarrow Con(\alpha, A))\Big)$. Given the standard treatment of iterated 'at t' operators as redundant (see, e.g., Sider, 2001: 167)), so that 'at t_{-1}:(at t_0:ϕ)' entails 'at t_0:ϕ', this means that, contrary to what dynamic absolutists claim, α must still have the content that Trump is president at t_0 if it is to constitute reality then.

Biden is currently president) it will, at each other point in time, have a different tensed content (e.g., by having, at t_i, the content that Biden was/will be president i temporal units ago/hence). As a result, dynamic absolutists cannot adopt the most natural conception of what it means for a fact to be tensed. On this natural conception, a fact is tensed just in case it obtains at some times but not at others. To endorse that there are tensed facts, on this natural conception, then is to endorse:

(Tensed-Facts$_{FO}$) $\exists f(\Diamond(f \text{ obtains}) \wedge \Diamond\neg(f \text{ obtains}))$

Dynamic absolutists cannot adopt this conception of tensed facts because they do not think that the fact which has, at t_0, the content that Biden is president, failed to obtain at t_{-1}, when Trump was president. By their lights, the fact in question obtained all along. It is just that, back then, it had a different content, namely the content that Biden will be president 1 temporal unit hence. Analogous remarks apply to all other facts that one might have been tempted to regard as obtaining at some times but not at others. What makes a fact tensed by dynamic absolutists' lights is thus not that it changes its obtainment status over time but that it changes its content. To endorse that there are tensed facts, on the dynamic absolutists' conception, then is to endorse:

(DA-Tensed-Facts$_{FO}$) $\exists f \exists P(\Diamond Con(f, P) \wedge \Diamond\neg Con(f, P))$

So far we have understood dynamic absolutism as based on a first-order conception of facts. Thus understood, it is a subtle question how plausible dynamic absolutism is, with its rejection of fixed content and its non-standard account of tensed facts. For instance, Eker (2021) has argued that dynamic absolutists encounter a vicious infinite regress when trying to account for what the continuous content change of facts consists in exactly. And it is also a subtle question how much of a transformation of the Finean topography really results from recognizing dynamic absolutism as a further occupant of the tense realist landscape. For instance, Loss (2018) has argued that while dynamic absolutism is compatible with (Absolutism), it is still incompatible with a strengthening of this principle that takes not only the relation between reality and facts to be absolute but also that between facts and their contents. These objections are not to be brushed aside. At the same time, however, they are themselves testaments to the cogency of a neutral, absolute, and coherent tense realism in the form of dynamic absolutism, when conceived against a background conception of first-order facts: they may be serious objections to dynamic absolutism, but whether or not they can be met would appear to be a matter hinging on quite subtle and controversial metaphysical issues. As we will see, dynamic absolutism faces a much more fundamental problem once developed against a background conception of higher-order facts. Before we get to that, let us consider the other debate on which this conception will prove to have a serious impact.

3.2 The constitution of reality

The first debate concerned the logical space of tense realism. The second concerns the nature of each of the positions populating it. It also concerns the question of how to demarcate tense realism from anti-realism in the first place. Both issues turn on the notion of facts *constituting reality*. This notion occurs in every tense realist principle discussed, so its interpretation effects how each of the tense realist positions characterised with the help of these principles is to be understood. It also effects how the demarcation of tense realism from anti-realism is to be understood since, following Fine, we construed tense realism as the view that reality is (partly) constituted by tensed facts.

Fine himself recommends regarding reality constitution as a primitive concept that allows us to draw a non-trivial distinction among the existent facts (Fine, 2001, 2005: 267). On his account, reality is thus not constituted by all the facts there are but only by an elite subclass of them. Unsurprisingly, several other tense realists have been trying to avoid this commitment. A particular tempting proposal is to simply identify the notion of facts constituting reality with that of facts existing (Correia & Rosenkranz, 2012: 309). We may call this the constitution-existence equation:[13]

(C=E) For facts to constitute reality just is for them to exist.

Part of what makes the proposal so tempting is the conceptual economy it promises: we need a notion of factual existence in any case, so (C=E), if viable, would allow us to make sense of the realism vs. anti-realism dispute, as well as of the various variants of tense realism, while employing strictly fewer conceptual resources than envisaged by Fine.[14] Note also that although (C=E) is proposed by Correia and Rosenkranz in the course of their defence of dynamic absolutism, the two views are independent of one another and independently interesting: the conceptual economy promised by (C=E) ought to be desirable to all parties debating the reality (or otherwise) of tense, never mind which version of realism (if any) they end up adopting. Conversely, whether a neutral, absolute, and coherent form of tense realism is available in the form of dynamic absolutism is an important question regardless of whether this position is based on the acceptance of (C=E). We will therefore (continue to) investigate each proposal in its own right, while being open to potential synergies they may exhibit in concert.

[13] Why try to equate reality constitution with the *existence* of facts rather than with their *obtainment*? A disadvantage of the latter option is that it would be straightforwardly unacceptable to fragmentalists who take the non-obtaining fact that Trump is president to still constitute reality (see §2). Obtainment thus cannot replace Fine's reality constitution as a notion to be used in formulating the whole space of tense realists options.

[14] This is an advantage over, e.g., the proposal by Lipman (2015: §4, 2018: §2), who suggests replacing Fine's primitive notion with a different primitive notion of facts *co-obtaining* where this requires more than for each of the relevant facts to obtain individually.

So, does (C=E) effect a viable simplification of the conceptual framework in which the debate about the reality of tense is to be conducted? Again, I will argue that the answer depends crucially on the background conception of facts. While (C=E) may well serve to simplify the conceptual framework if a first-order conception of facts is presupposed, it will turn out to be unviable when pursued against a higher-order conception of facts.

To begin to appreciate why this is so, we need to consider a—arguably *the*—crucial theoretical function which Fine's notion of reality constitution is meant to serve. That function is to protect the realism vs. anti-realism dispute from trivialization (Fine, 2005: §2). A threat of trivialization arises, according to Fine, because anti-realists should not be construed as disagreeing with common sense about the intelligibility or veracity of everyday tensed statements, such as 'Trump was president' or 'Biden is president'. Sure, anti-realists will take these to somehow belie reality's tenseless character (268). But, despite the mismatch between the statements' tensed character and reality's lack thereof, circumspect anti-realists should not declare them as plainly false, thinks Fine (270). Even anti-realists ought to recognize a difference between these statements' lack of fit with reality and the more drastic mismatch exhibited by, say, 'McCain was president' or 'Gore is president'. And the best way for anti-realists to account for this difference, so the idea goes, is to maintain that, while all four statements misrepresent reality in some way, only the latter pair involves the sort of misrepresentation that actually renders a statement false.

Anti-realism, then, should exhibit a healthy amount of 'post-Moorean modesty' (Fine, 2001: 2) and respect common sense tensed truths. But there then threatens to be an all too short route from these truths to the falsity of anti-realism (Fine, 2005: 267). The trivialisation worry can be put in terms of two conditional questions. First, if, say, the tensed statement 'Biden is president' is true, then is it not trivial that there is the tensed fact that Biden is president? And, second, if there is such a tensed fact, then is it not trivial that reality is partly tensed?

The prime function of Fine's notion of reality constitution is to allow modest anti-realists to reject the conditional corresponding to the second question. Even if modest anti-realists cannot deny that there are tensed facts, so the thought goes, they can still deny that these facts belong to the elite subclass of facts that constitute reality. Evidently, embracing (C=E) precludes this kind of response to the trivialisation worry. Given (C=E), it *is* trivial that any fact constitutes reality as soon as it exists. But then proponents of (C=E) had better be able to reject the conditional corresponding to the first question, lest their 'simplified' conceptual framework for the realism vs. anti-realism dispute would be acceptable only to immodest anti-realists prepared to disagree with common sense in rejecting the truth of any tensed statement.

