FELIPE MORALES CARBONELL [*]

# TOWARDS SUBJECT MATTERS FOR COUNTERPOSSIBLES[1]

S U M M A R Y : In this paper, I raise the problem of dealing with counterpossible conditionals for theories of subject matter. I argue that existing accounts of subject matter need to be revised and extended to be able to a) provide reasonable (potentially non-degenerate) verdicts about what counterpossibles are about, b) explain the intuition that counterpossibles are in some sense about what would happen if the antecedent were true, and c) explain in what sense counterpossibles can be about individuals. I sketch how one could extend atom-based and way-based theories of subject matters to handle the problem. Then, I raise the problem that it might be desirable for a theory of subject matter to prevent the inference that certain counterpossibles are about the kinds of things that they seem to mention.

K E Y W O R D S : counterpossibles, conditionals, subject matter, topic-transparency, subject-predicate subject matters, atom-based subject matters, way-based subject matters.

[*]    University of Chile, Faculty of Philosophy and Humanities. E-mail: ef.em.carbonell@gmail.com. ORCID: 0000-0001-5492-0759.

## 1. Introduction

Counterpossibles have caused a lot of headache for philosophers. Mostly, though, the concern with them has been whether they can be true non-vacuously, against the standard or orthodox view.[2] There is, however, a different worry, that sometimes is hinted at in discussions of counterpossibles, but that to my knowledge has never been treated with the full explicitness that it deserves. It is this: what are counterpossibles about?

The question is worrisome because on the absence of an answer, room is left open for debates on counterpossibles to devolve into into discussions about who changed the subject, and how. The problem is already there when we have to evaluate impossible statements in general. Gendler observes that when faced with statements that purport to describe impossibilities, the principle of charity might force us to think that people who utter them must have changed the subject:

> If someone comes up to me and says "Twelve both is and is not the sum of five and seven," it seems that I have no choice but to reinterpret one or more of her terms. Whatever she is talking about, she cannot mean by "twelve" and "both" and "is" and "and" and "not" and "sum" and "five" and "seven" what we mean by those terms. It just does not make sense to say that twelve both is and is not the sum of five and seven; and since I cannot make sense of what it would be for twelve both to be and not to be the sum of five and seven, I surely cannot imagine a story in which it is true that twelve both is and is not the sum of five and seven. (Gendler, 2000, p. 67)

The challenge is typical (cf. Williamson, 2007, p. 177). People who defend the use of counterpossible reasoning need to have an answer to the objection that they are changing the subject. Without a theory of subject matters for counterpossibles, any answer can be criticized as ad hoc or as guided by unreliable intuitions. Note that a similar point can be made against those who object to counterpossible reasoning on the grounds of the change of subject objection, since they also lack such theory. While we can be guided by intuitions in the construction of a theory, we cannot be satisfied with them.[3]

What sort of pre-theoretical intuitions do we have about the subject matter of counterpossibles? Take a counterpossible conditional like:

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[2] Stalnaker (1968; 1987), Lewis (1973), Williamson (2007; 2018), Emery and Hill (2016), and Vetter (2016) defend the orthodoxy. Nolan (1997), Vander Laan (2004), Kim and Maslen (2006), Yagisawa (2010), Brogaard and Salerno (2013), Kment (2006; 2014; 2016), Jago (2014), Bernstein (2016), Priest (2016), Berto et al. (2018), Kocurek (2018), Weiss (2019), Locke (2019), Tan (2019), Berto and Jago (2019), and Kocurek and Jerzak (2021) defend heterodoxy. Cf. also Baker (2007).

[3] Dialectically, however, the burden seems to be on the defender of counterpossible reasoning: the objector could be satisfied with a much weaker theory that assigned degenerate subject matters to all counterpossibles, while the defender may need to show that different counterpossibles have different subject matters.

1)   If 1 + 1 were 3, 1 + 2 would be 4.

A naive answer to the question "what is it about?" is readily at hand: this counterpossible is about the numbers 1, 2, 3 and 4, because those are the numbers that it mentions (this is the Mention-Criterion, or MC for short; cf. Ryle, 1933). The same answer can be given for other counterpossibles:

2)   If the laws of logic were different, different argument forms would be valid (where we can say that the counterpossible is about the laws of logic and argument forms),

3)   If I had different parents, I could have been born in Marseilles (about me, about my parents, about Marseilles).

The naive answer, however enticing it may be, cannot be the full answer. Suppose that these counterpossibles are about these things (and this is an assumption that we may have to drop, as I will argue later). Intuitively, it seems to me correct that in general these counterpossibles are *also* about what would happen, were the antecedent true.[4] While this strikes as something that is generally true about the subject matter of counterfactuals (call it the Counterfactual Subject Matter Principle, or CSP for short), we cannot capture it in the same way as the MC. How to do it?

This paper is largely exploratory in character. It is structured as follows. In Section 2, I will lay down some desiderata for a theory of subject matter of counterpossibles, and examine how current theories of aboutness (subject-predicate-based, atom-based and way-based) can deal with the problem of the subject matter of counterpossibles. To anticipate my assessment: these theories are inadequate to meet those desiderata. Naturally, it is worth asking whether suitable modifications to these theories could make them fit for purpose. In Section 3, I will examine how we can enrich atom-based accounts of subject matters with structure, and how this kind of solution can fare with the issue of the subject matter of counterpossibles. In Section 4 I will sketch a ways-based theory of subject matters where the subject matters of counterpossibles are patterns of counterfactual variance in enriched modal spaces. Both atom-based and way-based theories are shown as viable candidates for a theory of subject matters for counterpossibles, partially vindicating the position of defenders of counterpossible talk. However, in Section 5 I will suggest that a theory of subject matters for counterpossibles should allow for counterpossibles to fail to be about the items that they mention. To make that work, we should favor either a way-based approach or some form of pluralism about subject matter. But it would also undermine some of the intuitions of defenders of counterpossible talk.

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[4] Let me fix a bit of typographical convention: I will use sans serif labels to denote descriptive names for subject matters.

## 2. The State of Things

In what follows, I will assume that a theory of subject matter for counter-possibles can be developed as an extension of a theory of sentential subject matter.[5] There are various alternative accounts of subject matters to draw on. With Hawke (2018), who provides a nice overview of the theories of subject matter available, I will distinguish between subject-predicate-based, atom-based, and way-based conceptions of subject matters.[6] Hawke evaluates the different theories in terms of a series of desiderata. Two of those are particularly relevant here: first, most necessary statements are about something, but not about everything, and second, most impossible statements are about something, but not about everything.[7]

For our purposes here we need to introduce three more desiderata, in line with our brief discussion in the introduction. A theory of subject matters for counterpossibles should, in my estimation:

a)    For any counterpossible (and more generally, for any counterfactual), provide with a reasonable (definite, and potentially non-degenerate) verdict about what its subject matter is.[8]

b)    Capture the intuition behind the CSP, so that for any counterpossible/counterfactual $\varphi \,\square\!\!\rightarrow\, \psi$, its subject matter includes what would be true, were $\varphi$ true.[9]

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[5] The assumption may not be innocent. Edgington (2008), for example, argues that indicative and subjunctive conditionals are not truth-stating and should be treated suppositionally. In the context of a theory of this sort, it may be natural to treat the subject matter of counterpossibles separately from sentential subject matter also. Edgington herself, however, seems to suggest that the subject matter of counterfactuals is the consequent under the supposition of the antecedent. It seems like this can be captured without disentangling the subject matter of counterfactuals and truth-stating sentences. There might be viable theories where this is not the case, but none exists in the literature as far as I can tell.

[6] The distinction has more to do with the metaphysical frameworks they are embedded in than the kind of resources that the approaches make use of to account for subject matters. For example, Hawke himself shows how from some atom-based accounts like his own we can derive both subject-predicate and ways-based theories.

[7] Cf. Hawke's (2018, p. 7). Note that Hawke qualifies with "most", so he leaves it open for some necessities and impossibilities to be either about nothing or about everything. But crucially, he thinks that claims of the forms $\varphi \vee \sim\!\varphi$, $a = a$, $\varphi \wedge \sim\!\varphi$, and $a \neq a$ are about something and not about everything.

