A (contingent) content-parthood analysis of indirect speech reports

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Abstract: This paper presents a semantic analysis of indirect speech reports. The analysis aims to explain a combination of two phenomena. Firstly, there are true utterances of sentences of the form *α said that φ* which are used to report an utterance *u* of a sentence wherein *φ*'s content is not *u*'s content. This implies that in uttering a single sentence, one can say several things. Secondly, when the complements of these reports (and indeed, these reports themselves) are placed in conjunctions, the conjunctions are typically infelicitous. I argue that this combination of phenomena can be explained if speech reports report (perhaps contingent) parts of the contents of the sentences reported.

1 Saying Pluralism and Overlapping Contents

True utterances of a sentence *α said that φ* can report an utterance *u* of a sentence wherein *φ*'s content is not *u*'s content (Cappelen & Lepore, 1997):

(1)

a. Kadi: I bought a pair of Bruno Magli shoes and then I ate lunch.
b. Kadi said that she bought a pair of Bruno Magli shoes.

(2)

a. Kadi: At around 11 p.m., I put on a white shirt, a blue suit, dark socks and my brown Bruno Magli shoes. I then got into a waiting limousine and drove off into heavy traffic to the airport, where I just made my midnight flight to Chicago.
b. Kadi said that she dressed around 11 p.m., went to the airport and took the midnight flight to Chicago.

(3)

a. Kadi: I didn't fail any students.
b. Kadi said Alice passed.

In each case, the content of the report's complement doesn't match the content of the reported sentence.[1] A saying-pluralism has been inferred from this phenomenon: when one utters a sentence, one does not say just one thing (which has the content of the uttered sentence). One says many things (at most one of which has the content of the sentence) (see (Cappelen & Lepore, 1997), (Cappelen & Lepore, 2004), (Cappelen & Lepore, 2005), (Cappelen & Lepore, 2008), and (Cappelen & Lepore, 2015) and similarly (Bowker, 2019), (Buchanan, 2010), and (Soames, 2002)).

However, whatever truth there is to saying-pluralism, a saying-pluralism according to which we say things with contents which are simply disjoint from the content of the sentence we use to say them doesn't mesh well with the available evidence.

Note the contrast between the (a)'s and the (b)'s:

(4)

a. Arun made an omelette and he made something he could eat.
b. Arun made an omelette. He made something he could eat.

(5)

a. Sabrina broke her skis and she broke her only means of transport.
b. Sabrina broke her skis. She broke her only means of transport.

The conjunctions imply the distinctness of what is said by each conjunct (the (a)s). The omelette is not something Arun can eat. The skis were not Sabrina's only means of transport. The asyndetic sentences (the (b)s) do not imply the same. This contrast is commonly accepted. Summarizing recent work on the meaning of "and" (i.e. (Blakemore & Carston, 2005), (Txurruka, 2003), and (Zeevat & Jasinskaja, 2007)), Jayez and Winterstein remark: 'All of them try to give a formal content to the intuition we formulated above: in a sentence *A and B*, the second conjunct B must not repeat what the first one already said.' (Jayez & Winterstein, 2013, p. 87). This is why, when we cannot see how the conjuncts of a conjunction could describe distinct states of affairs, the conjunction is infelicitous:

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(6) Yair painted that still life and he painted that banana.

(6) is felicitous if the banana is not part of the still life and infelicitous if it is.

We can use this feature of "and" as a check on whether the contents of the complements of the reports in (1)-(3) are distinct from the contents of the sentences reported by placing them together in a conjunction. If we get an infelicity in the conjunction, then we have reason to believe that the contents are not distinct. Consider a conjunction that corresponds to (1), where the same episode of shoe-buying is described in the first and third conjunct:

c. I bought a pair of Bruno Magli shoes and then I ate lunch *and* I bought a pair of Bruno Magli shoes.

Although (1b) is a true report of (1a), and although the content of the complement of (1b) is not identical with the content of (1a), when we place the content of (1a) in a conjunction with the content of the complement of (1b), we get the same infelicity we see in (4)-(6) (an infelicity absent in the asyndetic foils). This shouldn't happen if the two contents were entirely separate from one another. Moreover, we see the same infelicity in corresponding conjunctive *reports* (used to report the same speech act):

d. Kadi said that she bought a pair of Bruno Magli shoes and then she ate lunch and she said that she bought a pair of Bruno Magli shoes.

Putting all this together, we have reason to believe that the content of the reported sentence and the content of the complement of the true report of this utterance are not quite separate from one another. It's far from implausible that the complement's content is a *part* of the reported utterance's—that the one repeats the other's content. Similarly, it's far from implausible that the conjunctions of the reports (as in (1d)) are infelicitous because one report is repeating the content of the other.

This might not be surprising for conjunctions and conjuncts. But the other examples behave similarly. Consider a conjunction that corresponds to (2):

c. At around 11p.m., I put on a white shirt, a blue suit, dark socks and my brown Bruno Magli shoes and I got dressed around 11p.m.

Likewise, with the corresponding report:

d. Kadi said that at around 11p.m., she put on a white shirt, a blue suit, dark socks and her brown Bruno Magli shoes and she said that she got dressed around 11p.m.

The infelicity doesn't arise with *every* combination of reports or complements. Consider:

(3)

c. Kadi said Bea passed.
d. Kadi said that Alice passed and Kadi said that Bea passed.
e. Alice passed and Bea passed.

(3c) is just as much an acceptable report of (3a) as (3b) is. One *can* felicitously conjoin (3b) and (3c) (as in (3d)), just as one can felicitously conjoin their complements (as in (3e)). Looking at this pattern of infelicities, it's very tempting to think that although the contents of the complements of (3b) and (3c) are each somehow included in the content of (3a)–-which is why conjunctions of (3a) with either the complement of (3b) or the complement of (3c) are infelicitous—neither content of the complements of (3b) and (3c) includes the other—which is why a conjunction of (3b) with (3c) (or indeed of their complements) is felicitous.

The infelicities observed here are not what one should expect if the contents of the several things one can say by uttering one sentence are simply disjoint from the content of the sentence one used to say them. They are what one should expect if they were parts of it. A plausible saying-pluralism is, it seems, a *homeomerous* saying-pluralism: we say many things by uttering a single sentence but each thing we say has a part of the content of the reported sentence as its content.

I develop an analysis of indirect speech reports according to which speech reports report parts of the content of the sentence whose utterance is reported. I show how such an analysis can explain the data used in support of saying-pluralism whilst respecting the infelicities which suggest that a plausible saying-pluralism is homeomerous.