Now, against the background of a first-order conception of facts, there is indeed

considerable leeway to reject the first conditional instead of the second. To see this, first recall from §3.1 that different versions of tense realism will operate with different conceptions of what it means for there to be tensed facts. On dynamic absolutism, we saw the existence of tensed facts to amount to:

(DA-Tensed-Facts$_{FO}$) $\exists f \exists P(\Diamond Con(f, P) \wedge \Diamond \neg Con(f, P))$

This claim is actually nowhere near being entailed (trivially or otherwise) by a simple tensed truth of the type featuring in Fine's formulation of the trivialisation worry, such as, e.g., 'Biden is president'. Presumably, however, modest anti-realists will also accept more complex tense-involving claims, such as 'sometimes Biden is president and sometimes not', which we can regiment as follows:

(7) $\Diamond$Biden is president $\wedge$ $\Diamond\neg$Biden is president

This gets us somewhat closer to the existence of tensed facts on the dynamic absolutists' conception. But (7) still fails to entail (DA-Tensed-Facts$_{FO}$) without being combined with substantial background assumptions. In particular, it needs to be combined with the assumption that there is a fact which has the content that Biden is president, when but only when Biden is president:

(8) $\exists f \Box(Con(f,$ Biden is president$) \leftrightarrow$ Biden is president)

From (7) and (8), (DA-Tensed-Facts$_{FO}$) can then be derived given standard tense logical principles and higher-order existential generalisation, to which dynamic absolutists, who we found embracing higher-order quantification when it comes to quantifying over contents, will have no objection. But (8) is certainly not *trivially* true. It is independent of standard principles of first-order and tense logic. And it is also not a good candidate for a trivial truth in the sense of an immediate conceptual or analytic truth (if there are such things). After all, it tells us that there is a fact which loses its content as soon as Biden loses his office. Whatever the merits of dynamic absolutism, even its proponents stay well clear of the claim that the content shifts they posit are somehow inherent in what we mean by 'fact', or that a claim like (8) could be otherwise regarded as trivial. On the contrary, they are perfectly aware that the idea of shifting contents takes some getting used to and requires the support of a non-trivial, abductive argument that identifies the rejection of (Fixed-Content) as the all-things-considered best response to (what they perceive as) the Finean tetralemma. On a first-order conception of facts, there is thus no trivial route from tensed truths to tensed facts if those are understood along dynamic absolutists' lines.

Nor is there such a route on a more conventional first-order conception of facts, on which we saw the existence of tensed facts to amount to:

(Tensed-Facts$_{FO}$) $\exists f(\Diamond(f$ obtains$) \wedge \Diamond\neg(f$ obtains$))$

This, too, does not follow from (7) without extra assumptions. In this case, we need the assumption that there is a fact which obtains whenever Biden is president:

(9) $\exists f \Box(f \text{ obtains} \leftrightarrow \text{Biden is president})$

Like (8) before, (9) is independent of standard principles of first-order and tense logic. And while it may not be quite as bad a candidate for an immediate conceptual or analytic truth as (8), this does not make it a particularly good candidate either. After all, some influential first-order conceptions of facts construe facts as *sparse*, without thereby qualifying as conceptually inconsistent.[15] On one way of making the sparse conception more precise, it will only accept instances of the following comprehension schema for facts where ϕ is couched in *natural* vocabulary, understood as vocabulary that plays a privileged role in the natural sciences (where f may not occur free in ϕ):

(Comp$_{FO}$) $\exists f \Box(f \text{ obtains} \leftrightarrow \phi)$

Whatever its merits, such a sparse conception of first-order facts should not qualify as *trivially* false. But, given the not implausible assumption that the natural sciences can be formulated tenselessly, such a position will entail the falsity of (9) and of any other tensed instance of (Comp$_{FO}$). This illustrates that, on a first-order conception of facts, (9), too, constitutes a substantial metaphysical assumption, so that there is no trivial route from tensed truths to tensed facts even if those are understood along more standard lines than those proposed by dynamic absolutists.

This is good news for those trying to embrace (C=E) against the background of a first-order conception of facts. It means that it is not mandatory to conceive of the realism vs. anti-realism dispute as concerning the reality-constituting status of trivially existing tensed facts (as preferred by Fine). Rather, the dispute can in this setting naturally be understood as pertaining to the question of whether tensed facts exist in the first place. So, (C=E) can be adopted in the first-order context without automatically surrendering oneself to the triviality worry. As we will see, the fate of (C=E) is much worse when considered against a higher-order conception of facts.

4 Higher-Order Tense Realism

We have considered two crucial debates among tense realists. The first centers around the question of whether the space of tense realist options set out by Fine is complete. The second focuses on the question of whether his notion of reality constitution must be accepted as primitive. Correia and Rosenkranz disagree with Fine on both fronts: they think we should recognize (and embrace) an additional tense realist

[15] See, e.g., Armstrong (1997) for a sparse conception of facts, which he calls 'state of affairs'.

option that involves rejecting the principle of fixed content. And they think that for facts to constitute reality is simply for facts to exist. I would like to suggest that each of these positions is viable only if we are operating on a first-order conception of facts. Once we move to a higher-order conception of facts, both positions must be rejected. On a higher-order conception there is no room for anything like the content-changing facts postulated by dynamic absolutism. And facts constituting reality must be distinguished from facts existing. The crucial distinction between first-order and higher-order facts responsible for this can be put in a slogan: while first-order facts *have* contents, higher-order facts *are* contents.[16]

4.1 Higher-order facts and contents

To understand the slogan, it is helpful to appreciate just how crucial the assignment of contents to facts is on a first-order conception of facts. Imagine you are told by a first-orderist that, at a given time t, a certain fact γ obtains. That, by itself, does not tell you much at all about what things are like at t. Sure, you know that things are such that γ obtains—but what does that mean? If someone were to ask you whether you would want to time travel to t, being told that t is at time at which γ obtains does not help you at all in evaluating whether t would be a worthwhile temporal destination.

What you need to know to make a more informed decision on the proposed time travel is what content γ has at t. Depending on whether or not you are a dynamic absolutist, this information can be imparted to you in different ways. If you are a dynamic absolutist (and hence believe that facts constantly change their contents), it helps you to be informed that γ has at t the content that Trump is president—at t, *Con*(γ, Trump is president). If you are not a dynamic absolutist (and hence do not think that facts change their content) the relevant information may also be imparted to you by $\Box$(γ obtains $\leftrightarrow$ Trump is president). Either way, you need some additional information that tells you what things are like when the fact obtains—in order for the initial information that a given fact obtains for you to be of value.

The situation is different on the higher-order conception of facts. Here, there is no need and, in fact, no room for the assignment of contents to facts at all. On the higher-order conception, facts are the worldly correlates not of singular terms but of sentences (which are sometimes true). As a result, on the higher-order conception, in order to state perspicuously that the fact that Trump is president obtains at t, it suffices to say:

(10) at t, Trump is president.

[16]For recent discussions of higher-order facts (and propositions) undergirding this slogan see Jones (2019) and Trueman (2021: Chs. 11-14, 2022).

This already tells us what reality is, in part, like at t. We do not need to be told in addition that the fact has this or that content. Indeed, it would not only be unnecessary but also misleading to introduce $Con^*(F, P)$, a would-be intra-level analogue of the first-order dynamic absolutists' mixed-level content-ascribing construction $Con(f, P)$, and to embellish (10) as follows:

(11) at t, Trump is president $\wedge$ Con^*(Trump is president, Trump is president).

For what relation could it be that the second conjunct is asserting here to hold between the higher-order fact and itself? Presumably, it is just the relation of higher-order self-identity. But then this conjunct is a misleading appendix. Rather than somehow contributing to the assertion that the fact that Trump is president obtains, it states that some additional albeit rather unexciting fact concerning the higher-order self-identity of the fact that Trump is president obtains. The conjunct is unnecessary and misleading because, on the higher-order conception, the job of saying that a specific fact obtains coincides with that of specifying its content—and both are taken care of by the first conjunct. Similarly, there is no need for you to be given the information that it is always the case that Trump is president just in case he is president, i.e $\Box$(Trump is president $\leftrightarrow$ Trump is president), in order for (10) to be of informational value to you.

To put the point another way, on the higher-order conception of facts, there are not two types of things, facts and contents, that must somehow be coordinated with one another in statements characterizing reality. For, on this conception, contents are the worldly correlates of sentences, and facts the worldly correlates of those restricted class of sentences that are true at some time or another. So, on the higher-order conception, facts are just special contents. When confronted with a higher-order fact, there thus is not a distinct entity, its content, that it must somehow be paired up with. Rather, the higher-order fact and its content are one and the same (higher-order) thing.

This is not to deny that some claims about first-order facts and their contents do have more or less natural analogues on the higher-order conception of facts. For example, consider the first-order fact, call it δ, that Bob Dylan is a musician. And consider the first-order fact, call it ϵ, that Robert Zimmerman is a musician. Since Bob Dylan is Robert Zimmerman, a first-orderist may want to say that these two facts share one and the same content. A natural way to do this is as follows:

(12) $\exists P(Con(\delta, P) \wedge Con(\epsilon, P))$

Since, on the higher-order conception, we have no use for anything like the content-assigning $Con(f, P)$, we cannot express exactly this sort of claim. But what we can express is the claim that there is one and the same higher-order content P such that P

is higher-order identical to the fact that Bob Dylan is a musician and also higher-order identical to the fact that Robert Zimmerman is musician. Following Dorr (2016) in using ≡ for higher-order identity, we can put this as follows:

(13) $\exists P$(Bob Dylan is a musician $\equiv P \wedge$ Robert Zimmerman is a musician $\equiv P$)

So, on the higher-order conception, the closest thing to saying that this and that first-order fact *have* the same content, as done by (12), is to say that this and that higher-order fact *are* the same content, as done by (13).