[8] Something has a degenerate subject matter when it is about either nothing or anything. The intuition here is that counterfactuals, and by extension counterpossibles, do not (necessarily) have degenerate subject matters.

[9] Arguably, this is an instance of a constraint that Hawke considers but ultimately dismisses in its full generality, which is that we should be able to associate subject matters to questions (Hawke, 2018, p. 7). Not all theorists about subject matter would be willing

c)   Capture the intuition behind the MC, so that for any counterpossible/ counterfactual, the theory says what individuals it is about, if it is about any.

Clearly, a theory that does not meet a) cannot meet b) or c). As our discussion proceeds, I will consider some further constraints that a theory of subject matters for counterpossibles should respect (in particular, I will return to this point in Section 5), but the above will give us a baseline for evaluation.

In the next subsections I will consider how subject-predicate (2.1), atom-based (2.2) and way-based (2.3) accounts can deal with our desiderata.[10]

## 2.1 Subject-Predicate Conceptions

The basic idea of the subject-predicate approach is that subject matters of sentences are the sets of the objects that serve as the subjects of predication in those sentences. For example, the subject matter of "John loves Katy" is {John, Katy}, since in it John is a subject for the predicate "loves Katy" and Katy is a subject for the predicate "is loved by John". A more concrete version of the view can be found in (Perry, 1986). The main ideas there are that: 1) propositions are sets of situations that verify an issue (along the lines of Barwise and Perry's [1983] situation theory), and 2) what a proposition is about is the set of the objects that constitute every member of the proposition. This rationalizes the result above: John and Katy are constituents of every situation that verifies "John loves Katy", so the subject matter of "John loves Katy" is {John, Katy}.

Problems immediately arise when it comes to disjunctions such as "John is in love or Katy is happy", which is verified by situations where John is in love but Katy is not happy, situations where Katy is happy but John is not in love, and situations where John is in love and Katy is happy. There is nothing that is a constituent of all the situations that verify the disjunction, so the subject matter of the disjunction is the empty set (∅). We can interpret this result in two ways: either the disjunction is about everything, given that ∅ is a member of all sets, or it has no subject matter. The issue also affects material conditionals, since they are equivalent to disjunctions.

Similar troubles will beset counterfactual conditionals, and thus counterpossibles. On the one hand, if what a sentence is about is a set of objects, we should expect a material conditional and a counterfactual to be about the same things (call this the Conditional Likeness Principle, or CLP). Intuitively, "If John

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to take this as a necessary constraint on a theory for the subject matter of counterpossibles (for example, Hawke would not be too worried if we cannot associate some subject matter to some question—for them there is no reasonable expectation that there would be). However, I think that the connection between subject matters and questions should be central to our understanding of both, so I will take it as a strike against a theory of subject matters that is not able to say something about the point.

[10] I will only give summary sketches of the accounts. An interested reader should refer to Hawke's (2018) for a more formal overview.

is not in love, then Katy is happy" and "If John were not in love, Katy would be happy" involve the same individuals. But since material conditionals have the problem we just saw, if we assume the CLP, the counterfactual would have ∅ as its subject matter, since the material conditional has it as its subject matter.

There are various ways to solve the issue. The first is to modify the notion of subject matter at play in the theory so that it gives non-degenerate results in the disjunctive case. Barwise (1989, p. 66) seems to go for this option when he says that the subject matter of a proposition is "anything that is a constituent of one of the *possible* facts used to characterize the situation" (emphasis mine). Hence, the subject matter of "John is in love or Katy is Happy" is the set {John, Katy}, as we would expect, and we can apply the CLP to get the desired result for conditionals.[11] The second way to solve the issue is to reject the CLP, to leave space for counterfactual subject matters to diverge from the subject matter of material conditionals or other extensional structures. In this case it is necessary to provide an account of subject matters for counterfactuals that is independent from that of disjunction or the material conditional. The CLP is not a principled way to identify the subject matter of counterfactuals; the reason why the subject matter of the counterfactual includes John and Katy is not that the counterfactual has some relation to some material conditional, but comes from the features of the counterfactual itself. The CLP is a constraint on what kinds of subject matters conditionals could have in a language that contains both material and counterfactual conditionals. Applying the CLP to identify the subject matter of a counterfactual requires that we assume that this constraint is met. This cannot be the case if we have an issue with the subject matter of even material conditionals. So a proper solution to the issue will have to specify the subject matter of disjunctions in a more reasonable way, and provide an independent account of the subject matter of counterfactuals. If that can be done, there may not be a need to reject the CLP or a similar principle (for example, it may be possible to say that for any counterfactual $\varphi \;\square\!\!\rightarrow\; \psi$ with subject matter $m$ there is a material conditional $\varphi \rightarrow \psi$ such that its subject matter $m' \subset m$).

Before we try to come up with a construction that can handle counterfactuals, we should pay attention to the issues that would appear once we try to meet our second desideratum. There are reasons to think that a subject-predicate account cannot meet it even in principle. In fact, there is reason to think that it cannot distinguish between the subject matter of even simpler sentences (for example, "John loves Ann" and "Ann hates John" end up having the same subject matter). In the case of counterfactuals, by the CSP we would have that the "if Samantha were to ask Kira, she would know the answer" has as part of its subject matter what would happen, were Samantha to ask Kira, and "if Samantha were to shoot Kira, she would go to jail" has as part of its subject matter what would happen, were Samantha to shoot Kira. But there does not seem to be any way to say that

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[11] In fact, as we will see, this move gives a theory that is closer to the atom-based conception.

these counterfactuals are about different things in any implementation of the subject-predicate approach. A different way to put this is that what we want is a way to say that counterfactuals talk about what would happen, not merely to whom it would happen. [12] This simply is a consequence of the inter-independence of our second and third desiderata. [13] Since the approach seems to be a non-starter for counterfactual conditionals in general, it cannot even begin to be a satisfactory account of the subject matter of counterpossibles. [14]

## 2.2 Atom-Based Conceptions

In atom-based conceptions of subject matters, the subject matter of complexes is the combination (either the set-union or some kind of fusion) of the subject matters of the atoms that constitute those complexes. Thus, for example, the subject matter of a sentence of the form $p \wedge q \vee \sim q$ is the union of the subject matters of $p$ and $q$. This neatly solves the issue with disjunctions that affects the subject-predicate view (as I pointed out already, Barwise's version of the subject-predicate view, which solves it, simply adopts union instead of intersection for conjunctions and disjunctions), and offers a way forward for handling conditionals of at least some sorts.

We still need a way to obtain the subject matter of counterfactuals. The astute reader will note at once that the atom-based view does not necessarily solve the issue of meeting our second criterion, for the simple reason that it might also assign mere sets of individuals to atoms. In what follows I will consider how atom-based views that do not shoot themselves in the foot in the obvious way fare with counterfactuals and counterpossibles. In particular, I will examine how theories along the lines of Fine's (2020) state-based theory of subject matters and Hawke's (2018) issue theory of subject matters can handle the problem.

Fine's (2020) proposal makes use of the notion of states, which are not complete worlds, but "situations"; he treats worlds as a special case (worlds are consistent and complete, whereas states need not be either). In Fine's theory, not all states need to be possible, and states that necessarily co-obtain need not be identical. States can be constructed unrestrictedly by fusion: for any states $|A|$ and $|B|$ in logical space, there is a state $|A \sqcup B|$ (notationally, I will use $\|A|,|B\|$ in what

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[12] Both Perry (1986) and Barwise (1989, Chapter 5) suggest that we should think of conditionals differently from non-conditional statements. In their view, rather than being about situations and their constituents, conditionals are about the relations between types of situation, or what they call *constraints*.

[13] This can illuminate what a principle like the CLP actually is about. The CLP can only be taken as a principle about *the things* that conditionals talk about, not about what the conditionals are about simpliciter. So it cannot be used to fully identify the subject matter of counterfactuals.

[14] As a reviewer notices, the point can generalize into a more general argument against subject/predicate conceptions of subject matter.

follows).[15] Fine simply identifies subject matters with states: the subject matter of $\varphi$ is the fusion of the exact verifiers and exact falsifiers of $\varphi$.