2 What is a part of a content?

Let's define content parthood. One possibility: P is part of Q if and only if Q entails P. However, this definition will allow disjunctions to qualify as parts of their disjuncts when intuitively they are not. Several alternatives avoid this consequence. Without assuming that it's compulsory, I opt for Fine's ((2017), (2017a)). He defines content parthood in terms of state parthood, on the assumption that the contents of sentences are functions from states to truth-values. Thus, in defining the meanings of sentences we draw upon a set of states S. We assume that for every subset of states in S, there is a least upper bound of those states, given the partial order $\sqsubseteq$ (the "part of" relation) i.e. a sum of the states in the subset. Worlds are maximal states: the state *s* is a *world-state* if any state is either a part of *s* or incompatible with *s*. States that the content of a sentence maps to true are exact verifiers of that sentence. States that the content of a sentence maps to false are exact falsifiers of that sentence. A sentence's *exact* verifiers don't include any material that is not relevant to the truth of the sentence, and exact falsifiers likewise. States themselves are those things which make sentences true or false, without excess. The vast majority of the universe is not responsible for the truth of the claim that Quito is the capital of Ecuador: its truth requires nothing of how things are on say Mars. What makes it true are features of the Ecuadorian legal and political system. Change *those* and you change whether the claim is true.

But this leaves open what we are saying when we say that one state has another as a part. I provide an easy-to-use gloss. When you have two states s1 and s2 (conditions of the world that could make a sentence true or false), ask yourself whether what it is for s1 to obtain is in part for s2 to obtain. If yes, then we'll say that s2 is a part of s1. If not, then we'll say that it isn't. For example, is part of what it is for Fine to be an American philosopher for him to be a philosopher? Yes. But only part of it. He must also be American. Is part of what it is for Fine to be an American, for him to be a philosopher? No. Perhaps in a country run by philosopher kings, citizenship rules could make being a citizen of that country a matter, in part, of being a philosopher. But America is not such a place. The analysis put forward in this paper predicts an invariance between a person's judgements about state parthood and her judgements about the truth of indirect speech reports (and the infelicity of certain conjunctions). The gloss suffices as an elicitor of intuitions about state parthood relative to which the analysis can be applied.

We can now motivate the elements of Fine's definition of content parthood. Part of the content of "There is a scarlet carpet" is the content of "There is a red carpet." "There is a scarlet carpet" surely entails "There is a red carpet." So every time we have a verifier of the former there must be a verifier of the latter. But if we are dealing in exact verifiers, then we don't want to say that this is because the verifiers of the former also verify the latter. But a verifier of "There is a scarlet carpet" will bring with it a verifier of "There is a red carpet" if the former contains the latter. This suggests that if one content contains another then every verifier of the former contains a verifier of the latter. Now move in the other direction. A state that exactly verifies "There is a red carpet" cannot exactly verify "There is a scarlet carpet": it includes too little. Nonetheless, the truth of "There is a red carpet" makes it the case that "There is a scarlet carpet" has more going for its truth than if there were only a turquoise parrot. The person who says "There is a scarlet carpet" when there is only a burgundy carpet isn't so wrong as she would be if there were only a turquoise parrot. "There is a scarlet carpet" is at least partly true if "There is a red carpet" is true. We can represent this by supposing that verifiers of "There is a red carpet" are parts of verifiers of "There is a scarlet carpet." This suggests that when one content is part of another, each verifier of the former appears in some verifier of the latter. Finally, if "There is a red carpet" is false then part (and only a *part*) of what makes it false is a state that makes "There is a scarlet carpet" entirely false – which has a corresponding implication about contents. Regimenting these observations, we arrive at the following definition:

Content Parthood

For two contents P and Q, P is a part of Q if and only if:

(i) Every verifier of Q includes a verifier of P.

(ii) Every verifier of P is included in a verifier of Q.

(iii) Every falsifier of P includes a falsifier of Q.

Fine's proposal for (iii) is that every falsifier of P *is* a falsifier of Q (Fine, 2017a). But this requirement is too strong. Wherever we have a falsifier of "there is a red carpet", there should also be a falsifier of "There is a scarlet carpet." However, the latter cannot simply *be* the former. For the former is not an exact falsifier of "there is a scarlet carpet": it contains more than is required to make "There is a scarlet carpet" false. So we require only that every falsifier of "There is a red carpet" contains a falsifier of "There is a scarlet carpet."

2.1 Contingent state parts

There's trouble afoot. I explain later that when uttered in normal contexts, the complement of (2b) is entailed by (2a). But I don't think that for every true speech report the complement is entailed by the sentence being reported. (3) illustrates the problem. It's quite possible for Kadi not to have failed any students without Alice having passed: most obviously, there's no necessity to Alice being in Kadi's class. Perhaps it could be argued that (3a) includes implicit quantifier domain restriction which requires Alice to be in Kadi's class for (3a) to be true. But I find it hard to believe that only on such restrictions is (3b) an acceptable report of (3a). And if it is acceptable without such a domain restriction, then we have to face the fact that the report is acceptable in the absence of entailment. Examples like this abound.

One possible reaction is to limit the intended application of the proposed analysis to reports whose complements are entailed by the sentences reported (cf. (Abreu Zavaleta, 2019)). But I try an alternative. I adapt the definition of content-parthood so that a content can have parts that it doesn't entail. I'll work from the following observation. Although it is possible for Alice not to be in Kadi's class, and it is possible for Kadi not to have failed a student without that student having passed, when attention is restricted to worlds in which Alice is in Kadi's class, and in which for Kadi to not fail a student is in part for that student to pass, (3a) and (3b) will satisfy Fine's definition of content parthood. I will describe a variant of Fine's definition which allows such restrictions, and thus according to which, relative to some worlds of evaluation, (3b) is true of (3a) but, relative to others, it is not.

Notice that we're now contemplating something which Fine's model of a complex state forbids: on that model, because a complex state is the sum of a particular set of states, a complex state has its parts necessarily. We're contemplating complex states which have their parts contingently: e.g. that in some worlds the state of Kadi not failing any students has Alice's passing as a part while in other worlds it does not. We need to modify Fine's model of a complex state.

Let S be a set of states. We identify a subset of S as the set of worlds W. We assign subsets of S to each element in W. In this assignment, a non-world state may be assigned to multiple worlds but each world-state is assigned only to itself. Let the elements of these subsets of S be parts of the world they are assigned to. Worlds are again maximal states: for each world, every state is either a part of it or incompatible with it. The parthood relation ($\sqsubseteq_{()}$) between two states is relativized to the worlds of which the states are parts: a state s is a part of a state s′ relative to world w, where w has s and s′ as parts. Relative to a world, the parthood relation is a partial order. The relativization of state parthood to a world is redundant when our question is whether a state is a part of a world: if a world isn't part of multiple worlds, the world cannot have different parts relative to different worlds of which it is a part. However, because a non-world state s may be a part of several different worlds, s may have another non-world state s′ as a part when s is a part of w even though, when s is a part of w′, s doesn't have s′ as a part.