Note that higher-order facts being contents, rather than having contents, has a knock-on effect on what kind of views one may reasonably hold about their plenitude. In §3.2 we noted that, on a first-order conception, there is nothing obviously problematic about a sparse conception of facts. This is different on a higher-order conception. Similar to how we have been using f as a term variable restricted to first-order facts, let us use F as a sentential variable restricted to higher-order facts, i.e., to higher-order contents that are sometimes true. Then the higher-order analogue of (Comp_{FO}) is the following (where F may not occur free in ϕ):

(Comp$_{HO}$) $\exists F \Box(F \leftrightarrow \phi)$

A higher-orderist about facts cannot reject instances of this as easily as a first-orderist can reject instances of (Comp_{FO}). In particular, higher-orderists cannot easily reject instances of (Comp_{HO}) just because ϕ contains non-natural vocabulary. Consider an arbitrary sentence that may involve highly non-natural vocabulary, say, 'Jack is dancing tango'. Note that it is a tense-logical truth that $\Box$(Jack is dancing tango $\leftrightarrow$ Jack is dancing tango). Now assume that our sentence is sometimes true, i.e., $\Diamond$Jack is dancing tango. From the conjunction of these two claims, we can then infer, by higher-order existential generalisation, that $\exists P(\Diamond P \wedge \Box(P \leftrightarrow$ Jack is dancing tango)). Discharging our assumption and using our variable reserved for higher-order facts in the way described, we can establish the following conditional:

(14) $\Diamond$Jack is dancing tango $\rightarrow \exists F \Box(F \leftrightarrow$ Jack is dancing tango)

So, on the higher-order conception of facts, we cannot easily deny that there is a higher-order fact that obtains just in case Jack is dancing tango, provided Jack is dancing tango at least at some time. Of course, nothing hinges on us having picked the specific example sentence we used. We can thus universally generalize, arriving at the following principle capturing the *abundance* of higher-order facts:

(Abundance$_{HO}$) $\forall P(\Diamond P \rightarrow \exists F \Box(F \leftrightarrow P))$

To summarize, the upshot of the higher-order conception of facts for our two debates about tense-realism is threefold. First, while first-order facts *have* contents, higher-order facts *are* contents. Second, the best way to approximate, on the higher-order

conception of facts, claims about first-order facts having contents often involves the higher-order identity predicate $\equiv$. Third, the higher-order conception of facts is much less amenable to a sparse conception of facts, since it provides, whenever it is sometimes true that P, a logical route to a corresponding higher-order fact.

4.2 Higher-order facts and the constitution of reality

Let us now return to the debate about the constitution of reality. The debate concerned the viability of (C=E) which states that for facts to constitute reality just is for them to exist. We noted in §3.2 that (C=E) forecloses one way of responding to Fine's triviality worry. Once (C=E) is accepted, one can no longer avoid trivializing the dispute about the reality of tense by allowing modest anti-realists to maintain that tensed facts exist but fail to constitute reality (as envisaged by Fine). We also noted, however, that this need not be regarded as a problem for (C=E), as long as it is proposed against a first-order conception of facts. For on that conception it is a non-trivial matter whether tensed facts exist in the first place. In particular, on the first-order conception of facts, there was no trivial route from claims which we took modest anti-realists about tense to accept, such as

(7) $\Diamond$Biden is president $\wedge$ $\Diamond\neg$Biden is president,

to the existence of tensed facts, when understood along first-order lines, e.g., as

(Tensed-Facts$_{FO}$) $\exists f(\Diamond(f \text{ obtains}) \wedge \Diamond\neg(f \text{ obtains}))$

We therefore concluded that (C=E) can be accepted in a first-order setting without trivializing the dispute between realists and anti-realists about tense.

This is different once we operate with a higher-order conception of facts. For the natural higher-order analogue of (Tensed-Facts$_{FO}$) is:[17]

(Tensed-Facts$_{HO}$) $\exists F(\Diamond F \wedge \Diamond\neg F)$

And to *this* claim, there is a trivial route from claims such as (7). For recall the abundance principle we have just found, in §4.1, to govern higher-order facts as a matter of higher-order tense logic. An instance of (Abundance$_{HO}$) is:

(15) $\Diamond$Biden is president $\rightarrow \exists F\Box(F \leftrightarrow$ Biden is president)

And (7) and (15) together entail (Tensed-Facts$_{HO}$). So while, on a first-order conception of facts, the existence of tensed facts is a non-trivial matter even given the

[17] Since we are using F as restricted to contents that sometimes obtain, the first conjunct is, if course, redundant. It is still displayed to bring out the structural similarity with the first-order claim.

acceptance of claims such as (7), this is no longer the case on a higher-order conception of facts. Here, the acceptance of claims such as (7) brings with it a logical commitment to the existence of tensed facts, understood in appropriate higher-order terms, i.e., as (Tensed-Facts$_{HO}$). But this means that on the higher-order conception there is a genuine problem with (C=E): since (7) logically entails the existence of tensed higher-order facts, adopting (C=E) now does make it a trivial matter that reality is tensed. Combining a higher-order conception of facts with (C=E) is thus unacceptable for any moderate anti-realist about tense who wants to go along with common sense in accepting claims such as (7). In other words, if we want to embrace a higher-order framework that modest anti-realists can accept as neutral ground on which to debate the reality of tense, we must reject (C=E).

Once we reject (C=E), we can ensure that that our higher-order setting does not trivialize the realism dispute by following Fine's lead in regarding this dispute not as concerning the existence of tensed (higher-order) facts but the question of whether these facts constitute reality. In particular, we can follow his suggestion to use a sentential operator $\mathfrak{R}$ in order to express the primitive notion of reality constitution, so that the proper way to say that reality is constituted by the fact that Biden is president is: $\mathfrak{R}$(Biden is president). We may then construe the modest anti-realist as accepting claims such as (7) as well as their logical consequence (Tensed-Facts$_{HO}$), while rejecting the additional claim that there are tensed facts that constitute reality, i.e.:

(R-Tensed-Facts$_{HO}$) $\exists F(\mathfrak{R}F \wedge \Diamond F \wedge \Diamond \neg F)$

This brings out a further interesting aspect of our result that (C=E) is not viable in a higher-order setting. When recommending his primitive notion of reality constitution as a resource to capture disputes among realists and anti-realists about various subject matters, Fine (2001: 11) suggests conceiving of a claim such as $\mathfrak{R}S$ as making a 'second-order' comment on the metaphysical status of the 'first-order' claim S (assuming S itself does not contain $\mathfrak{R}$). This evidently involves a notion of 'order' very different from the syntactical notion of 'order' operative in 'higher-order' metaphysics. If the above argument is correct, though, then the two notions of order are interestingly connected: it is a commitment to a higher-order metaphysics framework and in particular to a conception of facts as entities which are higher-order—in the syntactical sense—that makes it necessary for the tense realism dispute to be formulated with the help of a device, such as $\mathfrak{R}$, for making comments that are higher-order—in the sense of Fine (2001)—on the metaphysical status of the facts corresponding to the tensed sentences in its scope.

Before turning to the other major dispute on which the higher-order conception of facts has an impact, I want to consider a possible way in which a staunch supporter of

(C=E) might try to resist the above argument and preserve the right to rely on (C=E) even in a higher-order setting. Our above argument against the viability of (C=E) in a higher-order setting involved an application of the principle (Abundance$_{HO}$). This application relies on the assumption that the quantificational apparatus of our background higher-order tense logic is classical. Those trying to preserve (C=E) in a higher-order setting might try to reject that assumption in favour of a *free* higher-order tense logic.

To illustrate the idea, first consider free first-order logic. Free first-order logic allows for empty singular terms: terms that fail to stand for any object. For instance, a proponent of free first-order logic might suggest to regard the name 'Zeus' as empty, so that we have $\neg\exists x(x = \text{Zeus})$. Since terms are allowed to be empty, free first-order logic weakens the classical rule of first-order universal instantiation: we may no longer infer $\phi(a)$ from $\forall x\phi(x)$ alone but need an additional premise ensuring that the term in question is non-empty, $\exists x(a = x)$, in order to instantiate the universal quantifier with it.