Because the theory characterizes subject matters in terms of verifiers and falsifiers, it is forced to appeal to the semantics of the relevant expressions. In the case of the subject matter of counterfactuals and counterpossibles more specifically, the theory depends on the semantics for counterfactuals being able to make distinctions between counterfactuals with different impossible antecedents. This means that the semantics for counterfactuals cannot be the standard one. Fine (2012) offers a divergent semantics for counterfactuals that makes use of states instead of worlds, and in his (2021) sketches a way to modify this proposal in order to handle counterpossibles. Fine himself has not provided a theory of subject matters for counterpossibles, so I will now attempt to project one from some of the materials that he has made available. What follows is an admittedly simplified version of what Fine's theory could be, but it will serve to illustrate some problems that a theory of this kind could face.

The core idea of Fine's semantics for counterfactuals is that counterfactuals are primarily concerned with the "outcomes" of states. The antecedents of counterfactuals expresses conditions of change (themselves states) for states, and the consequent expresses something about the outcome of those changes (also states). As a rough characterization of the truth conditions of counterfactuals, Fine claims that a counterfactual $\varphi \mathbin{\Box\!\!\rightarrow} \psi$ is true iff any possible outcome of an $\varphi$-state contains a $\psi$-state.

More explicitly, Fine's (2012, p. 237) view is that $\varphi \mathbin{\Box\!\!\rightarrow} \psi$ is true at a state $w$ iff $u$ inexactly verifies (is partially relevant to) $\psi$ whenever $t$ exactly verifies (is wholly relevant to) $\varphi$ and $u$ is a possible outcome of $t$ relative to $w$. When in the truth condition the $\varphi$-states are restricted to possible states, the semantics gives the same verdict as the orthodox semantics when it comes to counterpossibles. To account for non-vacuous counterpossibles, Fine (2021) suggests the following. States have mereological structure, so they can be decomposed into other states. To calculate the outcomes of impossible states we look into the outcomes of states that they might decompose into—this will mean that impossible states for which we can calculate the outcome normally will be decomposed into possible states for which we can calculate the outcome (*ex hypothesi*).[16] For example, with an atomic $p$, the impossible state $|p \mathbin{\&} {\sim}p|$ decomposes into $|p|$ and $|{\sim}p|$; that is, $||p|, |{\sim}p||$. For an impossible state $s$ that decomposes into possible states $s_1, s_2, \ldots, s_n$ there will be states $t_1^1, t_2^1, \ldots, t_n^1$ which are the possible outcomes of each of $s_1, s_2, \ldots, s_n$. Fine's proposal is to take the fusion of those possible outcomes as the outcome of $s$. This outcome may be an impossible state. Consider the counterfactual:

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[15] For an elaboration of the construction of this state space, see (Fine, 2021).

[16] In principle, there could be decompositions of impossible states into other impossible states for which we can calculate the outcome, but it is not clear from Fine's proposal how this could be made sense of.

4)   If I were vegan and not-vegan, I would both eat exclusively only non-animal based foods and non-exclusively animal based foods.

The antecedent is verified by the impossible state ‖am vegan|, |am not vegan‖, which decomposes into the possible states |am vegan| and |am not vegan|. |eat exclusive non-meat| is a possible outcome of |am vegan|, and |eat non-exclusive meat| is a possible outcome of |am not vegan| (for simplicity, let us suppose that these are the only possible outcomes). Consequently, the outcome of ‖am vegan|, |am not vegan‖ is the (impossible) state ‖eat exclusive non-meat|, |eat non-exclusive meat‖. All the possible outcomes of the $\varphi$-state contain a $\psi$-state, so the counterfactual comes out as true.

Perhaps more interestingly, in this view some counterpossibles come out as false. For example:

5)   If Hobbes had found a counterexample to Fermat's Last Theorem, he would have squared the circle.

Roughly, the idea here is that |squared circle| is not the possible outcome of any plausible decomposition of |counterexample found|, so the counterfactual comes out as false.

We might reason that in that case we do not actually need to decompose |counterexample found|: since |squared circle| is itself impossible, it cannot be the possible outcome of any possible state). However, this creates a complication with

6)   If Hobbes had found a counterexample to Fermat's Last Theorem, he would have found a counterexample to Fermat's Last Theorem.

Since |counterexample found| is impossible, by parity of reasoning it cannot be the outcome of any possible state, so it is not the outcome of any decomposition of |counterexample found|, and the counterfactual seems to evaluate as false. However, intuitively, the counterfactual should come out as true (even Berto, French, Priest, Ripley, 2018 accept reflexivity). To make this work Fine has to add explicitly the assumption that impossible states always decompose into possible states, or that it does given the conditions of the case (however those are spelled out). Then, the possible states into which |counterexample found| decomposes must be possible outcomes of the possible states into which |counterexample found| decomposes, just by reflexivity on possible states, which is uncontroversial. The reason why (5) is false is that the possible states into which |squared circle| decomposes are not possible outcomes of the possible states into which |counterexample found| decomposes. Since the falsity of the counterfactual depends on the decompositions of its components, other false counterpossibles will have different falsitymakers.

If we plug this machinery into the Finean conception of subject matters we get that the subject matter of the counterfactual is exactly the fusion of its verifiers and falsifiers. Since different counterpossibles can be made true and false in different ways, we can distinguish between the subject matter of different counterpossibles.

While the full Finean picture (the union of his theory of subject matters and his semantics for counterfactuals) can give an account of the subject matter of counterpossibles, one may wonder if the theoretical cost of adopting Fine's framework is too high.[17] Besides, the theoretical costs of the framework are difficult to assess because some of its central notions are under-specified; for example, the notion of an outcome is not fully delineated, so it it not clear how fit for generalizations it is. Consider, for example, mathematical counterpossibles: what is the "outcome" of a mathematical antecedent? What we need is something that can support the structure of the theory across domains—and that, whatever it is, may not match with Fine's notion of an outcome.[18] Furthermore, there is no obvious way to understand the connection between the kind of states that the theory predicts as the subject matters of counterpossibles, and the kind of question that we want to capture by our second desideratum.[19]

Another problem is that the assumptions about the decomposition of states that Fine's semantics of counterfactuals requires are highly controversial. Remember the attempted solution to the problem of validating reflexivity, which required the assumption that impossible states can always be decomposed into possible states. This is unsatisfying, because: 1) there is no principled way to decompose impossible states like |counterexample found|, and 2) the assumption may seem ad hoc (why could not there be "primitive" impossible states, and why, for example, could not |counterexample found| be a primitive impossible state?).[20]

A different problem is that it is not clear that the theory even yields the correct predictions about truth values for counterpossibles: since states are easy to come by by fusion, the theory might over-generate candidate outcomes, which in

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[17] Along similar lines, Yablo (2018, p. 1497) raises the worry that the benefits of moving from a framework of worlds (which are relatively well understood) to the framework of states might not be worth it. Fine (2020), of course, argues otherwise. Here, I will not attempt to adjudicate what approach will fare better in terms of the cost/benefit analysis of theoretical virtue.

[18] Fine (2012, p. 237) warns that we should not be misled by the term "outcome", and that in some cases (such as the case of "if his peg had been round then it would not have fit the hole") the outcome-relation "could be taken to be more logical or conceptual in character", so his notion is more general than one could be led to think from his treatment of causal examples, and consequently we should not treat the worry raised here as a knockdown argument against the approach.

[19] Relatedly, Hawke (2018, p. 25) raises the question why we should think of Finean states as subject matters at all.

[20] Fine (2021, pp. 154–156) is aware of the point, and sketches some ways to deal with such "modal monsters", although it is not clear to me how they would solve the current problem concretely (of course this does not mean there is no way).

turn gives more ways for counterpossibles to come out as true.[21] In fact, the application of unrestricted fusion to construct impossible states should be regarded with suspicion. For the kind of impossible states that we need to consider, the application of fusion is the only reason to think that they may exist; we cannot say that, given that those impossible states exist, they must have been built by fusion from other states. The introduction of those states to the ontology is accepted merely on the basis of theoretical benefits.