If the parthood relation is relativized to a world, then a sum of states should be too:

$$\mathrm{sum}(x, P, w) \overset{\text{def}}{=} \forall y[P(y) \rightarrow y \sqsubseteq_{(w)} x] \wedge \forall z[z \sqsubseteq_{(w)} x \rightarrow \exists z'[P(z') \wedge z \circ_{(w)} z']]$$

The sum x of a set of states P relative to world w is that state such that every member of P in w is a part of x in w and every part of x in w overlaps in w with a member of P in w (where overlap is understood as sharing a part in w). A given state may then be the sum of one set of states relative to one world but be the sum of a different set of states relative to another.

As we'll see, sometimes whether a state is a verifier (falsifier) of a sentence depends on what the parts are of the state. Since the parts of a (non-world) state are world relative, the verification and falsification conditions of a sentence need to be relativized to worlds. For this reason, the content of a sentence in a context is a function from world-state pairs to truth-values. In the pair, the state is a part of the world. Let's say that a state s is an exact verifier in w of a content if and only if the content maps <w,s> to 1. Let's say that a state s is an exact falsifier in w of a content if and only if the content maps <w,s> to 0.

Henceforth, when discussing states, I write "x is a part of y in w" as "x is $\text{part}_{(w)}$ of y"; likewise, for other properties of states which are relativized to worlds.

2.2 Contingent Content Parthood

For contents P and Q, we define contingent content parthood as follows:

> *Contingent Content Parthood*
> P is a part of Q relative to a world w if and only if there is a set of states SW that are eligible parts of w such that, for every world w′ ∈ L = {w′: every member of SW is a part of w′}:
> (i) Every $\text{verifier}_{(w')}$ of Q $\text{includes}_{(w')}$ a $\text{verifier}_{(w')}$ of P.
> (ii) Every $\text{verifier}_{(w')}$ of P is $\text{included}_{(w')}$ in a $\text{verifier}_{(w')}$ of Q.
> (iii) Every $\text{falsifier}_{(w')}$ of P $\text{includes}_{(w')}$ a $\text{falsifier}_{(w')}$ of Q.

This definition coopts Fine's definition as a complex condition which must be satisfied by some parts of a world of evaluation in order for P to be a part of Q relative to that world. In order for P to be a part of Q relative to world w, w must contain parts which ensure that states are distributed across the worlds which share these parts with w in such a way that Fine's conditions are met. In assessing whether P is part of Q relative to a world, we attend only to worlds which share some parts with the world of evaluation. Because of this, even if there are worlds such that Q has a verifier but P does not, this doesn't necessarily mean that P is not a part of Q. Every content that qualifies as a part of another according to Fine's definition still does so on the new definition. For in those cases, for any set SW used to define L, the definition will be satisfied.

The restriction to *eligible* states in the world of evaluation is needed to handle the following facts:

(7)
a. Heidi died.
b. Heidi died or the moon is made of cheese.

(8)
a. Every student passed.
b. Alice passed.
c. Alice is a student.
d. Alice exists.

Suppose the word "eligible" were absent. The content of (7b) is intuitively not a part of the content of (7a): (7b) includes extraneous content. But in the actual world there exists a state of the moon not being made of cheese. The L defined using that state allows all three conditions on content parthood to be satisfied. Consequently, the content of (7b) would qualify as a part of the content of (7a) relative to the actual world. Any state that contains the state of the moon not being made of cheese as a part has the same effect. Similarly, the contents of (8c) and (8d) would qualify as parts of the content of (8a) once the world of evaluation contains the state of Alice being a student.

What's going wrong? The thought behind the definition of contingent content parthood is that there are states in the world of evaluation which ensure that a certain mereological relation obtains in that world between other states, a relation which in turn generates a certain mereological relation between contents relative to that world. To identify whether there are states in the world of evaluation which ensure the right kind of mereological relation between states, we examine what happens in worlds which share states with the world of evaluation. Problems arise in (7) and (8) when there is some state that is capable of verifying (falsifying) the content which is the candidate part (the P) such that, in restricting which worlds we attend to, we thereby eliminate *all* worlds which contain that state. The state of the moon not being made of cheese is not compossible with a certain state that can verify (7a): viz. the state of the moon being made of cheese. Consequently, when the world of evaluation contains the state of the moon not being made of cheese, the extra content of (7b) which makes no appearance in (7a) is ignored in the assessment of whether the content of (7b) is part of the content of (7a). By allowing elimination of the verifier of (7b), we make the definition insensitive to the extra content included in (7b) which violates the second condition on verifiers. The state of Alice being a student is compossible with Alice not passing but it is not compossible with a state of Alice not being a student or with a state of Alice not existing. Yet these states are falsifiers of (8c) and (8d) respectively. Consequently, if the state of Alice being a student is a part of the world of evaluation, falsifiers of (8c) and (8d) will be ignored in the assessment of whether the contents of (8c) and (8d) are parts of the content of (8a). By allowing the elimination of the falsifiers of (8c) and (8d), we make the definition insensitive to the content of (8c) and (8d) which violates the third condition on falsifiers.

When we set aside verifiers or falsifiers of the whole (the Q) relative to *some* worlds we make it harder for parts to satisfy the second and third requirements in the conditions on content parthood: there are fewer verifiers and falsifiers available for the verifiers and falsifiers of the candidate content part to be a part of. But we don't risk the definition becoming insensitive to aspects of the content of the candidate part. It's in doing this that the definition generates the counterintuitive results in (7) and (8).

To avoid ignoring any verifiers (falsifiers) of a content altogether when assessing whether this content is a part of another, eligible states should eliminate worlds (ways states may be mereologically ordered), not the states themselves that are verifiers or falsifiers of a candidate content part. So, I define eligible states as follows:

> *Eligible States*
> A state s is eligible for content P which is being assessed for its status as part of another content Q if and only if for each state s′, which, relative to some world w′, is either a verifier or falsifier of P, s is compossible with s′.

When assessing whether the content of (7b) is part of the content of (7a), the state of the moon not being made of cheese is not eligible, since it is not compossible with a verifier of (7b): viz. the moon being made of cheese. When assessing whether the content of (8b) is a part of the content of (8a), the state of Alice being a student is eligible since it is compossible both with the state of Alice passing and the state of Alice not passing. But when assessing whether the content of (8c) is a part of the content of (8a) the same state is not eligible because it is not compossible with a falsifier of (8c) viz. the state of Alice not being a student—*mutatis mutandis* (8d).

2.3 A formal language for modelling verification and falsification conditions
In this section I provide a formal language with quantifiers and Boolean operators. The formulas of this language will serve as models of corresponding English sentences when we: define the meaning of indirect speech reports (in section 3); apply that meaning to the examples of section 1 (in sections 4 and 5); and account for conjunction infelicities (in section 6).