Analogously, the version of free higher-order logic which the defender of (C=E) will have in mind allows for empty sentences: sentences that fail to stand for any content (let alone for a fact). In particular, the proponent of (C=E) will suggest that we treat tensed sentences, such as 'Biden is president', as empty, so that we have $\neg\exists P(P \equiv \text{Biden is president})$. Since sentences are allowed to be empty, free higher-order logic weakens the classical rule of higher-order universal instantiation: we can no longer infer $\phi(A)$ from $\forall P\phi(P)$ alone but need an additional premise ensuring that the sentence in question is non-empty, $\exists P(A \equiv P)$, in order to instantiate the universal quantifier with it.

In such a free higher-order setting, there is then no longer a direct conflict between accepting (7) and still rejecting (Tensed-Facts$_{HO}$), since the relevant instance of (Abundance$_{HO}$), (15), can no longer be derived from (Abundance$_{HO}$) by universal instantiation.[18] So, the staunch proponent of (C=E) might argue, it is not so much that (C=E) makes the higher-order framework *per se* unacceptable to modest anti-realists about tense. What it makes unacceptable to them is only a *classical* higher-order framework. But this need not mean that (C=E) is to be rejected. The lesson might instead be that we need to adopt a *free* higher-order tense logic, if we want to have a neutral framework in which to have a non-trivial debate about the reality of tense. (C=E) might then still be incorporated into this free framework.

The problem with this defence of (C=E) is that embracing the envisaged free framework would be extremely costly for modest anti-realists for reasons indepen-

[18]The principle (Abundance$_{HO}$) itself will still hold in the free setting envisaged but will concern only the contents of untensed sentences over which the sentential quantifiers will then be taken to range.

dent of the trivialisation worry. First, recall that a defining feature of modest anti-realism is that it agrees with common sense that 'Biden is president' is sometimes true. Since such sentences are now to be treated as empty, the present strategy is committed to a free logic that is *positive* in the sense that 'Biden is president' can be true at a time without standing for a content (let alone a fact) at that time. A proponent of the strategy thus has to come to terms with the problematic consequences that such a positive free logics typically bring along, such as requiring, in their model theory, an 'outer domain' from which to draw the semantic values for the relevant empty expressions, a move that is often taken to commit the free-logician to entities which by their own lights do not exist.[19]

Second, modest anti-realists will surely also want to agree with common sense that all claims of the form 'Biden is president $\vee$ ¬Biden is president' are true. And they will likely not want to regard this as a coincidence. Rather, they will want to to regard such disjunctions as governed by the law of excluded middle, i.e., $\forall P(P \vee \neg P)$, in much the same way in which otherwise similar disjunctions with untensed disjuncts are. But in the free setting currently envisaged, the instance under discussion no longer follows from the law, since universal quantifications can no longer be instantiated with tensed sentences, which are all considered empty.

Third, the envisaged free setting would also render an attractive defense of the intelligibility of higher-order quantification unavailable. The defense, due to Bacon (2024), proceeds by stressing the analogies between universal and existential quantifications of any order and corresponding infinite conjunctions and disjunctions. Part of the defense is the idea that, just as one may grasp a first-order universal quantification $\forall x \phi(x)$ by noticing its close relation to the infinite conjunction 'ϕ(Biden) $\wedge$ ϕ(Trump) $\wedge$ ...', so one may grasp a higher-order universal quantification $\forall P \phi(P)$ by noticing its close relation to the infinite conjunction 'ϕ(Biden is president) $\wedge$ ϕ(Trump is president) $\wedge$ ...'. This defense is no longer available once we adopt the envisaged free setting because it severs just this connection between higher-order universal quantification and infinite conjunction, which can now differ in truth value (see Bacon, 2024: §3). Given the free version of higher-order universal instantiation, $\forall P \phi(P)$ can now be true despite having a false instance $\phi(A)$ (if A is empty), while any conjunction with the false $\phi(A)$ as a conjunct will still be false.

I take this discussion to show the following. It is technically possible to tinker with the background higher-order logic in such a way that (Abundance$_{HO}$) no longer entails the existence of tensed facts when combined with (7), in which case (C=E)

[19] In fact, the problem is particularly stark in that the outer domain will have to outstrip the union of all inner domains given that, on the strategy under discussion, there will be no content corresponding to 'Biden is president' at any time. The model theoretic semantics will thus have to be *super-positive* in the sense of Fritz and Goodman (2017: 26).

can be enforced without rendering moderate anti-realism trivially false. But there is strong abductive evidence against the required free higher-order framework and the framework remains, in particular, sufficiently unattractive to moderate anti-realists to leave our previous conclusion untouched: if we want to adopt a higher-order conception of facts which avoids the triviality worry in that modest anti-realists can accept it as part of the theoretical background against which to debate the reality of tense, we must reject (C=E).

4.3 Higher-order facts and the logical space of tense realism

We now return to the debate about the logical space of tense realism. Here, the crucial question is whether tense realism can be reconciled with all three of the attractive Finean principles—(Neutrality), (Absolutism), and (Coherence)—by rejecting (Fixed-Content) in favour of a dynamic absolutist conception of temporal reality.

We have already encountered some initial evidence suggesting that the higher-order conception of facts sits uneasily with dynamic absolutism. For we have seen in §4.1 that, in a higher-order setting, facts *are* contents rather than *having* contents. But if facts are contents, then it is hard to see how facts and contents could be dissociated from one another in the way dynamic absolutism requires.[20]

We can make this suspicion more precise by considering what becomes of (Fixed-Content) in a higher-order setting. If the suspicion is correct, then rejecting the higher-order analogue of (Fixed-Content) should be more problematic than rejecting (Fixed-Content). What, then, might this higher-order analogue look like? Recall the principle's original informal formulation by Correia and Rosenkranz:

(Fixed-Content) If at time t, f both constitutes reality and is the fact that p, then for every time u, if f constitutes reality at u, then at u, f is the fact that p.

[20]There is an additional, albeit less fundamental, tension between the higher-order setting and dynamic absolutism. We have seen in §4.2 that, in a higher-order setting, there is a logical route from tensed truths to tensed facts, understood as higher-order facts 'obtaining' at some times but not at others:

(Tensed-Facts$_{HO}$) $\exists F(\Diamond F \wedge \Diamond \neg F)$

This creates a tension with dynamic absolutism, which we saw in §3.1 to rely on a different conception of tensed facts, one on which tensed facts obtain eternally (while continuously changing their contents). By itself, however, this tension need not yet be seen as fatal. For just because there are tensed facts in the sense of (Tensed-Facts$_{HO}$) does not mean that there cannot *also* be tensed facts in the dynamic absolutist sense. What is more, we have seen that, in a higher-order setting, it is advisable to distinguish between facts that constitute reality and those that do not. It is then open to dynamic absolutists to insist that while there also are tensed facts in the sense of (Tensed-Facts$_{HO}$) these tensed facts do not constitute reality. Instead they are ultimately to be accounted for in terms of more fundamental, reality constituting tensed facts which obtain eternally while continuously changing their content. The tension identified in the main text is more fundamental because it calls into question the very coherence of such content-changing facts in a higher-order setting.

Precisifying this principle as (Fixed-Content$_{FO}$) involved understanding the construction 'f is the fact that p' as $Con(f, P)$. We found there to be no room for such a content-assigning prenective on the higher-order conception of facts. As discussed in §4.1, the closest we can provide by way of analogy is a claim replacing talk of facts *having* contents with talk of facts *being* contents (in the sense of higher-order identity). In particular, the best higher-order approximation of (Fixed-Content) is then the following (where talk about reality constitution has been captured with the help of the $\mathfrak{R}$-operator):

(Fixed-Content$_{HO}$) $\forall F \forall P \Box((\mathfrak{R}F \wedge F \equiv P) \rightarrow \Box(\mathfrak{R}F \rightarrow F \equiv P))$

Rather than reading 'f is the fact that p' as $Con(f, P)$, we are now reading it as expressing higher-order identity $F \equiv P$. The principle thus ensures that if a higher-order fact F is identical to P at any time at which F constitutes reality, then this identity holds at every time at which F constitutes reality.

Functionally, (Fixed-Content$_{HO}$) plays the same role as (Fixed-Content$_{FO}$): rejecting (Fixed-Content$_{FO}$) allows first-order dynamic absolutists to maintain that a first-order fact α changes what content it *has* from t_{-1} to t_0. It allows them to say that at t_{-1}, $Con(\alpha$, Trump is president), while at t_0, $Con(\alpha$, Trump was president 1 time unit ago). That reality is at t_0 constituted by α and β (where, at t_0, $Con(\beta$, Biden is president)) then no longer means that reality is at t_0 constituted by facts which *have* incompatible contents. Analogously, rejecting (Fixed-Content$_{HO}$) allows higher-order dynamic absolutists to maintain that a higher-order fact A changes what content it *is* from t_{-1} to t_0. It allows them to say that at t_{-1}, $A \equiv$ Trump is president, while at t_0, $A \equiv$ Trump was president 1 time units ago. That reality is at t_0 constituted by A and B (where, at t_0, $B \equiv$ Biden is president) then no longer means that reality is at t_0 constituted by facts which *are* incompatible contents.