Hawke (2018) proposes a different atom-based theory of subject matters, the issue theory. The guiding idea behind this proposal is that subject matters are systems of distinctions, which are associated to issues concerning whether the world is a certain way or not. The same issue can be answered in different ways by different worlds: those are the ways things are in those world relative to the pertinent subject matter. This idea gives itself more naturally to atomic sentences, which locate a world as distinguished concerning a certain subject matter (in the ordinary sense). More generally, then, subject matters of sentences will be sets of distinctions. For complex sentences, these sets are built by union of the subject matters of the atoms that compose them.

The issue theory of subject matters seems like a solid contender against Fine's. Hawke shows that both theories meet equally well a series of desiderata for theories of subject matters. However, an advantage of Hawke's account is that it does not require the heavyweight state ontology that the Finean proposal requires, and the primitive notions at play are reasonably well specified (which was not the case with the Finean notion of an outcome, as we saw above). The theory is also able to give verdicts about subject matters without having to appeal to the semantic and meta-semantic properties of the sentences at hand. But how well does it fare with counterpossibles?

In the issue-theorist's proposal, distinctions are modeled as ordered tuples of general and individual concepts. Thus, the topic of $Fa \land Fb$, $t(Fa \land Fb)$, is $\{<\mathfrak{F}, \mathfrak{a}>\} \cup \{<\mathfrak{F}, \mathfrak{b}>\}$, that is, $\{<\mathfrak{F}, \mathfrak{a}>\}, \{<\mathfrak{F}, \mathfrak{b}>\}$. The approach allows the subject matter of different impossibilities to be distinguished: for example, $t(Fa \land \sim Fa)$ is not the same as $t(Gb \land \sim Gb)$. With this, one can also distinguish between conditionals with different impossible antecedents. What one cannot do is to distinguish between indicative and subjunctive conditionals.[22] Without this ability, the approach cannot meet out second desideratum, assuming that indicatives and counterfactuals answer different questions (that is, if "what happens, if $X$?" is different from "what would happen, if $X$?", which strikes me as plausi-

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[21] The issue compounds on the problem that it is not entirely clear how we should calibrate the verdicts of a theory of truth conditions for counterpossibles (this is, after all, why the debate on their truth conditions remains). Cf. Williamson's (2021) for some related worries.

[22] Perhaps this needs not concern theorists who argue for a unified treatment of both kinds of conditionals, like Starr (2014).

ble).[23] In any case, even if having a way to distinguish between the subject matter of different classes of conditionals was not sufficient to satisfy the second desideratum, it would be desirable for a theory of subject matters to have this capacity.

## 2.3 Way-Based Conceptions

In way-based conceptions of subject matters, the notion of a way is taken as a primitive. Subject matters are sets of ways that things could be. The most prominent versions of the approach are Lewis' (1998b, 1998a) and Yablo's (2014).

Lewis' view builds on the idea that worlds that are exactly alike make true the same things with respect to the same subject matters. In worlds where a class of objects $O$ is alike, truths about $O$ will be alike. Worlds which are exactly alike with respect to a subject matter will make true the same things about that subject matter. Consequently, we can group worlds in equivalence classes that exhaust the ways that worlds can be with respect to those subject matters (they partition modal space in the ways in which worlds can be with respect to them). Lewis proposal is then to identify subject matters with equivalence relations or the partitions of those equivalence classes. Yablo (2014, pp. 27–28) offers two additional characterizations of Lewisian subject matters: i) as specifications of what goes on each world with respect to the subject matter, and ii) as sets of propositions that correspond to questions (the subject matter of "Francis won the championship" is the answer-set to the question "who won the championship?", that is, who won the championship).

How to apply this to counterfactuals and counterpossibles? Consider the following counterfactual:

7)     If it had rained yesterday, the plants would not have withered.

Intuitively, as per the CSP, it has as its subject matter what would have happened, had it rained yesterday. In Lewis' account, what that is depends on the account we have for the truth conditions of counterfactuals, since we require those to determine what worlds are exactly alike in what respect to the subject matter: the subject matter of (7) is the partition of ways in which (7) would have been true (or false). Paired with Lewis' own semantics, we have that the subject matter of (7) is the partition of ways in which either (i) in no world it rained yesterday (where the counterfactual would be vacuously true), (ii) in which there is a sphere of worlds $S$ such that it rained in some world $s$ in $S$, and where it is

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[23] Hawke does not consider a language with an intensional conditional, but Berto (2018) does (he considers a language with a strict conditional). There, we are told that the subject matter of a sentence is the set union of the subject matters of the sentence's atoms, so the subject matter of strict conditionals should be equivalent to the set union of the subject matter of the antecedent and consequent (note that this is extrapolation, the explicit theory of subject matters given there does not assign subject matters to strict conditionals explicitly).

true that for all worlds in $S$, if it rained, the plants did not wither (where the counterfactual would be non-vacuously true), or (iii) in which there is a sphere or worlds $S$ such that it rained in some world $s$ in $S$, and where it is false that for all worlds in $S$, if it rained, the plants did not wither (where the counterfactual would be false). In the Lewisian picture, we evaluate the truth of a counterfactual in the context of a system of spheres of worlds. This system of spheres, which is a partition of logical space, naturally corresponds to a subject matter.

When we apply this to counterpossibles, which are vacuously true, we get the result that the resulting partition contains as its sole member the whole set of possible worlds (in every world, the counterfactual is made true vacuously). Further, all counterpossibles have the same subject matters. Lewis admits the same with regards to contradictions:

> The proposition expressed by a contradiction is about any subject matter because, since there is no way at all for two worlds to give it different truth values, *a fortiori* there is no way for two worlds to give it different truth values without differing with respect to the subject matter. (1998a, p. 121)

But intuitively, we want to say that the subject matters of

8)     If I had different parents, I would have lived in Ontario,

9)     If Nero had not been Nero, he would have been a butterfly

are different, so Lewis' theory of subject matters plus his semantics for counter-factuals cannot provide an account for the subject matter of counterpossibles.[24] A potential approach to solve this issue is to extend the theory to make use of "impossible" worlds (our previous discussion of Fine's atom-based theory can provide some hints about how this could go). I will return to this later.

Yablo (2014, p. 27) maintains what he takes to be the central idea of Lewis account, that a subject-matter is "a system of differences, a pattern of cross-world variation". His proposal extends Lewis' theory by switching equivalence classes by similarity classes, so that instead of partitions of logical space we get divisions of logical space, which can overlap.[25] Alternatively, he elaborates a notion of sentential subject matters that makes use of the notion of truthmaking: a sentence $s$'s *subject matter* $\vec{s}$ is the set of its potential truthmakers, a sentence $s$'s *subject anti-matter* $\overleftarrow{s}$ is the set of its potential falsitymakers, and its *overall subject matter* is the unordered-pair $\{\vec{s}, \overleftarrow{s}\}$.

While this is an improvement over Lewis' theory, there are problems with this as well. The most troublesome for the problem of counterpossibles is that

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[24] Hawke (2018, p. 709) raises the same problem for way-based theories with the case of logical validities: the subject matter of any expression of the form $\varphi \lor \sim\varphi$ is everything.

[25] In a footnote he advances that we should be more liberal still, replacing divisions with what he calls covers.

Yablo's account may still be inadequate to handle some hyperintensional contexts.[26] Fine raises the point as a reason to favor his state-based account:

> If one thinks of a subject matter as being given by a set of states, then this means that certain hyperintensional differences in subject matter may be lost once one moves to the corresponding equivalence or similarity relation on worlds. One subject matter may be *mathematical truth*, another *metaphysical truth*, each constituted by certain necessary states. The subject matters are quite different and yet the corresponding relations will be the same, since all worlds will agree on the mathematical facts and all will agree on the metaphysical facts. (2020, p. 151)

If the subject matter of counterfactuals is the division of ways in which the counterfactual can be similarly true or false, we will again have the problem that counterpossibles with a standard semantics will share their subject matter: the overall way the world is.[27] I will return to way-based accounts in Section 4.

## 3. Enriching Atom-Based Accounts With Structure

Summarizing the previous section: some straightforward ways to deal with the issue of the subject matter of counterpossibles utilizing existing approaches are deficient. On the one hand, neither subject-predicate nor atom-based approaches seem able to meet our second desideratum. On the other hand, existing way-based approaches seemingly cannot provide with a way for different counterpossibles to be about different subject matters, and thus fail to meet the first desideratum. We need something else.[28]

In this section, I will sketch one way that we could proceed to extend the atom-based approach so that it can handle the second desideratum. In the next section, I will sketch how we could proceed starting from a way-based approach.