We assume a typed language. e is a type. t is a type. For all types σ, τ, where s is a state, c is a context, and w is a world (a kind of state): $\langle\sigma,\tau\rangle$, $\langle s,\tau\rangle$, $\langle c,\tau\rangle$, $\langle w{\times}s,\tau\rangle$ are also types. Constants and variables are some such type. We'll interpret the language using a model M = $\langle D, I, C, S, W, f, \sqsubseteq_{()}\rangle$. D is a non-empty set of individuals, I is an interpretation function, C is a non-empty set of contexts, S is a non-empty set of states, W is a subset of S (viz. the set of states that are not part of any other state), f is an assignment of subsets of S to elements of W conforming to the conditions described above, and $\sqsubseteq_{()}$ is a parthood relation between states relative to worlds. The interpretation function will assign constants to characters (functions from contexts to functions from world-state pairs to extensions). Where α is a name, I(α) is a function of type $\langle c,\langle w{\times}s,e\rangle\rangle$. Where α is a one place predicate, I(α) is a function of type $\langle c,\langle w{\times}s,\langle e,t\rangle\rangle\rangle$. Where α is a two place predicate, I(α) is a function of type $\langle c,\langle w{\times}s,\langle e,\langle e,t\rangle\rangle\rangle\rangle$—with an exception in section 3. By default, constants are context-sensitive. For exceptions, assume an invariant character. In what follows, I specify the semantic values of expressions using the following notation: $[\![\alpha]\!]^{M,g,c,\langle w,s\rangle}$ is the semantic value of α in model M, under assignment function g, in context c relative to world-state pair <w,s>. The semantic values of variables and constants are as follows:

Variables

Where α is a variable of whatever type, $[\![\alpha]\!]^{M,g,c,<w,s>} = g(\alpha)$.

Constants

Where α is a name, $[\![\alpha]\!]^{M,g,c,<w,s>} = I(\alpha)(c)(<w,s>)$ = an object of type e.

Where α is a one place predicate, $[\![\alpha]\!]^{M,g,c,<w,s>} = I(\alpha)(c)(<w,s>)$ = a function of type <e,t>.

Where α is a two place predicate, $[\![\alpha]\!]^{M,g,c,<w,s>} = I(\alpha)(c)(<w,s>)$ = a function of type <e,<e,t>>.

Two remarks. Firstly, for each constant α, $[\![\alpha]\!]^{M,g,c,<w,s>} \neq I(\alpha)$. The interpretation function assigns a character to a constant. But the semantic value of that constant relative to a context and a world-state pair is the outcome of the application of its character to a context and a world-state pair. This keeps things extensional unless intensions are required as arguments. Secondly, we assume names are rigid across worlds but that within a world, relative to many states, they may fail to refer. Borrowing a riff from Forbes (1999) and Zimmerman (2005), this hyperintensionality explains how two co-referring rigid designators can differ in content.

(Strong Kleene) Connectives

Where α is of type t, $[\![\neg\alpha]\!]^{M,g,c,<w,s>} =$

1 iff $[\![\alpha]\!]^{M,g,c,<w,s>} = 0$

0 iff $[\![\alpha]\!]^{M,g,c,<w,s>} = 1$

\# otherwise

Where α and β are of type t, $[\![\alpha \wedge \beta]\!]^{M,g,c,<w,s>} =$

1 iff s is a $\text{sum}_{(w)}$ of states s′ and s′′ such that $[\![\alpha]\!]^{M,g,c,<w,s'>} = 1$ and $[\![\beta]\!]^{M,g,c,<w,s''>} = 1$.

0 iff $[\![\alpha]\!]^{M,g,c,<w,s>} = 0$ or $[\![\beta]\!]^{M,g,c,<w,s>} = 0$ or s is a $\text{sum}_{(w)}$ of two states s′ and s′′ such that $[\![\alpha]\!]^{M,g,c,<w,s'>} = 0$ and $[\![\beta]\!]^{M,g,c,<w,s''>} = 0$.

otherwise.

Where α and β are of type t, $[\![\alpha \vee \beta]\!]^{M,g,c,<w,s>} =$

1 iff $[\![\alpha]\!]^{M,g,c,<w,s>} = 1$ or $[\![\beta]\!]^{M,g,c,<w,s>} = 1$ or s is a $\text{sum}_{(w)}$ of two states s′ and s′′ such that $[\![\alpha]\!]^{M,g,c,<w,s'>} = 1$ and $[\![\beta]\!]^{M,g,c,<w,s''>} = 1$

0 iff s is a $\text{sum}_{(w)}$ of two states s′ and s′′ such that $[\![\alpha]\!]^{M,g,c,<w,s'>} = 0$ and $[\![\beta]\!]^{M,g,c,<w,s''>} = 0$.

otherwise

Unrestricted Quantifiers

Where α is of type t, and ν is a variable of type e, $[\![\forall\nu.\,\alpha]\!]^{M,g,c,<w,s>} =$

1 iff for the n values of ν k1…kn, s is a $\text{sum}_{(w)}$ of states s1…sn such that $[\![\alpha]\!]^{M,g[\nu \to k1],c,<w,s1>} = 1 \ldots [\![\alpha]\!]^{M,g[\nu \to kn],c,<w,sn>} = 1$.

0 iff there is one value of ν k such that $[\![\alpha]\!]^{M,g[\nu \to k],c,<w,s>} = 0$.

otherwise.

Where α is of type t, and ν is a variable of type e, $[\![\exists\nu.\,\alpha]\!]^{M,g,c,<w,s>} =$

1 iff there is a value of ν k such that $[\![\alpha]\!]^{M,g[\nu \to k],c,<w,s>} = 1$.

0 iff for the n values of ν k1…kn, s is a $\text{sum}_{(w)}$ in w of states s1…sn such that $[\![\alpha]\!]^{M,g[\nu \to k1],c,<w,s1>} = 0 \ldots [\![\alpha]\!]^{M,g[\nu \to kn],c,<w,sn>} = 0$.

otherwise.

We're assuming that there's no variation across worlds in what exists. This is a simplification to streamline presentation of the analysis.

Restricted Quantifiers

Restricted quantifiers are not treated as applications of unrestricted quantifiers to formulas with Boolean operators (as in $\exists x.(Fx \wedge Gx)$ and $\forall x.(Fx \rightarrow Gx)$). Why? Consider

"Every man died." What are its verifiers relative to a world w? Not the $\text{sum}_{(w)}$ of $\text{verifiers}_{(w)}$ of instances of the disjunction "Either x is not a man or x died" in w. If they were, the $\text{verifiers}_{(w)}$ would $\text{include}_{(w)}$ as a part the $\text{sum}_{(w)}$ of states which simply consist of there being a dead thing, regardless of whether this thing is a man. Yet, surely if we are interested in exact verification, such states should not generally be amongst the $\text{verifiers}_{(w)}$ of "Every man died." Similarly, any state consisting of a non-man will form $\text{part}_{(w)}$ of verifiers of "Every man died" even when there are some men.