As suspected, however, the similarities between the two principles come to an end once we consider the theoretical costs incurred by rejecting them. Rejecting (Fixed-Content$_{HO}$) comes at a *much* steeper price. This is because (Fixed-Content$_{HO}$) follows directly from the permanence of higher-order identity (while (Fixed-Content$_{FO}$) does not follow from the permanence of first-order identity). The permanence of higher-order identity ensures that every higher-order identity that obtains at any one time obtains at every time:

(Permanent Identity$_{HO}$) $\forall Q \forall P \Box(Q \equiv P \rightarrow \Box(Q \equiv P))$

(Fixed-Content$_{HO}$) is simply the result of doubly restricting the variable Q in (Permanent Identity$_{HO}$), firstly to facts, i.e., to Q such that $\Diamond Q$, and secondly to constituents of reality, i.e., to Q such that $\mathfrak{R}Q$. This means that anyone who rejects (Fixed-Content$_{HO}$)

must also reject the more general (Permanent Identity$_{HO}$). This is bad news for higher-order dynamic absolutists because (Permanent Identity$_{HO}$) has a good claim to be considered a law of higher-order tense logic, a claim which dynamic absolutists in particular are not in a good position to deny. In addition to being inherently plausible, this principle can be derived, by a higher-orderization of a familiar argument, from some very plausible principles of higher-order tense logic. In order to better appraise the costs of higher-order dynamic absolutism it will be useful to consider this derivation. The point of the ensuing discussion is not so much to show that it is absolutely inconceivable to reject (Permanent Identity$_{HO}$). As usual with such principles, this can be done if one is sufficiently tolerant with respect to the various complications and implausible consequences this brings along. Rather, the point is to make an abductive case against higher-order dynamic absolutism, by bringing out how substantial the theoretical costs of rejecting (Permanent Identity$_{HO}$) are and that these costs are often *particularly* high for higher-order dynamic absolutists.

The original argument goes back to Barcan Marcus (1947) and Kripke (1971) and aims to establish the necessity, rather than the permanence, of first-order, rather than higher-order, identity. But the argument is easily adapted to our setting. Here is one way to do this. Consider a higher-order tense logic which, in addition to the axioms and rules of classical propositional logic, contains the following axiom schemata and rules (where $V_{(n)}$ are sentence variables and O is any one-place sentence-operator):[21]

(Reflexivity$_{HO}$) $V \equiv V$

(Leibniz's Law$_{HO}$) $V_1 \equiv V_2 \rightarrow (OV_1 \rightarrow OV_2)$

(Extensional β_{HO}) $(\lambda V_1.\phi)V_2 \leftrightarrow \phi[V_2/V_1]$
where $\phi[V_2/V_1]$ is the result of replacing each free occurrence of V_1 in ϕ with V_2 re-lettering, if necessary, bound variables so that V_2 does not become bound

(Generalization$_{HO}$) From $\phi \rightarrow \psi$ infer $\phi \rightarrow \forall V\psi$, when V does not occur free in ϕ

(Necessitation) If ϕ is a theorem, so is $\Box\phi$

The first two axioms ensure that higher-order identity is a reflexive relation subject to Leibniz's Law. The third governs the behavior of the variable binding device λ in a higher-order setting. In such a setting, we can use the λ-apparatus to form not only complex predicates, such as, e.g., $(\lambda z.\Box y = z)$, which combines with first-order (singular term) variables and which we can read as 'is such that y is always

[21] See Roberts (2023) for a recent discussion of the original argument and its higher-order variant in a modal rather than temporal setting. I follow his presentation in several respects (for instance in treating open formulae of the right form as theorems). Note that higher-orderists will endorse versions of the first four axioms which are more general in several respects than the ones listed here, e.g., by also concerning types other than the type of sentences (see Roberts, 2023: 13). I'm here focusing on the specific cases needed for the argument to be presented.

first-order identical to it', but also complex operators, such as, e.g., $(\lambda S.\Box(Q \equiv S))$, which combines with higher-order (sentential) variables and which we can read as 'is such that Q is always higher-order identical to it'. (Extensional β_{HO}) then ensures that Q is such that Q is always higher-order identical to it just in case Q is always higher-order identical to Q: $(\lambda S.\Box(Q \equiv S))Q \leftrightarrow \Box(Q \equiv Q)$. The fourth resource is a standard rule of generalization for classical higher-order universal quantifiers in a system that allows open sentences to count as theorems. The fifth is the standard modal rule of necessitation. Given our temporal reading of $\Box$, it captures the idea that what is logically true does not vary over time. These resources allow us to derive (Permanent Identity$_{HO}$) as follows (where *PL* stands for 'propositional logic'):

1.	$\Box(Q \equiv Q)$	(Ref$_{HO}$), (Nec)
2.	$(\lambda S.\Box(Q \equiv S))Q$	1, (β_{HO}), *PL*
3.	$Q \equiv P \rightarrow ((\lambda S.\Box(Q \equiv S))Q \rightarrow (\lambda S.\Box(Q \equiv S))P)$	(LL$_{HO}$)
4.	$Q \equiv P \rightarrow (\lambda S.\Box(Q \equiv S))P$	2, 3, *PL*
5.	$Q \equiv P \rightarrow \Box(Q \equiv P)$	4, (β_{HO}), *PL*
6.	$\forall Q \forall P \Box(Q \equiv P \rightarrow \Box(Q \equiv P))$	5, (Nec), (Gen$_{HO}$), *PL*

Higher-order dynamic absolutists who want to reject (Fixed-Content$_{HO}$) must thus find a principled way to reject at least one of the resources relied upon in this derivation. We will consider momentarily whether they can do so. Before this, though, let us note that whether or not dynamic absolutists *can* reject this argument, as a matter of fact not all of them *do*: in a somewhat different dialectical context, Correia explicitly accepts a version of the higher-order Barcan Marcus-Kripke argument (Correia & Skiles, 2021, §2). Setting such independent commitments of its proponents aside, the philosophically more interesting question is, of course, whether there is anything in the position of dynamic absolutism that allows for a principled rejection of the derivation. I will now argue that this is not the case.

The likely focal points of those trying to reject the argument are (Leibniz's Law$_{HO}$) and (Extensional β_{HO}). We consider them in turn. As for the former, first note that if we are to allow into our language expressions which create opaque contexts, this may require a suitable restriction of Leibniz's Law. This applies to the higher-order version of Leibniz's Law on which the above argument relies as much as to its more familiar first-order counterpart featuring in the original Barcan Marcus-Kripke argument. Thus, if the operator B stands for 'everyone believes that', b for 'Bob Dylan' and r for 'Robert Zimmerman', we may well want to allow that $B(b = b)$ and that $\neg B(b = r)$, despite it being the case that $(b = b) \equiv (b = r)$. Similarly, in the first-order case, we may well want to allow, e.g., that $(\lambda x.B(b = x))b$ and that $\neg(\lambda x.B(b = x))r$, despite it being the case that $b = r$. But there is no reason to think

that any restriction warranted by such opacity phenomena would render unavailable the instances of the Leibnizian laws needed for the derivations of the permanence of identity of the respective order.[22] For neither ($\lambda z.\Box y = z$) nor ($\lambda S.\Box(Q \equiv S)$) involves any material under suspicion of creating opaque contexts: the identity predicates, $=$ and $\equiv$, are paradigmatic examples of expressions that create transparent contexts. And the temporal operator involved, like operators expressing more paradigmatic objective modalities and unlike operators expressing, e.g., epistemic modalities, also creates a transparent context: the question of whether it is always the case that P is no more sensitive to the guise under which the higher-order fact P is presented than, e.g., the question of whether it is metaphysically necessary that P.[23]

Another potential challenge to (Leibniz's Law$_{HO}$) arises from the work of Gallois (1998). Gallois is arguing against the permanence of first-order identity but his strategy carries over to the higher-order case. It has three components. First, he takes all ascriptions of identity, in our case for instance $Q \equiv P$, to be incomplete —in that Leibniz's Law fails to apply to them—unless they are indexed to a specific time, as in 'at t_1:$(Q \equiv P)$' (76). In fact, this point applies to *all* predications, not just identity statements (80). Second, he reformulates Leibniz's Law accordingly, rendering it applicable only to such time-indexed expressions (81). Applied to our case, Gallois strategy thus involves replacing (Leibniz's Law$_{HO}$) with:

(G-Leibniz's Law$_{HO}$) $\forall t\Big(\text{at } t\text{:}(V_1 \equiv V_2) \rightarrow (\text{at } t\text{:}(OV_1) \rightarrow \text{at } t\text{:}(OV_2))\Big)$

Third, he introduces a complex account of how different temporal operators interact with one another. On this account, it does not follow from Q's being, at a given time t_1, always identical to P that Q is always identical to P simpliciter (124). In other words, by Gallois's lights, 'at t_1:$\Box(Q \equiv P)$' does not entail $\Box(Q \equiv P)$. This allows Gallois to accept that (G-Leibniz's Law$_{HO}$), in tandem with the (analogously modified) other resources, establishes that if Q and P are identical at any time t, then they are, at that time t, always identical: $\forall Q \forall P \forall t(\text{at } t\text{:}(Q \equiv P) \rightarrow \text{at } t\text{:}\Box(Q \equiv P))$. For, crucially, on his

[22] See Dorr (2016: 42-46) for a defense of higher-order Leibniz's Law in light of opaque contexts, which, incidentally, is embraced by at least one half of Correia and Rosenkranz (see Correia & Skiles 2019: 645). For further detailed discussion of (Leibniz's Law$_{HO}$) (and the corresponding quantified principle) in a higher-order setting that allows for opaque contexts see Bacon and Russell (2019) and Caie et al. (2020). Note that, with the exception of the temporal operator (which they do not consider), ($\lambda z.\Box y = z$) and ($\lambda S.\Box(Q \equiv S)$) only contain material which qualifies as 'purely logical' in the sense of Bacon and Russell (2019: §4) and which is guaranteed to be transparent even in their opacity-friendly system.

[23] See Williamson (2016: 454) for discussion of the distinction between objective and non-objective modalities and the idea that the creation of transparent contexts is a characteristic mark of operators expressing the former. Roberts (ms: §1) hesitates to classify temporal operators such as 'always' as expressing an objective modality but not because he takes them to differ from paradigmatic examples (e.g., 'it is metaphysically necessary that', 'it is is physically necessary that') with respect to the creation of transparent contexts, but because he takes them not to concern 'circumstantial contingency' in the same way as operators expressing (meta-)physical modality do.

account, this does not conflict with Q and P still being distinct at other times, e.g., it does not conflict with 'at t_2:$(Q \not\equiv P)$' (125-131).

Gallois's strategy has some serious theoretical costs. On it, the interaction of general temporal operators ($\Box$, $\Diamond$) and specific temporal operators (at t_1, at t_2) among themselves and among one another is complicated substantially and requires the rejection of some very plausible principles. First, note that a claim such as 'at t_1:$\Box(Q \equiv P)$' entails '$\exists t$(at t:$\Box(Q \equiv P)$)' which Gallois accepts to be equivalent to $\Diamond\Box(Q \equiv P)$ (135). Since he denies that 'at t_1:$\Box(Q \equiv P)$' entails $\Box(Q \equiv P)$ he must thus also deny that $\Diamond\Box(Q \equiv P)$ entails $\Box(Q \equiv P)$. But this means he must reject at least one of two immensely plausible principles (which, together, licence the entailment he must reject): the temporal B axiom, according to which what is true is always sometimes true ($\phi \rightarrow \Box\Diamond\phi$), and the temporal 4 axiom, according to which what is always true is always always true ($\Box\phi \rightarrow \Box\Box\phi$).[24] Second, Gallois also has to reject that 'at t_1:(at t_2:P)' entails 'at t_2:P' (86) and with it the natural thought that it being the case on Monday that, on Tuesday, P entails that on Tuesday, P.[25] Third, 'at t_1:$\Box P$', on his view, is compatible with 'at t_1:$\Diamond\neg P$' (135-137), which means that $\Box$ and $\Diamond$ no longer behave as duals once they are embedded under specific temporal operators.

These and similar features should make *anyone* think twice before following Gallois's route. But it is worth noting that there is an additional reason why resisting the Barcan Marcus-Kripke argument in this way would be *particularly* awkward for dynamic absolutists. The reason is that dynamic absolutists are, after all, tense realists. And tense realists typically reject the idea that there is anything amiss with statements lacking explicit time-indexing of the form 'at t'. As we noted (see §3.1), dynamic absolutists want there to be a fact which has, at t_0, the content that Biden is president, and which has, at t_1, the content that Biden was president 1 temporal unit ago. It is not clear at all how this can be brought in harmony with Gallois's framework which dictates that all predications need to be time-indexed if they are to interact with Leibniz's Law, so that our example fact would really have to have a content of the form 'at t, Biden is president'.

A different way to resist the permanence of identity by modifying Leibniz's Law has been put forward by Myro (1986). Like Gallois, Myro proposes a temporally qualified formulation of Leibniz's Law (392). But Myro avoids Gallois's complicated and counter-intuitive treatment of the interaction of temporal operators. He does so by distinguishing between 'time-bound' and 'time-free' properties and restricting

[24]Model theoretically, B and 4 require the accessibility relation on times to be symmetric and transitive, respectively. To see that they licence the inference which Gallois must reject, suppose for reductio that we have $t_1 \models \Diamond\Box\phi$ and $t_1 \models \neg\Box\phi$. We must thus have t_2, t_3 accessible from t_1 with $t_2 \models \Box\phi$ and $t_3 \models \neg\phi$. Given symmetry and transitivity, t_3 is accessible from t_2 so that we have $t_3 \models \phi$. Contradiction.

[25]See Sider (2001: 167-70) for further critical discussion of Gallois's rejection of this specific principle.

Leibniz's Law to the latter, which are taken to be properties corresponding to expressions that do not involve any form of 'temporal qualification' (392-3). In our setting, this would mean to block the argument by rendering (Leibniz's Law$_{HO}$) inapplicable to the property (of contents) corresponding to the expression '$\lambda S.\Box(Q \equiv S)$)', which involves the temporal qualification $\Box$.

There are two ways to understand Myro's proposal, neither of which is convincing in the present dialectic. On the first (arguably intended by Myro), it is not denied that there *are* time-bound properties. It is just that these are deemed irrelevant when it comes to Leibniz's Law. So, applied to our case, it is granted that there is a property (of contents) corresponding to '$\lambda S.\Box(Q \equiv S)$)'. But it is maintained that contents P and Q can, at one at the same time, differ with respect to this property and still be identical. The problem with the proposal, on this reading, is that it is simply implausible (see Gallois, 1998: 182-183 and Sider, 2001: 166-167). How, if there is a property distinguishing P and Q at t, can P and Q still be identical at t? The problem is exacerbated by the fact that, as we noted, we cannot point to any opacity in the relevant expression in order to mitigate the feeling of adhocness when being told to disregard the relevant difference between P and Q as an obstacle to their identity.

On the second way to understand Myro's proposal, suggested by Gallois, it is not a restriction on which properties fall in the scope of Leibniz's Law but a 'restriction on what is to count as a property' (Gallois, 1998: 184). On this reading, the proposal thus denies that there are time-bound properties in the first place, so that no restriction of Leibniz's Law is needed. Instead, in the present context, it is (Extensional β_{HO}) which needs to be restricted so that the Barcan Marcus-Kripke argument is blocked right after the first step. While we found Gallois's own proposal to sit awkwardly with dynamic absolutists qua higher-order *tense realists*, the problem with Myro's proposal, on Gallois's reading, is that it sits awkwardly with dynamic absolutists qua *higher-order* tense realists. The reason is that a higher-order tense realist will not only endorse a higher-order conception of facts but also a corresponding higher-order conceptions of properties. And such a conception of properties lends itself particularly well to an abundant conceptions of properties, much as we saw, in §4.1, the corresponding conception of facts lend itself to an abundant conception of facts.[26] So it is *particularly* awkward for *higher-order* tense realists to try to enforce a conception of properties so sparse as to exclude time-bound properties.[27]

Moving to further challenges to (Extensional β_{HO}), let us note that, as its name sug-

[26]See Jones (2018: §3), Trueman (2021: Ch. 6), and Williamson (2013: Chs. 5, 6) on the abundance of higher-order properties.