The problem we are facing is really that the theories of aboutness we have available are theories of the subject matter of a limited range of sentences, namely those that can be constructed from atoms by negation, conjunction and disjunction. Conditionals fit awkwardly in this context (the material conditional can

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[26] Yablo (2014, pp. 92–94) hints at some ways to make sense of impossibilities; they can be understood as relatively possible with respect to a limited set of constraints, even if they are impossible when all constraints are considered. So, roughly, at least part of the subject matter of counterpossibles may be the part of what they say that does not take into account those constraints.

[27] Hawke (2018, p. 15) notes that there are some variations of Yablo's proposal that can circumvent the issue, but these also fail for other reasons.

[28] In more recent and unpublished work, both Fine and Yablo have provided more refined versions of their theories of subject matter (for example, Yablo has explored ways to account for sub-sentential subject matter that could be illuminating for our present discussion; cf. also Yablo's [2020] account of aboutness for sentences involving fictional names). In this paper I do not have enough room to deal with how those adjustments could treat the issue of the subject matter of counterpossibles.

be captured, but some might have qualms about it being a correct rendering of indicative conditionals). Intensional conditionals fit the picture only if we treat them as atoms, or as somehow equivalent to other complex constructions like conjunctions or disjunctions. The general problem is that in intensional conditionals structure matters in a way that cannot be captured by the usual rules of topic composition for propositional operators—where for any operator pair of distinct propositional operators $<\circ_1, \circ_2>$, $t(\varphi \circ_1 \psi) = t(\varphi \circ_2 \psi)$. My guiding intuition, on the contrary, is that the subject matter of $\varphi \,\square\!\!\rightarrow\, \psi$ is not *just* the subject matter of $\varphi \wedge \psi$ in the best of cases (where they overlap to some extent).[29]

The problem does not actually appear only in the case of subjunctive conditionals. Take an strict conditional, and consider

10)   If the question was open yesterday, it has not been answered today,

11)   Necessarily, if the question was open yesterday, it has not been answered today.

The first is compatible with there being a world where the question was open yesterday (that is, at a counterpart time) and the question having been answered today (at a counterpart time), while the second is incompatible with it. For the first it is enough that the world of evaluation verifies the conditional, while for the second it is also a concern (in the ordinary sense) whether the same holds across all accessible worlds. So while the first is about what goes on in a world in particular, the second is also about what goes on in the whole arrangement of worlds in logical space. What this suggests is that in some sense, intensional operators such as $\square$ are not topic-transparent in the same way that negation is: $t(\square\varphi) \neq t(\sim\varphi) = t(\varphi)$. But if that is so, then why should negation itself be topic-transparent? And why should conjunctions and disjunctions (and material conditionals) be relatively topic-equivalent?

Because we also may have the intuition that, in some sense of "being about", disjunctions and conjunctions, as well as arbitrary formulas and their negations, are about the same things, it seems like something has to give.[30] Despite appearances, in fact we are not forced to make a choice. The way out of the problem, or at least the way out that I will endorse here, is to say that there are different senses of "being about" and that when those are properly distinguished there is no tension. In fact, theories of aboutness like Hawke's already distinguish between a general sense of aboutness (in the case of the issue theory, *atomic-aboutness*), and more restricted senses like that of being about something in particular or

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[29] Cf. Berto and Özgün's (2021) where they argue that in the case of on-topic conditionals, the subject matter of $\psi$ must be included in a subject matter that contextually extends on the subject matter of $\varphi$, that is the subject matter of $\varphi \wedge \psi \wedge \rho$, where $\rho$ is additional information that is contextually relevant. The subject matter of on-topic conditionals is, then, $t(\varphi \wedge \psi \wedge \rho)$. But nothing is said about the topic of off-topic conditionals; one possibility is to take it to be the union of $t(\varphi \wedge \psi)$ and $t(\psi)$.

[30] Perry (1986) and Hawke (2018) both take those as requisite constraints for a theory of aboutness.

*objectual-aboutness* ("Fido is happy" is about whether Fido is happy—
$\{<\mathfrak{H}, \mathfrak{f}>\}$— but also about Fido himself). Note that while objectual aboutness
can be recovered from atomic-aboutness, the opposite cannot be done. In other
words, objectual aboutness is lossy with regards to atomic-aboutness. Likewise,
atomic-aboutness is lossy with regards to richer senses of aboutness, like those
where we can distinguish between the subject matter of different types of condi-
tionals with identical atoms.

I will now sketch a way to develop this idea more explicitly. Assume a lan-
guage $\mathcal{L}$ with a set $\mathcal{L}_{CONST}$ of constants ($c_1, \ldots, c_n$), a set $\mathcal{L}_{PRED}$ of non-structural
predicates of arbitrary arity ($P_1^1, \ldots, P_1^n, \ldots, P_n^1, \ldots, P_n^n$), and a set $\mathcal{L}_{STRUCT}$ of
"structural" elements of arbitrary arity (this would include negation, the logical
connectives, modal operators, conditionals, etc.).[31] The syntax of the language will
be as usual, allowing binary predicates to be used both in prefix and infix notation.

Semantically, we follow Hawke's account with some (mayor) differences.
A model $M$ is a tuple $<W, O, a, s>$. $W$ is a set of worlds. $O$ is a set of objects. $a$ is
an assignment function that maps each $c \in \mathcal{L}_{CONST}$ an individual concept $\mathfrak{c}$, each
$P$ in $\mathcal{L}_{PRED}$ a general concept $\mathfrak{P}$, and each $\nabla \in \mathcal{L}_{STRUCT}$ a general concept $\nabla$ that
plays the corresponding structural role. $s$ is a function that maps sentences in the
language to subject matters (I will call these *prime* subject matters), as follows:

- $s(P_n c_n, \ldots, c_m) = <\mathfrak{P}_n, \mathfrak{c}_n, \ldots, \mathfrak{c}_m>$
- $s(\nabla\varphi) = <\nabla, s(\varphi)>$
- $s(\nabla\varphi_n, \ldots, \varphi_m) = <\nabla, <s(\varphi_n), \ldots, s(\varphi_m)>>$

This allows us to distinguish between the subject matter of conditionals, as
we wanted. Assuming that $\rightarrow$ and $\square\!\!\rightarrow$ are in $\mathcal{L}_{STRUCT}$, $s(\varphi \rightarrow \psi) \neq s(\varphi \square\!\!\rightarrow \psi)$
(since $\langle\rightarrow, \langle s(\varphi), s(\psi)\rangle\rangle \neq \langle\square\!\!\rightarrow, \langle s(\varphi), s(\psi)\rangle\rangle$). Furthermore, it is easy to check
that the theory also allows us to distinguish between counterpossibles; for exam-
ple, $s((Fa \wedge \sim Fa) \square\!\!\rightarrow Gb) \neq s((Gb \wedge \sim Gb) \square\!\!\rightarrow Ga)$.

We can now define a function, $A$, that for each sentence yields an atomic-
subject matter, which is the set tuples of the form $<P_n, c_m, \ldots, c_m>$ that we get
traversing the prime subject matter of the sentence recursively. It turns out that
these subject matters are exactly those that the issue-theory predicts (so, $A(\varphi) =
A(\sim\varphi)$, $A(\varphi \wedge \psi) = A(\varphi \vee \psi)$, and so on). We also define a function $\mathfrak{D}$, that for

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[31] I do not include variables and quantifiers because Hawke's theory does not include
them either. While I do not have space to evaluate this possibility, as a reviewer notices,
the introduction of quantifiers might provide a different kind of account for the subject
matter of counterpossibles, treating them (and other kinds of counterfactuals) as quanti-
fied structures of some sort. Yablo's (2014, pp. 61–67) treatment of quantifiers and condi-
tionals could suggest something like this. Plebani and Spaolore (2020) provide accounts
of subject matter that include a treatment of quantified sentences, and Badura (2020)
suggests that this extension should be made to Hawke's models.

each sentence yields its objectual subject matter, which is the union of all sets of individual concepts contained in each tuple in the sentence's atomic subject matter.