A parallel phenomenon arises for the falsity of restricted existential sentences like "Some men died." If this sentence means $\exists x.(Mx \wedge Dx)$, then its $\text{falsifiers}_{(w)}$ would $\text{include}_{(w)}$ all the states in which there are things—be they men or otherwise—that haven't died. But surely the sentence "Some men died" is made false either by the absence of men altogether or, if we focus on things that have died, then by *men* who haven't died and not, for instance, by tables.

To better model the verifiers and falsifiers of restricted quantifiers, separate analyses are provided for restricted quantification.

Restricted Quantifiers

Where α and β are of type t, and ν is a variable of type e, $[\![\forall(\nu{:}\,\alpha)\beta]\!]^{M,g,c,<w,s>} =$

1 iff s is a $\text{sum}_{(w)}$ of states s‴ such that for each k of D and state s′ such that $[\![\alpha]\!]^{M,g[\nu \rightarrow k],c,<w,s'>} = 1$, there is a state s″ such that $[\![\beta]\!]^{M,g[\nu \rightarrow k],c,<w,s''>} = 1$ and s‴ is the $\text{sum}_{(w)}$ of s′ and s″.

0 iff s is a $\text{sum}_{(w)}$ of two states s′ and s″ such that for some k of D, $[\![\alpha]\!]^{M,g[\nu \rightarrow k],c,<w,s'>} = 1$ and $[\![\beta]\!]^{M,g[\nu \rightarrow k],c,<w,s''>} = 0$.

otherwise.

Where α and β are of type t, and ν is a variable of type e, $[\![\exists(\nu{:}\,\alpha)\beta]\!]^{M,g,c,<w,s>} =$

1 iff s is a $\text{sum}_{(w)}$ of two states s′ and s″ such that for some value of ν k, $[\![\alpha]\!]^{M,g[\nu \rightarrow k],c,<w,s'>} = 1$ and $[\![\beta]\!]^{M,g[\nu \rightarrow k],c,<w,s''>} = 1$.

0 iff

EITHER s is a $\text{sum}_{(w)}$ of states s‴ such that for each k of D and state s′ such that $[\![\alpha]\!]^{M,g[\nu \rightarrow k],c,<w,s'>} = 1$, there is a state s″ such that $[\![\beta]\!]^{M,g[\nu \rightarrow k],c,<w,s''>} = 0$ and s‴ is the $\text{sum}_{(w)}$ of s′ and s″.

OR s is a $\text{sum}_{(w)}$ of states s′ such that for each k of D $[\![\alpha]\!]^{M,g[k \rightarrow \nu],c,<w,s'>} = 0$.

otherwise

Two remarks. Firstly, restricted universally quantified formulas presuppose existence. I think this more accurately models the corresponding English sentences, given that most untutored English speakers grant that "Every man died" entails "Some man died." Apparent exceptions include verbs with generic aspect (e.g. "Every man dies"). I suspect their explanation lies in the verb, not the quantifier. Secondly, the disjunctive condition for the falsifiers of restricted existential quantification is needed, where it is not needed for the verifiers of restricted universal quantification, because we don't want a restricted existential sentence to be not false if there is nothing satisfying the restrictor—that's another way a restricted existential sentence can be false.

Finally, there's a hat operator:

> Where α is of type t, $[\![\hat{}\alpha]\!]^{M,g,c,<w,s>}$ is that function P of type <c,<w×s,t>> such that for a given c, and for each <w,s'>, P(c)(<w,s'>) = $[\![\alpha]\!]^{M,g,c,<w,s'>}$.

Once a context is settled, $\hat{}\alpha$ denotes the intension of α.

2.4 Entailment and Sentence Truth

A context of utterance *con* for an English declarative sentence φ determines a target world w, about which φ is used to make a statement. A sentence in context is true or false relative to w. A sentence's truth-value relative to a world is then related to the sentence's verifiers and falsifiers as follows:

> *Sentence Truth*
>
> Where $\ll \varphi \gg$ is a translation of φ into the formal language just defined, *con* is a context, and w is a world of evaluation fixed by con, φ as uttered in con relative to w is:
>
> true if and only if there is a state s such that $[\![\ll \varphi \gg]\!]^{M,g,con,<w,s>} = 1$.
>
> false if and only if there is a state s such that $[\![\ll \varphi \gg]\!]^{M,g,con,<w,s>} = 0$.
>
> Neither true nor false otherwise.

Entailment will be understood thus:

> *Entailment*

A formula α in context c entails a formula β in context c if any only if for every world w wherein there exists a state s such that $[\![\ll \alpha \gg]\!]^{M,g,c,<w,s>} = 1$, there also exists a state s′ such that $[\![\ll \beta \gg]\!]^{M,g,c,<w,s'>}$.

A sentence φ in context c entails a sentence ψ in context c if any only if $\ll \varphi \gg$ in c entails $\ll \psi \gg$ in c.

3 A contingent content-parthood based meaning for indirect speech reports

In our formal language, "said′" is a special kind of two place predicate: one whose first argument (after context and world-state pair) is a content:

Where "said′" is a function of type <c,<w×s,<<<w×s>,t>,<e,t>>>>, c is a context, <w,s> is a world-state pair, P is of type <<w×s>,t>, and x is of type e, said′(c)(<w,s>)(P)(x) is:

1 iff s is a state in which x uttered one or more sentences whose characters, when applied to the context of reported utterance, return a propositional content Q such that P is a part of Q relative to w.

0 iff s is a state in which x did not utter one or more sentences whose characters, when applied to the context of reported utterance, return a propositional content Q such that P is a part of Q relative to w.

otherwise.

We can use "said′" to provide the meaning of sentences of the form α *said that* φ that we have been envisaging:

The meaning of an indirect speech report
$\ll \alpha \textit{ said that } \varphi \gg = \text{said}'(c)(<w,s>)(\hat{}[\![\ll \varphi \gg]\!]^{M,g,c,<w,s>})([\![\ll \alpha \gg]\!]^{M,g,c,<w,s>})$.

Given this meaning for α *said that* φ, the definition of said′, and the above definition of sentence truth, α *said that* φ when uttered in a context c will be true relative to the world w of c if and only if there is a state s, such that there is a part of w which ensures that, in s, the denotation of α uttered a sentence with a content that had the content of φ as a part relative to w.

Notice that the presuppositions of the content of a sentence whose utterance is being reported cannot be reported as having been said. Why? The third condition in the definition of contingent content parthood requires that for P to be a part of Q relative to the world of evaluation w, there must be an eligible part of w, such that for every world w′ that has that part, every falsifier$_{(w')}$ of P must include a falsifier$_{(w')}$ of Q. But if Q presupposes P, then in any such w′ in which P is false, there is no falsifier of Q because relative to such a world, Q is neither true nor false. This is a welcome consequence. In many cases, intuitively, we cannot report a speaker as saying the presuppositions of the content of the sentence she uttered. If Nick says, "Amy came back", we cannot report Nick as having said that Amy went away (at least not without further elaboration). If Jake tells his parents "We have arrived" we cannot rightly report him as having said that he wasn't there.[2] The evidence on the nature and patterning of presupposition is complex. I am not suggesting that the account of speech reports presented here accurately models this patterning. But it's a start: for a significant range of cases, it is indeed awkward to report presuppositions as having been said. For these cases, we have an account.