[27]Which is not to say that this particular sparse conception may not *also* be objectionable for other reasons (as argued by Gallois, 1998: 184) nor that there is not *also* a tension between Myro's proposal and the tense realism of dynamic absolutists. Since Myro, too, requires all predications to be time-indexed (1986: 391), there is that tension as well.

gests, this axiom schema dictates only that the left-hand sides and right-hand sides of its instances are materially equivalent, not that they stand in a more demanding equivalence relation. We may therefore set aside familiar, opacity-involving objections exclusively targeting stronger versions of this principle.[28]

A more serious challenge to (Extensional β_{HO}) turns on its conflict with higher-order temporaryism (and contingentism), understood as the view that that it is a non-permanent (non-necessary) matter which higher-order facts exist. The tension arises once (Extensional β_{HO}) is combined with the relevant version of the so called *Being Constraint*, according to which, roughly, a higher-order property of contents (the semantic value of an operator) can never (impossibly) apply to a content without the content existing. We can put the higher-order temporal Being Constraint as follows (where O is any one-place operator):

(BC$_{HO}$) $\Box\forall P\Box(OP \rightarrow \exists Q(Q \equiv P))$

To see the tension between (Extensional β_{HO}) and temporaryism, note that it is uncontroversial, for instance, that it is always the case that, for any higher-order content P, it is always the case that P is the case if P is the case:

(16) $\Box\forall P\Box(P \rightarrow P)$

But the following is a necessitated and universally generalized instance of (Extensional β_{HO}):

(17) $\Box\forall P\Box((\lambda Q.Q \rightarrow Q)P \leftrightarrow (P \rightarrow P))$

And in combination with (16) and the relevant instance of (BC$_{HO}$), (17) entails the permanentist conclusion that always every higher-order content exists always:

(18) $\Box\forall P\Box\exists Q(Q \equiv P)$

Might this tension with temporaryism equip higher-order dynamic absolutists with a principled way of rejecting (Extensional β_{HO}) and the argument for (Permanent Identity$_{HO}$) based on it? At first sight, the answer may appear complicated. For it is controversial, e.g., (i) whether higher-order permanentism commits one to first-order permanentism, (ii) whether first-order permanentism is problematic enough to

[28]Such as Salmon's (2010: 447-452) argument to the effect that β-reduction cannot preserve 'semantic content' because one may believe the proposition expressed by 'a is larger than a' without believing that expressed by '$(\lambda x.x$ is larger than $x)a$'. For a defense, in light of such arguments, of strong β reduction principles for any order (restricted to non-vacuous cases in which there is at least one free occurrence of the respective variable in ϕ) see Dorr (2016: §§5, 6).

warrant rejecting otherwise plausible seeming logical principles, and (iii) whether, if so, it is (Extensional β_{HO}), rather than the Being Constraint, which has to go.[29]

Luckily, we can side-step these subtle issues by noting that higher-order dynamic absolutists will not ultimately be able to defend their position on temporaryist grounds. This is because it is constitutive of their position to uphold (Absolutism). After all, the whole point of dynamic absolutism was to preserve all three component claims of Fine's trilemma, of which (Absolutism) is one. And (Absolutism) requires that there is no variation over time in terms of the constituents of reality (see §3.1).[30] Now, it is one thing to reject the entirely general Being Constraint and to think that contents may have *some* property at a time without existing at that time. But It is quite another to think that contents could have the *specific* property of constituting reality at a time while failing to exist at that time—how could reality be constituted by something that is not there? In other words, the following specific instance of (BC_{HO}) ought to be accepted by higher-order dynamic absolutists even if they embrace temporaryism:

(19) $\Box\forall P\Box(\Re P \rightarrow \exists Q(Q \equiv P))$

It follows that higher-order dynamic absolutists are, quite independently of any assumptions underlying the (higher-order) Barcan Marcus-Kripke argument, committed to permanentism about the restricted class of contents that constitute reality. But then, while they may in principle still be temporaryists about *non-reality-constituting* higher-order contents and take this as a reason to reject the general principle (Extensional β_{HO}), they cannot reject, on temporaryist grounds, the following restricted β reduction principle (subject to the usual re-lettering clause):

(R-Extensional β_{HO}) $\Re V_2 \rightarrow ((\lambda V_1.\phi)V_2 \leftrightarrow \phi[V_2/V_1])$

And while (R-Extensional β_{HO}) no longer allows, in combination with the other assumptions specified above, for the derivation of (Permanent Identity$_{HO}$) in full

[29] Re (i): while higher-order necessitism/permanentism is often taken to lead to first-order necessitism/permanentism (Williamson, 2013; Fritz & Goodman, 2017) this connection has recently been called into question (Skiba, 2022; Fairchild, 2024). Re (ii): the modal analogue of this question is, of course, at the heart of the dispute between necessitists, such as Williamson (2013) and Goodman (2016), and contingentists, such as Stalnaker (2012). Re (iii): see Williamson (2013: Ch. 4) for discussion of a contingentist position (based on Stalnaker 1994) that retains the Being Constraint at the price of complicating the conversion principle governing λ expressions. See Dorr (2016: 55-57) for considerations in support of a contingentist position that goes the opposite way.

[30] As discussed in §4.2, Correia and Rosenkranz endorse (C=E). Given (C=E), (Absolutism) directly amounts to permanentism about all facts. However, we have seen that (C=E) is not viable in a higher-order setting and are therefore not taking higher-order dynamic absolutism to be based on (C=E). The following discussion aims to show that, even with (C=E) suspended, higher-order dynamic absolutism cannot reject the argument for the permanence of higher-order identity on temporaryist grounds.

generality, it does still allow for the derivation of the permanence of identity of reality-constituting contents:

(R-Permanent Identity$_{HO}$) $\forall Q \forall P \Box((\Re Q \wedge Q \equiv P) \rightarrow \Box(\Re Q \rightarrow Q \equiv P))$

This restricted version of (Permanent Identity$_{HO}$) can be established as follows:[31]

1.	$\Box(Q \equiv Q)$	(Ref$_{HO}$), (Nec)
2.	$\Re Q \rightarrow (\lambda S.\Box(Q \equiv S))Q$	1, (R-β_{HO}), PL
3.	$Q \equiv P \rightarrow ((\lambda S.\Box(Q \equiv S))Q \rightarrow (\lambda S.\Box(Q \equiv S))P)$	(LL$_{HO}$)
4.	$(\Re Q \wedge Q \equiv P) \rightarrow (\lambda S.\Box(Q \equiv S)P$	2, 3, PL
5.	$(\Re Q \wedge Q \equiv P) \rightarrow (\Re P \rightarrow \Box(Q \equiv P))$	4, (R-β_{HO}), PL
6.	$Q \equiv P \rightarrow (\Re Q \rightarrow \Re P)$	(LL$_{HO}$)
7.	$(\Re Q \wedge Q \equiv P) \rightarrow \Box(Q \equiv P)$	5, 6, PL
8.	$(\Re Q \wedge Q \equiv P) \rightarrow \Box(\Re Q \rightarrow Q \equiv P)$	7, Tense Logic
9.	$\forall Q \forall P \Box((\Re Q \wedge Q \equiv P) \rightarrow \Box(\Re Q \rightarrow Q \equiv P))$	8, (Nec), (Gen$_{HO}$)

And (R-Permanent Identity$_{HO}$), which is a restriction of (Permanent Identity$_{HO}$) to Q such that $\Re Q$, still entails (Fixed-Content$_{HO}$), which is a restriction of (Permanent Identity$_{HO}$) to Q such that $\Re Q$ *and* $\Diamond Q$. So, (R-Permanent Identity$_{HO}$) still entails the principle which we identified as the one higher-order dynamic absolutists ultimately need to reject. So even if we grant that higher-order dynamic absolutists may, on temporaryist grounds, reject some of the resources involved in the reasoning supporting the entirely general permanence of higher-order identity, this will not allow them to reject the reasoning in the special case whose rejection is required for the viability of their position.

Given its intrinsic plausibility and the strong support which (Permanent Identity$_{HO}$) and its consequence (Fixed-Content$_{HO}$) receive from a higher-order version of the Barcan Marcus-Kripke argument, I can think of only one way in which dynamic absolutists may still try to defend their position in a higher-order setting. It consists in accepting the universally quantified principles (Permanent Identity$_{HO}$) and (Fixed-Content$_{HO}$) while trying to resist some of their instances.[32] To illustrate how such a position may be motivated, let us first consider a first-order analogue of it in the form of a Fregean conception of definite descriptions on which they are treated as genuine singular terms (rather than along Russellian lines). Such a Fregean may well accept the permanence of first-order identity

(Permanent Identity$_{FO}$) $\forall x \forall y \Box(x = y \rightarrow \Box x = y)$

[31] Note that line 6 assumes $\Re$ to be a transparent operator, so that (LL$_{HO}$) holds for it. Given the intended theoretical role for $\Re$ this is justified.