With these modifications, we have a theory that allows us to meet our first and third desiderata, and that it seems to go some way towards meeting the second, by being able to distinguish the subject matter of different types of conditionals. But this is not sufficient yet, because we want to have some reason to think that the structures that the theory predicts as the subject matter of sentences has some systematic link to the kinds of questions that we associated to counterfactuals in the second desideratum. That is: how come $\langle \square\!\rightarrow, \langle s(\varphi), s(\psi) \rangle \rangle$ represents, for example, the question what would happen, were $\varphi$ the case?

Before trying to tackle this issue, there is a different point that we need to address. Prime subject matters as described in the theory match the syntax of sentences very closely. In fact, they are in a 1:1 mapping to syntax trees. But if subject matters match with syntax, why think that subject matter is a different dimension to meaning, as Yablo (2014), Fine (2016) and others suggest? It is part of the presuppositions of the various approaches to subject matter that it represents some stopping point in the continuum between extension and syntax, to the right of where intension would lie, but never at the very extreme.[32] In truth, the theory we have can be seen as the top of a lattice of different theories of subject matters that yield different prime subject matters, where we can find a theory where $s$ is replaced by something that is functionally equivalent to $A$, and also a theory where $s$ is replaced that something that is functionally equivalent to $\mathfrak{D}$. At different points in the lattice, different syntactic elements are "ignored" so that prime subject matters do not capture them.

To implement this idea, we could add a designated element $\circ$ ("blank") to our models. We could then adjust $s$ so that it behaves differently if some elements have been "blanked out" by the $a$ function:[33]

$$s(P_n c_n, \ldots, c_{m'}) = \begin{cases} \{\mathfrak{P}_n\} & \text{if } \forall c \in c_m \ldots c_{m'}, a(c) = \circ \\ \{\langle \mathfrak{P}_n, c_m \ldots c_{m'} \rangle\} & \text{if } a(P_n) \neq \circ \\ \{a(c) \mid c \in c_m, \ldots, c_{m'} \text{ and } a(c) \neq \circ\} & \text{if } a(P_n) = \circ \\ \emptyset & \text{otherwise} \end{cases}$$

$$s(\nabla\varphi) = \begin{cases} s(\varphi) & \text{if } a(\nabla) = \circ \\ \{\langle \bar{\nabla}, s(\varphi) \rangle & \text{otherwise} \end{cases}$$

$$s(\nabla\varphi_n, \ldots, \varphi_m) = \begin{cases} \bigcup s(\varphi), \ldots, s(\varphi_m) & \text{if } a(\nabla) = \circ \\ \{\langle \bar{\nabla}, \langle s(\varphi_n), \ldots, s(\varphi_m) \rangle \rangle\} & \text{otherwise} \end{cases}$$

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[32] I take this observation from Leitgeb's (2018, p. 4).

[33] Some structures that in the previous version of the theory were simply tuples have been wrapped into sets here. This is done so that in cases where structural elements are blanked out, the output of $S$ is uniform.

The kind of theory of subject matters we will get depends on what syntactic elements of sentences are blanked out by the $a$ function. For example, the theory we had sketched before does not blank out anything, while the issue-theory blanks out all members of $\mathcal{L}_{STRUCT}$ (in this case, prime subject matters and atomic subject matters coincide). When $\mathcal{L}_{STRUCT}$ is not empty, there might be many intermediate theories that blank out only some of the elements of $\mathcal{L}_{STRUCT}$, where prime subject matters and atomic subject matters do not coincide.[34]

**Figure 1**

*Some Theories of Subject Matters*

$$S_1$$
$$\downarrow$$
$$S_{1.1} \qquad\qquad a(\sim) = \circ$$
$$\downarrow$$
$$S_{1.3} \qquad\qquad a(\wedge) = a(\vee) = \circ$$
$$\downarrow$$
$$S_{1.4} \qquad\qquad a(\square\!\rightarrow) = \circ$$
$$\downarrow$$
$$S_2 \qquad\qquad a(\mathcal{L}_{STRUCT}) = \circ$$
$$\swarrow \qquad \searrow$$
$$a(\mathcal{L}_{CONST}) = \circ \qquad S_3 \qquad S_4 \qquad a(\mathcal{L}_{PRED}) = \circ$$
$$\searrow \qquad \swarrow$$
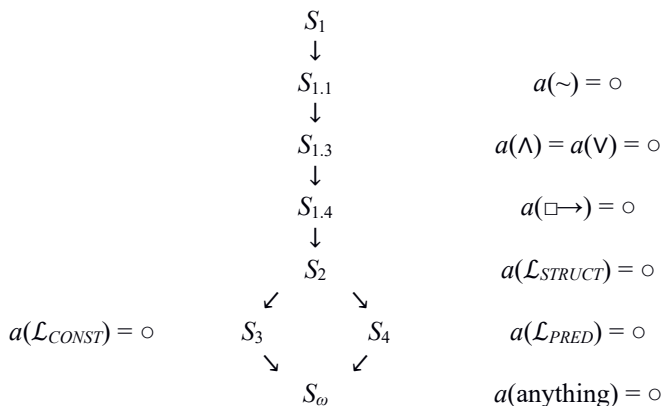$$S_\omega \qquad\qquad a(\text{anything}) = \circ$$

Figure 1 shows this as a subgraph of the lattice of theories that results from adjusting the $a$ function. Each arrow in the figure adds a condition to $a$. $S_1$ is the theory of subject matters with no blanked out elements, $S_2$ is equivalent to the issue theory, $S_3$ is a theory of predicative subject matters, $S_4$ is a theory of objectual subject matters, and $S_\omega$ is a trivial theory that assigns the empty set as the subject matter of all sentences (this theory lies at the bottom of the lattice). For the reasons I have given already, we should not expect a theory below $S_{1.4}$ to be able to distinguish between counterfactuals and other conditionals, even if it could distinguish between counterpossibles (in the issue theory $S_2$, "if Hobbes had squared the circle, Hobbes would have squared the circle" and "if Hobbes had squared the circle, children in the Andes would have cared" have different subject matters). This suggests that the weakest theory we should adopt from this perspective must be stronger than $S_{1.4}$. Because any theory at least as strong as $S_2$ (so *a fortiori* any theory stronger than $S_{1.4}$) has the resources to account for most types of subject matter of interest, nothing seems to be lost in doing so.[35]

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[34] Fine (1986) considers some variations on theories where connectives contribute to the content of sentences.

[35] Note that we need a theory at least as strong as $S_4$ to meet the third desideratum.

Thus, despite its closeness to syntax, the top theory $S_1$ may not be a bad candidate after all for the theory of prime subject matters, at least for our purposes here.[36]

The structure that results gives one suggestion about how subject matters in the sense of these theories can be mapped to questions. Pick a theory of subject matter $S_n$ and take the prime subject $\sigma_{Sn}$ for a sentence $\varphi$. We can get a set of questions by producing variations of $\sigma_{Sn}$ where any number of nodes (either sub-sentential or sentential) are replaced by a series of indexed "null" elements $\_1$, …, $\_n$. So, e.g., for a sentence $Fa$ we have $\sigma_{S_1} = \{<\mathfrak{F}, \mathfrak{a}>\}$, and then we get the set $Q = \{<\mathfrak{F}, \mathfrak{a}>, <\_1, \mathfrak{a}>, <\mathfrak{F}, \_1>, <\_1, \_2>, \_1\}$. These structures can be interpreted as the questions "is $a$ $F$?", "what is true of $a$?", "what does $F$ apply to?", "what is true of what else?", and "what is true?". In the case of counterfactuals, we will have (among others) structures of the form $<\Box\rightarrow, s(\varphi), \_1>$, which can be interpreted as standing for questions of the form "what would be true, if $\varphi$ were true?". The same applies, *mutatis mutandis*, for counterpossibles. Thus, we can count our second desideratum (that required us to link the subject matter of counterpossibles to questions of precisely this form) as satisfied.

## 4. Counterfactuals and Patterns in Modal Spaces

There may be several objections to the approach of enriching atom-based accounts of subject matter in the way I have done in the previous section (in fact, in Section 5 I will raise an issue against it). Since in any case we need a theory of subject matters for counterfactuals and counterpossibles, it is desirable that objectors are able to provide a replacement. One broad class of objectors would be constituted by those who would prefer to follow a way-based approach to the construction of a theory of subject matters. Can we have a theory that meets all the desiderata if we start from a way-based approach?