4 Predicting (3)

Let's apply the analysis to (3).

(3)

a. Kadi: I didn't fail any students.
b. Kadi said Alice passed.

Where "F" is a two-place predicate corresponding to "failed", "k" is a name corresponding to "Kadi" and "P" is a one-place predicate corresponding to "passed", here are two possible translations of (3a):

(9) $\forall(x: S(x))\neg F(k, x)$

(10) $\neg\exists(x: S(x))(F(k, x)$

We can translate the complement of the report of Kadi's utterance as follows:

(11) $P(a)$

Consider first (9). Given a world of evaluation w, (9) is verified$_{(w)}$ by a state that is the sum$_{(w)}$ of sums$_{(w)}$ of pairs of states s′ and s′′ such that s′ verifies$_{(w)}$ S(x) and s′′ verifies$_{(w)}$

[2] Reports of sarcastic utterances whose complements are the negation of the reported sentences' semantic content can be true. Reports which replace a reported specific indefinite with a referential term can be true. The proposed analysis can, in principle, handle such reports. I don't have the space to explore this. But it is not beyond plausibility to suggest that inverted sarcastic readings arise through a conventionalized pattern of intonation which corresponds to a semantic operator and there are influential analyses of specific indefinites on which they are referential (for discussion see (Camp, 2012) and (Szabolcsi, 2010) respectively). If such proposals are correct, the analysis can handle these reports along the same lines as other examples discussed in this paper.

¬F(k,x), where a state verifies$_{(w)}$ ¬F(k,x) if and only if it falsifies$_{(w)}$ F(k,x). So the verifiers$_{(w)}$ of (9) will be sums$_{(w)}$ of sums$_{(w)}$ of verifiers$_{(w)}$ of S(x) and falsifiers$_{(w)}$ of F(k,x) i.e. verifiers$_{(w)}$ of the instances of (9).

Does every verifier$_{(w)}$ of (9) contain$_{(w)}$ a verifier$_{(w)}$ of (11)? If we assume nothing about w, the answer is clearly "no". Most obviously, (9) can be true when (11) is false when Alice isn't in Kadi's class in w. But even if, in w, Alice is in Kadi's class, there's a question of the relationship between Alice's passing and Kadi not failing Alice. If, in w, passing is a different thing from not being failed by Kadi, then it's hard to see how an exact verifier of (11) could be part$_{(w)}$ of an exact verifier of (9). However, given the right circumstances, a state of Kadi not failing a student could include$_{(w)}$, as a part, a state of that student passing. Suppose that in w, Alice is in Kadi's class, and that for any student X in Kadi's class, the falsifiers$_{(w)}$ of "Kadi failed X" are verifiers$_{(w)}$ of "Kadi passed X." Then since any verifier$_{(w)}$ of the latter contains a verifier$_{(w)}$ of "X passed", any verifier$_{(w)}$ of "Kadi didn't fail X" will include$_{(w)}$ a verifier$_{(w)}$ of "X passed" as a part. And if that's so, then given our semantics for restricted universal quantification, any verifier$_{(w)}$ of (9) will include$_{(w)}$ a verifier$_{(w)}$ of (11). Suppose then that the following states obtain in w: Alice is a member of Kadi's class and Kadi has arranged things so that any students who she doesn't fail pass: the same strokes of the pen that make it the case that a student doesn't fail therein make it the case that she passes. The contents of ¬F(k, a) and P(a) are different. For example, in some world where there's a third option besides passing and failing (e.g. "must retake"), ¬F(k,a) has a verifier but P(a) does not. But let's restrict our attention to worlds which have the aforementioned states as parts. This is our L (from the definition of contingent content parthood). For every world w′ in L: every state which the content of ¬F(k, a) maps to 1 will contain$_{(w')}$ a state that the content of P(a) maps to 1; each state that the content of P(a) maps to 1 will appear as a part$_{(w')}$ of a state that the content of ¬F(k, a) maps to 1; and each state that the content of P(a) maps to 0 will be part$_{(w')}$ of a state which the content of ¬F(k,a) maps to 0. Given this, and given our semantics for restricted universal quantification, it follows that relative to w, the content of (11) is a part of the content of (9). For within L, every verifier of (9) will contain a verifier of (11) and every verifier of (11) will be contained in a verifier of (9). Moreover, every falsifier of (11) will contain a falsifier of (9) because, in every such world, Alice is a student so the only way for her to not pass is for her to have failed. Hence every state of Alice not passing (a falsifier of (11)) will have as a part a state that is the sum of the state of her being a student and the state of Alice not passing (i.e. a falsifier of (9)): in these worlds (in worlds wherein passing is not failing (and vice versa) and Alice is a student), what it is for Alice to not pass is in part for her to be a student that Alice didn't pass.

What then about (10)? (9) and (10) are not equivalent. A restricted universally quantified formula implies the existence of something satisfying the restrictor. A negated existential does not. There are therefore two kinds of verifier of (10), which correspond to the falsifiers of the existential formula that results from removing the negation. Firstly, in a world w without students, the state of the sum$_{(w)}$ of non-students verifies$_{(w)}$ (10). Secondly, in a world w with students, the sum$_{(w)}$ of pairs of states of a person being a student and that person not failing is a verifier$_{(w)}$ of (10). Within the set of worlds described in the previous paragraph, there are no verifiers of the first kind: in each such world, there's at least one student viz. Alice. The verifiers are of the second kind. But these verifiers are the same as the verifiers of (9). So given what we said about (9), we can conclude that for each world w′ which we're restricting our attention to, all verifiers$_{(w')}$ of (10) have a verifier$_{(w')}$ of (11) as a part, and all verifiers$_{(w')}$ of (11) are a part$_{(w')}$ of a verifier$_{(w')}$ of (10). What about the falsifiers of (10)? For each world w′ that we're restricting our attention to, if there is a state that is the sum$_{(w')}$ of states of a person being a student and that person failing, that state is a falsifier$_{(w')}$ of (10). For each world w′ that we're restricting our attention to, each falsifier$_{(w')}$ of (11) will contain as a part$_{(w')}$ some such sum because, contingently (given that Alice is a student and for Kadi not to fail a student is for that student to pass (and vice versa)), what it is for Alice not to pass is in part for her to be a student that Kadi failed.