[32] Thanks to Peter Fritz and Stephan Krämer for helpful discussion of this strategy.

without accepting the following (which they will regard as an instance of it):

(20) $\forall x \Box(x = \text{the fastest runner} \rightarrow \Box x = \text{the fastest runner})$

The reason is, of course, that, on the view sketched, singular terms such as 'the fastest runner' will be regarded as *temporally non-rigid* expressions, i.e., expressions which may stand for different individuals at different times. In accordance with this, a proponent of the Fregean view under consideration will weaken the classical rule of first-order universal instantiation so that (20) can no longer be derived from (Permanent Identity$_{FO}$). In such a setting, it will *not* be possible, even in the presence of (Permanent Identity$_{FO}$), to argue for reality being somehow incoherent by first inferring from the assumption that at some past time t_{-1}, Usain Bolt = the fastest runner, the conclusion that at the present time t_0, Usain Bolt = the fastest runner, and then using this latter claim to establish a conflict with how things are otherwise at t_0.

Inspired by this, higher-order dynamic absolutists may try to reconcile their position with (Permanent Identity$_{HO}$) by similarly treating tensed sentences such as 'Trump is president' as *temporally non-rigid* expressions, i.e., expressions which may stand for different contents at different times. In accordance with this, they will weaken the rule of higher-order universal instantiation so that (21) can no longer be derived from (Permanent Identity$_{HO}$):

(21) $\forall Q \Box(Q \equiv \text{Trump is president} \rightarrow \Box(Q \equiv \text{Trump is president}))$

In such a setting, it will *not* be possible, even in the presence of (Permanent Identity$_{HO}$), to argue for reality being somehow incoherent by first inferring, from the assumption that at some past time t_{-1}, $A \equiv$ Trump is president, the conclusion that at the present time t_0, $A \equiv$ Trump is president, and then using this latter claim to establish a conflict with how things are otherwise at t_0.[33]

The main problem with this strategy is that it does not ultimately succeed in reconciling the dynamic absolutists' commitment to tensed facts with (Permanent Identity$_{HO}$), even when the class of instances derivable from this principle is restricted in the way described. For we noted, in §3.1, that dynamic absolutism crucially involves a non-standard conception of what it means for facts to be tensed, a conception on which for there to be tensed facts just is for there to be facts that change their contents over time. In a first-order setting, the dynamic absolutists' commitment to tensed facts thus amounted to:

(DA-Tensed-Facts$_{FO}$) $\exists f \exists P(\Diamond Con(f, P) \wedge \Diamond \neg Con(f, P))$

[33]It is assumed here that the sentence constant A is regarded as temporally rigid so that the position under consideration recognizes both rigid and non-rigid sentential expressions, just like the corresponding first-order position recognizes both temporally rigid ('Usain Bolt') and non-rigid ('the fastest runner') singular terms.

In a higher-order setting, in which higher-order facts *are* contents, the dynamic absolutist commitment to tensed facts requires the truth of the higher-order analogue of (DA-Tensed-Facts$_{FO}$), which, once more, replaces talk of facts having contents, expressed with $Con(f, P)$, with talk of facts being contents, expressed with $F \equiv P$:

(DA-Tensed-Facts$_{HO}$) $\exists F \exists P(\Diamond(F \equiv P) \wedge \Diamond\neg(F \equiv P))$

This quantified claim, however, continues to conflict with (Permanent Identity$_{HO}$) even on the variant of higher-order dynamic absolutism presently under consideration (in much the same way in which the first-order quantified claim $\exists x \exists y(\Diamond x = y \wedge \Diamond\neg x = y)$ continues to conflict with (Permanent Identity$_{FO}$) regardless of whether (some) singular terms are treated as non-rigid). The present manoeuvre thus does not ultimately succeed in rendering dynamic absolutism compatible with (Permanent Identity$_{HO}$). Even with the inference from (Permanent Identity$_{HO}$) to instances such as (21) being blocked, higher-order dynamic absolutists must still reject (Permanent Identity$_{HO}$) itself unless they want to give up (DA-Tensed-Facts$_{HO}$) and with it their distinctive claim about what the reality of tense consists in.

With this last effort to reconcile higher-order dynamic absolutism with (Permanent Identity$_{HO}$) and its consequence (Fixed-Content$_{HO}$) having failed too, let us take stock. We have seen good reasons to accept the higher-order version of the Barcan Marcus-Kripke argument, in which case (Permanent Identity$_{HO}$) and (Fixed-Content$_{HO}$) are simply laws of (higher-order tense) logic. Unlike in the first-order setting, dynamic absolutism then fails, in a higher-order setting, as a matter of logic. We have also seen that, rather than somehow allowing for a principled rejection of (Fixed-Content$_{HO}$), core commitments of the dynamic absolutists' position in fact make it particularly hard to reject this principle. Thus, we found the most prominent ways of rejecting the Barcan Marcus-Kripke argument by modifying Leibniz's Law, due to Gallois and Myro, to clash with either the tense realist or the higher-order aspect of higher-order dynamic absolutism. And even if some of the resources appealed to in the argument supporting (Fixed-Content$_{HO}$) may be questioned on temporaryist grounds, the dynamic absolutists—qua *absolutists*—cannot, in fact, on these grounds reject the special case of the argument that supports (Fixed-Content$_{HO}$). Finally, we have considered an attempt to treat tensed sentences as temporally non-rigid, so that the quantified principles (Permanent Identity$_{HO}$) and (Fixed-Content$_{HO}$) can be accepted without having to accept all of their instances involving tensed sentences. This attempt failed to reconcile the quantified principles with dynamic absolutism, because it cannot resolve the tension between (Permanent Identity$_{HO}$) and the dynamic absolutists' conception of what the reality of tense consists in.

5 Conclusion

We have found the higher-order conception of facts to have a two-fold impact on recent debates about tense realism. On this conception, the suggestion that for facts to constitute reality just is for them to exist, as per (C=E), must be rejected on pain of trivializing the debate between realism and anti-realism about tense. And the suggestion that there could be a neutral, absolute, and coherent form of tense realism which allows facts to change their contents over time, as per dynamic absolutism, must be rejected too, this time on pain of a conflict with the laws of higher-order tense logic.

These are important results, not only for higher-orderists. First, they show that questions about the logical space of tense realism and the crucial notion of facts constituting reality, which may have initially seemed to admit of absolute answers, are sensitive to the type of quantification used in the precise formulation of the views in question. Disputes between different tense realist factions, which may have initially seemed to directly concern only the metaphysics of time, thereby turn out to equally concern the question of which general formal framework for metaphysical theorizing should be adopted in formulating the relevant theories and questions.

Second, there are several ways in which a better understanding of the implications of a higher-order approach to the metaphysics of time is important even for those not (yet) convinced of this approach. On the one hand, someone undecided between a first-order and higher-order conception of facts may reach unconditional verdicts regarding the viability of (C=E) and dynamic absolutism if this paper's negative verdicts can be supplemented with corresponding verdicts conditional on a first-order conception of facts. In the case of dynamic absolutism, the supplementary arguments required for this strategy may draw on the problems pointed out by Loss (2018) for dynamic absolutism when this view is understood as postulating first-order facts which are reducible to, or grounded in, their contents. If, on the other hand, a committed dynamic absolutist manages to provide a successful account of their view on a first-order conception of facts, they might take this as a reason to reject the higher-order approach to the metaphysics of time (and, presumably, to metaphysics more generally).

Naturally, however, the results develop their full force when combined with a higher-order conception of facts, in which case they make for unconditional insights into the logical space of tense realist positions and the nature of its occupants. And while this paper has been concerned with drawing out the consequences of this conception of facts, rather than arguing for it directly, it is worth stressing that there are ample reasons to take this conception very seriously in the present context. The reasons are both local and global.

Locally, it has recently been argued that tense realists in particular have a lot to gain from employing primitive higher-order, sentential quantification in formulating their views (Deasy, 2023a: §3). As we have seen, the higher-order approach allows us to express, e.g., the claim that there are tensed facts, (Tensed-Facts$_{HO}$), in a way that avoids any use of an obtainment predicate. It thereby avoids from the get-go potentially awkward questions as to how obtainment is to be understood exactly from a tense realist perspective (e.g., if it is a relation between facts and times, then is the idea that some facts stand in that relation to some but not all times really sufficient to do justice to a dynamic conception of reality? See Deasy (2023a: 2048-2051) for related discussion).

Globally, higher-order accounts of facts, propositions, and properties have been fruitfully employed in a large variety of theoretical contexts recently, where they have shed light, e.g., on the metaphysics of modality and ground. Even someone not convinced of the higher-order conception of facts by considerations local to the metaphysics of time and tense may thus still be attracted to this conception due to the growing abductive case for higher-orderism as a fruitful framework for metaphysics, to which this paper can itself be seen as a further contribution.

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