One way to attempt it, as hinted above, would be to extend modal space with impossible worlds, and adopting an alternative semantics for counterfactuals.[37] Then, were could be worlds where counterpossibles are true or false in different ways (like in Fine's state semantics, where they would have different truth- and falsity-makers). To see how the approach would look like, consider Berto, French, Priest & Ripley's (2018) semantics for counterfactuals. They assume that there is a universe of worlds, both possible and impossible. In their semantics, frames include an accessibility relation $R_\varphi$ for every formula $\varphi$ in the language, and their models add to the frames a valuation function $v$ that assigns truth values to sentences at worlds. For possible worlds, $v$ assigns a value only to propositional parameters. At impossible worlds, the value of all sentences is assigned

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[36] To capture less fine-grained theories, the $s$ function could also be adjusted in order to make different sentences have the same subject matter despite syntactical differences. That way, for example, $\sim(\varphi \wedge \sim\psi)$ and $\varphi \rightarrow \psi$ and could be made subject-matter-equivalent without having to blank out structural elements.

[37] Here I will not deal with criticisms to this kind of approach, although they remain influential (e.g., Williamson, 2018).

atomically (the guiding thought there is that at impossible worlds the laws of logic are different, in any possible way—so the value of $\varphi \nabla \psi$ could be anything; cf. Priest, 2005, p. 16). The truth conditions for the counterfactual are stated as follows:

- $w \vDash \varphi \,\square\!\!\rightarrow \psi$ iff for all $w'$ such that $wR_\varphi w'$, $w' \vDash \psi$

The relation $R_\varphi$ is intended to be understood so that $wR_\varphi w'$ means that $w'$ is, *ceteris paribus*, the same as $w$, except that $\varphi$ is true in $w'$. Accordingly, it is supposed that if $wR_\varphi w'$, then $w' \vDash \varphi$, and if $w \vDash \varphi$, then $wR_\varphi w$. Take

12)   If Hobbes had squared the circle, Hobbes would have squared the circle.

Then, consider a world $w_1$ *ceteris paribus* like ours, except at that world Hobbes squared the circle (this is an impossible world). In $w_1$, Hobbes squared the circle, and since $w_1$ was arbitrary, at all worlds *ceteris paribus* like ours where Hobbes squared the circle, Hobbes squared the circle. So the conditional comes out as true. Now consider

13)   If Hobbes had squared the circle, children in the Netherlands would have cared.

Likewise, consider a world where Hobbes squared the circle. There is a world that is *ceteris paribus* like it, where children in the Netherlands care for Hobbes's result. But at the same time, there is a world *ceteris paribus* like it where children do not care for it. So the counterfactual comes out as false. Now, consider a world where children in the Netherlands had paid special attention to the issue of whether the circle could be squared, and a world *ceteris paribus* like it where Hobbes had squared the circle. In worlds like that, we should expect children in the Netherlands to care about Hobbes' results. So in those worlds, the counterfactual should come out as true. In worlds where all European children are worried about squared circles, the counterfactual should also come out as true. Assuming Yablo's theory of subject matters, the subject matter of the counterfactual is the division of worlds where it is similarly true or false. The divisions whether (Dutch, European, any) children would have cared if Hobbes had squared the circle are included in the division corresponding to the subject matter what would happen if Hobbes had squared the circle. So the approach seems to be able to meet our first two desiderata. For meeting the third, we could stipulate that counterpossibles are about whatever is a part (in some sense) of all or some the ways in which the counterpossibles are true or false. So "if Hobbes had squared a circle, Hobbes would have squared a circle" is about Hobbes because it is a part of all the ways in which it could be true or false. I will revisit the point in Section 5.

It is worth considering a different way to extend the way-based approach. Underlying both Lewis' and Yablo's theories of subject matters is the idea that subject matters are "systems of differences" or "patterns of cross-world varia-

tion". In a cell-conception of subject matter like the one we have assumed so far, those patterns are "tilings" or "coverings" of logical space, and these are groupings of points (worlds, states) in logical space. Remember, however, the structure that Fine's proposal attributes to counterfactuals, with states having other states as outcomes. Rather than patterns of worlds/states, one might want to consider patterns of patterns of worlds/states: from states similar to the antecedents, we can get to states similar to the outcome-states of the antecedents. An idea, then, is to make the subject matters of counterfactuals patterns of transitions between states, which is naturally understood as a similarity relation over pairs of states and state-spheres. We do not need to assume that the relation between states and state-spheres is like Fine's outcome relation; a relation of similarity like in the traditional approach to counterfactuals could play a role here too. What would be true if I was not a philosopher is a system of different ways in which states in which I am not a philosopher relate to states that stand in certain relations to the states where I am not a philosopher. What would be true if I was not in Europe is part of patterns of patterns that also includes what would be true if I was not a philosopher, like what would be true if I was not in my actual situation. Intuitively, that is the pattern of patterns that includes all the counterfactuals about me (the common subject matter for all counterfactuals about me). To handle counterpossibles, we still need to include impossible worlds/states. But this extension to the way-based approach would yield an even finer-grained picture of subject matters.

## 5. Are Counterpossibles About the Things They Mention?

As we have seen, it is possible to develop theories of subject matters for counterpossibles along the lines of both atom-based and way-based approaches. These theories are in principle able to meet all the desiderata we set out for a theory of subject matters. Ideally, we should find a way to to decide between these approaches.[38] In this section I will raise an issue that could be decisive in this way. The problem is as follows. Suppose that it were reasonable to hold that a counterpossible is about what would happen if a fact concerning an object *a* were to happen at the same time that it is not about *a*. Under certain assumptions, the structurally-enriched atom-based theory of subject matters cannot not make this difference in a natural way, while the way-based theory can. Consequently, the latter should be preferred. The argument is not decisive because support for the crucial supposition is controversial. In what follows, I will try to motivate the supposition, show why the atom-based theory cannot make the distinction in a way that is natural, and how the way-based theory could.

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[38] Why not think that both approaches give us valid accounts of subject matter? A form of pluralism could be tempting. However, even for a pluralist there might be a further question about which of the approaches is more fundamental. Hawke (2018) shows that a way-based conception of subject matter is derivative from the atom-based account that he endorses. But the fact that a way-based theory can be derived like this does not entail that atom-based approach is in general more basic.

To see what may motivate the supposition, consider a counter-mathematical:

14)   If 1 + 1 was 3, then 1 + 2 would be 4.

It makes some sense, I think, to believe that (14) is about what would happen if 1 + 1 was 3.[39] This is what the CSP seems to predict, so one may be independently disposed to believe it. Does it make sense to think that (14) is about the numbers 1, 2, 3 and 4, that it mentions (that is, that {1, 2, 3, 4} is its objectual subject matter)? Now, I think that is something that one may find less intuitive, even if one thought that (14) must have some objectual subject matter.[40] This combination of positions may perhaps be held reasonably; so the supposition (of which this is an instance) may be *prima facie* plausible. I suspect a view where the supposition is vindicated will be attractive to those who are somewhat skeptical (but not fully skeptical) about counterpossibles, since it would allow for counterpossibles to have subject matters, while failing to be about certain contested subject matters.[41]

In a broader sense of "mentioning", we could want to block the inference that counterpossibles are about items of other syntactical classes. For example, assume that it is conceptually and logically necessary that in a disjunction, if one of the disjuncts is true, the disjunction is true.[42] Then, a disjunction being not-true if one of the disjuncts is true would constitute a logical impossibility. Consider, then, the counterpossible:

15)   If there was a not-true disjunction $\varphi$ with a true disjunct and $\psi$ was true, the disjunction $\varphi \vee \psi$ would be not-true.

As per the CSP, this is about what would be true if there was a not true disjunction $\varphi$ with a true disjunct, and something else was true. We could ask if this counterpossible could be in some sense about the property of being a disjunction.

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[39] Note that this is not the same as being about a truth concerning what would happen if 1 + 1 was 3; the question of the truth value of the counterpossible is a separate issue.