Now suppose that, in the world of evaluation, for Kadi not to fail a student is not, in part, for that student to have passed: because, for instance, there is a third status beyond pass and fail like "needs to retake." In that case, *ceteris paribus*, there won't be the states in the world of evaluation needed to ensure that the verifiers and falsifiers of (11) and (9) are distributed so as to meet the requirements. Relative to such a world, we rightly predict (3b) to be false of (3a).

The analysis predicts an invariant relation between judgements about the relation between states that are parts of the world of evaluation and judgements about the truth of indirect speech reports. It predicts that as we induce changes in the former we'll cause specific changes in the latter. The analysis doesn't require that everyone agree about which states are parts of which others in a given world (at least not about the verifiers and falsifiers of *atomic* formulas/sentences). It just predicts the invariance. It's the capacity of the analysis to get this right against which it should be assessed.

5 Predicting (2)

Consider again (2):

(2)

a. Kadi: At around 11 p.m., I put on a white shirt, a blue suit, dark socks and my brown Bruno Magli shoes. I then got into a waiting limousine and drove off into heavy traffic to the airport, where I just made my midnight flight to Chicago.

b. Kadi said that she dressed around 11 p.m., went to the airport and took the midnight flight to Chicago.

Let's focus upon the following segments of (2a) and (2b):

(12) Kadi: At around 11 p.m., I put on a white shirt, a blue suit, dark socks and my brown Bruno Magli shoes.

(13) Kadi said that she dressed around 11 p.m.

The report seems true if used to speak of what Kadi did when she uttered what she does in (12). Does our meaning for indirect speech reports predict this? For it to do so we need to focus on the content of the complement of (13):

(14) Kadi dressed around 11 p.m.

Reasonable translations of (12) and (14) are (where "P" is a two-place predicate corresponding to "put on at 11 p.m.", "k" is a name corresponding to "Kadi", "W" is a one place predicate corresponding to "is a white shirt", "P" is a one-place predicate corresponding to "is a blue suit", "D" is a one-place predicate corresponding to "is a pair of dark socks", "S" is a one-place predicate corresponding to "is Kadi's brown Bruno Magli shoes", and "F" is a one-place predicate corresponding to "dressed at 11 p.m."):

(15) $\exists v.\exists x.\exists y.\exists z.(W(v) \wedge P(k,v) \wedge B(x) \wedge P(k, x) \wedge D(y) \wedge P(k, y) \wedge S(z) \wedge P(k, z))$

(16) $F(k)$

Our question is whether the verifiers of (15) and (16) are so arranged that the content of (16) is a part of the content of (15). If they are, then we predict that (13) is true of Kadi's utterance in (12).

Relative to a world w, a verifier$_{(w)}$ of (15) is a verifier$_{(w)}$ of an instance of (15): a state verifies$_{(w)}$ (15) if and only if there are some w, x, y and z that satisfy "$(W(v) \wedge P(k,v) \wedge B(x) \wedge P(k, x) \wedge D(y) \wedge P(k, y) \wedge S(z) \wedge P(k, z))$" in that state. Does such a state have a state as a part$_{(w)}$ that verifies$_{(w)}$ (16)? Normally, when uttered, "put on a white shirt" just means to put the white shirt on one's back, one's head through the collar, one's arms through the sleeves, and to have done up the buttons. Similarly, normally, when uttered, "got dressed" just means to have put on some constellation of items of clothes, each in the normal way for the relevant item (i.e. trousers on legs, shoes on feet, shirt on back etc.). Call contexts which give the VPs of (12) and (13) such normal meanings, "normal contexts." To put on a white shirt, a blue suit, dark socks and one's brown Bruno Magli shoes, each in the normal way, just is, in part, to get dressed in the normal way. But if that's right then: for all worlds w, every state of Kadi having got dressed in the normal way is $part_{(w)}$ of a state of Kadi having put on the four items each in the normal way; every state of Kadi having put on these items in the normal way $includes_{(w)}$ as a part a state of Kadi having got dressed in the normal way; and every state of Kadi not having got dressed in the normal way $includes_{(w)}$ as a part a state of Kadi having not put on these items in the normal way. From this we can conclude, that if the characters of (15) and (16) are applied to normal contexts then, the content of (16) is a part of the content of (15), and if these are reasonable enough models of (12) and the complement of (13), then we predict that (13) is true of (12). This is so regardless of the world of evaluation.

But we don't predict this if (12) is uttered in a non-normal context while (13), albeit still used to report this utterance of (12), is uttered in a normal context. Suppose, for example, that (13) is said outside a gameshow about (12) used inside the gameshow. Suppose that in the gameshow the person who gets dressed the fastest without putting any item of clothing in its normal place, wins. To model this, we would apply our model of (12), viz. (15), to a non-normal context and our model of (13), viz. (16), to a normal context. The resulting contents of (12)/(15) and (13)/(16) would not stand in a relation of content-parthood. For instance, a verifier of (15) will be a state of having put one's legs through the arms of one's shirt and suit jacket, one's arms through the suit's trouser legs, one's socks on one's hands, and the Bruno Magli shoes on one's ears—do that fast enough, and you win. But the verifiers of (16) will still be states of having got dressed in the normal way. The state just described will be a verifier of (15) as used in a non-normal context but, because to have put these items on in the described way isn't in part to have got dressed in the normal way, this state doesn't include a verifier of (16) as used in a normal context as a part. So when (12) and (13) are uttered in such a pair of contexts, we predict that the report is false. And that seems correct. The speaker of (13) reports Kadi as having said that she got dressed in the normal way, but the sentence she uttered was true if and only if she put on the shirt, suit, socks and shoes in the non-normal gameshow way.

Could the contents differ in the way described and yet there be some eligible parts of the world of evaluation which generate a set L that allows the conditions on content parthood to be met? In this instance, no. We defined the contexts of utterance in such a way that to succeed in putting on one's clothes in the non-normal way is to not put them on in the normal way and vice versa. Given this, there can be no eligible part of the world of evaluation which will ensure that either state includes the other as a part. There might be *other* contexts of utterance which generate contents such that the contingencies of the world of evaluation *do* make it the case that one content is, relative to the world of evaluation, a part of the other. But that's not what we have in the current example.

6 Accounting for the conjunction infelicities of section 1

We've designed a truth-condition for indirect speech reports which can handle data offered in support of saying-pluralism. I now want to show how the core of this analysis—contingent content parthood—can be used to explain the infelicities introduced in section 1.

Recall that a pair of asyndetic sentences can be understood to overlap in what they say but a conjunction seems to force a separation of what is said by each conjunct. If it's not possible to interpret the conjuncts as saying separate things, infelicity results. We can formulate this felicity condition using content parthood.

> *Conjunction felicity*
>
> A sentence of the form *α and β* is felicitous relative to a world of evaluation w only if the content of α is not a part of the content of β relative to w and the content of β is not a part of the content of α relative to w.