[40] Remember Gendler's (2000) quote on what sentences describing impossibilities are about. More recently, Tump (2021) argues that numbers are given collectively in the context of number systems. In the case of natural numbers, they are characterized by the properties that are a consequence of the Peano axioms. Thus, we cannot change their relations to other numbers without also changing the number system. In those conditions, we cannot say that we are talking about the same numbers.

[41] A further form of skepticism could propose that even if we have reasons to think that counterpossibles have subject matters, we cannot know what they are.

[42] This fails for the disjunction in Weak Kleene Logic (WKL), which raises concerns about in what sense that logic has a disjunction (cf. Omori, Szmuc, 2017). One answer is that WKL has a disjunction in what respects to determinate values; so maybe what is a conceptual necessity about disjunction is that if one of the disjuncts is true and both disjuncts are determinate, the disjunction is true (cf. Beall, 2016 for some discussion on how to interpret WKL in terms of subject-sensitivity).

If we hold fixed as essential to the property that disjunctions with at least one true disjuncts are true, (15) cannot be about the property of being a disjunction.

This way to motivate the supposition faces two main objections. First, one may wonder: if the intuition against these counterpossibles to be about the things they mention in a broad sense holds, why does that not also undermine the CSP intuition? The point would be that counterpossibles could not be about what would happen if some impossibility $\varphi$ concerning $a$ occurred without also being about $a$. Second, one may think that linguistic items must be about the subject matters that they are intended to be about, so, since it it is implausible that these counterpossibles were not intended to be about the things they mention, they must be about those things.

The first objection is worrying because it seems to force us to say that the subject matter of counterpossibles is degenerate after all. However, we have enough resources to resist this concession. Plausibly, something that is about what would happen if some impossibility $\varphi$ concerning $a$ occurred ($Q_1$) is also about what would happen if some impossibility $\varphi$ concerning *something* occurred ($Q_2$). That is, we can abstract from the identity of the things that counterpossibles seem to mention and still have a viable subject matter. After all, when we are worried about patterns, we are not always worried about the bearers of those patterns except in that they are bearers of those patterns. So one way to respond to the objection is that we only need to be able to say that counterpossibles are about this kind of thing, rather than what the naive version of the CSP says. A sophisticated version of the CSP could be more informative. There are questions that these counterpossibles answer to that are more committal to $a$ than $Q_2$ without being as committal as $Q_1$. The questions that constitute the subject matter of the counterpossibles may not be as abstract as $Q_2$: plausibly, these counterpossibles are also about what would happen if some impossibility $\varphi$ concerning *something relevantly similar to a* occurred.[43] This is, to be sure, about $a$, but not as directly as $Q_1$ is about $a$, because the relevant properties of $a$ in each case are different (for $Q_2$, it only matters that $a$ is similar to whatever the counterpossible is about, whereas for $Q_1$ it matters that $a$ itself could somehow be in the conditions given in the antecedent). We want to avoid $Q_1$'s way of being about $a$. This also gives a simple error theory that explains why someone may think that counterpossibles are about the things they mention: they may realize that they are about them in some way, but misidentify the way in which they are about them.

This response to the first objection is not sufficient to dismiss the second objection, since it may still be objectionable that our theory of subject matters does not vindicate what is intended to be the topic of a counterpossible as its topic. If someone puts fort a counterpossible mentioning $X$ with the intention to talk about $X$, why should we not believe that the counterpossible is about $X$? In re-

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[43] This does not necessarily make the antecedents of counterpossibles to be about possibilities. It might still be impossible that anything similar to $a$ has the properties that are attributed to it there.

sponse, we could argue that merely intending to talk about something does not guarantee that one talks about it; one might, for example, have mistaken the topic that is under discussion.[44] Whether there is a mismatch between what counterpossibles are about and what they are intended to be about is not decisive against the claim that counterpossibles are not about the things the seem to mention.[45]

The supposition seems initially defensible, then, after some adjustments. Let us consider if the approaches to the subject matter of counterpossibles I have sketched can respect it.

The enriched atom-based account immediately falls into difficulties. Because the subject matter of counterpossibles is constructed from the subject matter of their constituent atoms, and the way that predicates and constants are assigned concepts is direct, counterpossibles will turn out to be about the things that they mention. Thus, e.g., (14) will have as its prime subject matter something like

$$\{\langle \Box\!\!\rightarrow, \{\langle \mathfrak{Eq}, \langle \mathfrak{Sum}, 1, 1\rangle, 3\rangle\}, \{\langle \mathfrak{Eq}, \langle \mathfrak{Sum}, 1, 2\rangle, 4\rangle\}\}\rangle\}$$

from which we can recover the objectual subject matter $\{1, 2, 3, 4\}$. It is not obvious how this result can be prevented. One way would be to adjust the assignment function, perhaps making it assign concepts that correspond to the idea of something that is similar to 1, 2, 3 and 4 in the relevant way (let us say, 1', 2', 3', and 4'). Then, we would get that the subject matter of (14) would be

$$\{\langle \Box\!\!\rightarrow, \{\langle \mathfrak{Eq}, \langle \mathfrak{Sum}, 1', 1'\rangle, 3'\rangle\}, \{\langle \mathfrak{Eq}, \langle \mathfrak{Sum}, 1', 2'\rangle, 4'\rangle\}\}\rangle\}$$

How to make it so the theory makes these adjustments only in the case of counterpossibles (and perhaps other expressions like statements concerning impossibilities)? It seems clear that the atom-theorist has to make the assignment function sensitive to the semantics of the atoms (in general, we cannot distinguish counterpossibles by purely syntactic means). However, this is undesirable if one wants the theory of subject matters to be independent from considerations

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[44] This is related to the issues that Munro and Strohminger (2021) raise concerning the idea that the contents of imaginings are simply determined by whatever contents one intends to imagine (and of course, their argument there applies to attempts to imagine a counterpossible as true as well), a position they call Intentionalism. Interestingly, Intentionalism is a substantial assumption in Berto and Schoonen's (2017) approach to imagination; the authors make use of Kung's (2016) idea that part of the content of imaginings is stipulated to argue that impossibilities can be imagined. The question I am raising here can be understood as whether aboutness properties can be stipulated or not.

[45] A fuller answer would have to address the issue of what function counterpossible-talk serves, in order to examine whether counterpossible talk indeed requires intentions to talk about the items that they mention, but I will not dwell on this here.

about the truth conditions of sentences, and many atom-theorists impose this restriction upon themselves.[46]

The way-based approach exhibits no such qualms about the independence of subject matter and truth conditions to begin with, so it is better positioned to deal with the issue. The manner in which a ways-theorist would filter out objectual aboutness for counterpossibles is similar to what the proponent of the enriched atom-based theory has available: first, we check if we are dealing with a structure with an impossible antecedent; then, we abstract from the counterpossibles so that the elements in questions are neutered (essentially, taking the focus of the counterpossible explicitly away from its putative referring terms); and finally, we evaluate the subject matter of the resulting structure.

There are, then, some reasons to prefer a way-based approach to an atom-based approach, at least in the case of counterpossibles. However, as I said before, these reasons are not decisive, for two reasons: first, because they depend on certain controversial intuition-based assumptions about what we can say about the subject matter of counterpossibles, and second, because proponents of the atom-based approach have a way to deal with the issue, namely, dropping the assumption that subject matter is independent from truth conditions. Whether that is too costly for such theorists is not my concern here, although the dialectical situation suggests that we may not be able to bypass the issue of the semantics of counterpossibles after all. For those who do not share that assumption, another alternative could be to adopt some form of pluralism about subject matters and make use of an overall theory that combines the insights of both way-based and atom-based approaches. Such a theory is not yet available.

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[46] Hawke (2018, p. 26), for example, argues in favor of the issue-theory over the Finean state-based theory of subject matter on the grounds that the former, but not the latter, can make certain distinctions about the subject matter of problematic sentences without having to appeal to what makes those sentences true or false. Yablo (2014, p. 2) suggests that subject matter is constrained, but not determined by truth conditions. Plebani and Spolaore (2020, p. 15) point out that in their account of subject matter, this Yablovian condition is respected, but also there is no way to recover the truth conditions of a sentence from its SM, which they take as a positive point for their account (cf. also Berto, Hawke, Hornischer, 2019).

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