This condition is superior to a simpler, nearby alternative: *α and β* is infelicitous if either conjunct entails the other. Consider:

(17) Every raven is black and there are no white spiders in your back yard that are ravens.

(18) Either John is the murderer or Simon is the murderer, and, either someone is the murderer or Mary is losing her mind. So, we can at least conclude that Mary is not losing her mind.

These conjunctions are acceptable. Consider (17). We can translate its first conjunct as:

(19) $\forall(x{:}\ R(x))B(x)$

And its second conjunct as:

(20) $\neg\exists(x{:}\ W(x))R(x)$

Given plausible assumptions about colour relations, (19) entails (20). Even so, setting aside worlds with fanciful mereological relations between states, the content of (20) is not a part$_{(w)}$ of the content of (19). For instance, suppose that in w nothing is white. Then the sum$_{(w)}$ of states containing a non-white thing would be a verifier$_{(w)}$ of (20). But this state is not a part$_{(w)}$ of any verifier$_{(w)}$ of (19). The entailment account thus predicts that the conjunction is infelicitous whereas, for a wide range of worlds of evaluation, the content-parthood account predicts that the conjunction is felicitous.

We find the same problem for the entailment account in (18). Entailment doesn't suffice to create a sense that the contents are not distinct. But the content of one conjunct including the content of the other as a part, does.

Because we're employing contingent content parthood (Conjunction Felicity is relativized to worlds), we expect that entailment is not *necessary* for infelicity. Is that correct? Yes. Consider:

(21) I didn't fail any students and Alice passed.

If Alice is in the relevant set of students and if not being failed by the speaker is in part to have passed (and provided we're aware of this), (21) will strike us as infelicitous. But if not, then it's felicitous. Yet neither conjunct entails the other. However, in the former case, the second conjunct is a (contingent) part of the first. Conjunction Felicity predicts infelicity where we find it. The entailment account predicts that (21) is felicitous even when Alice is amongst the students.

Conjunction Infelicity, combined with the proposed semantics of indirect speech reports, explains why the conjunctions (from section 1) of the complement of an acceptable report with the sentence reported are infelicitous: the content of the reported sentence contains the content of the complement of the report. Yet when the complements of two reports of a single utterance have disjoint contents, the complements can be conjoined without triggering Conjunction Infelicity (as in (3e)).

6.1 Conjunctions of speech reports

Once we adopt a plausible bridging principle, we can also use Conjunction Infelicity to explain the infelicity of the conjunctions of the speech reports that we saw in section 1. Consider again:

(2)

e. Kadi said that at around 11p.m., she put on a white shirt, a blue suit, dark socks and her brown Bruno Magli shoes and she said that she got dressed around 11p.m.

Conjunction (2(e)) is infelicitous. Given a normal context, and regardless of the world of evaluation, the complement of the report of the second conjunct is a part of the content of the complement of the first conjunct. Given Conjunction Felicity, 2(e) is predicted to be infelicitous given the following plausible bridging assumption for the relations of state and content parthood.

Bridging Assumption

If you say that P in w and a part of P is Q relative to w, then a part of the state in w in which you say that P is a state in w in which you say that Q.

Should we accept Bridging Assumption? Whether the fact that one ψs O, and the fact that O′ is a part of O, implies that one ψs O′, depends on the nature of ψ-ing. If I paint a still life, then I painted all its parts. But if I love someone, it doesn't follow that I love that person's knuckle or their obsessiveness. In this respect, saying something is more like painting a still life than loving someone. The things we say are homeomerous: if you said that P and part of P is Q, then you (at least) said that Q. Because they are, the bridging principle is plausible. The proposed meaning of indirect speech reports thus explains the infelicities that arise when we try to conjoin speech reports which are individually acceptable. As with conjunctions of their complements, it also explains the exceptions. Consider again:

(3)

a. Kadi: I didn't fail any students.
d. Kadi said that Alice passed and Kadi said that Bea passed.

In the right context, (3d) is not an infelicitous report of (3a). But in the case of this exception, given that Alice isn't Bea, for all worlds of evaluation w that at least I can conceive of, neither conjunct has a content that is a part of the other. If you can divide the content of an uttered sentence in a way that avoids triggering Conjunction Felicity, you can produce a conjunctive list of multiple things someone said when they uttered but one sentence.

7 Comparison with other accounts of (1)-(3)

Almost all of those who have recognized that the content of the complement of a speech (or attitude) report doesn't have to be the content of the speech (or attitude) reported propose that a content γ can be reported in context c′ as having been said by a person who has uttered a sentence σ in context c (or alternatively, as being the object of that person's attitude), if γ is entailed by the conjunction of the content of σ in c and some further information supplied by c′: i.e. if γ is contextually entailed by the content of σ in c (see (Bach, 1997), (Blumberg & Lederman, forthcoming), (Bowker, 2019), (Brasoveanu & Farkas, 2007), (Graff Fara, 2003), and (Sæbø, 2013)). But since such proposals will make entailment sufficient for the correctness of a report, no such proposal can be successful, at least when applied to speech reports: so applied, they will wrongly predict that someone can be said to have said a disjunction which has what they said as a disjunct. The current proposal avoids this consequence.

An exception is Abreu Zavaleta (2019). He does not aim to handle examples like (3). So this is one respect in which the proposal put forward in the current paper is, if successful, superior to Abreu Zavaleta's: it has wider scope. But let's set aside this difference in scope and consider what each account says about the reports that both do aim to explain. On Abreu Zavaleta's account, reports must not characterize speakers as having raised possibilities to salience that the speaker did not raise to salience. Abreu Zavaleta uses a Hamblin semantics for a sentential logic to model natural language sentence meanings. The Hamblin semantics assigns *sets of* sets of worlds to sentences (in context) instead of simply the standard sets of worlds. Each set of worlds is a possibility the sentence raises. For the most part these sets of sets of worlds have singleton members—they raise only one possibility. The exception is disjunctions, which have two sets of worlds in their set: the set of worlds provided by each disjunct. Abreu Zavaleta then proposes the following (paraphrasing):

> α *said that* φ (in c) is true iff α uttered a sentence (or sentences) with a content P (in c′) such that:
>
> (a) every set of worlds in the content P is a subset of a set of worlds in the content of φ (in c); and
> (b) every set of worlds in the content of φ (in c) has a set of worlds in the content P as subset.

This account disallows reports with complements consisting of disjunctions that include the content of the reported sentence(s) as only one disjunct. The official reason for this is that such reports raise possibilities to salience that the speaker didn't raise. But otherwise, this proposal will allow any sentence translatable as an atomic formula which has a content that is entailed by the content of the reported sentence to be the complement of an acceptable speech report. Thus understood, Abreu Zavaleta introduces a fix to block the acceptability of speech reports with complements that are disjunctions, a disjunct of which is the content of the sentence reported—but otherwise he relies on entailment as the measure of speech report acceptability. Can we get away with only a fix?

Abreu Zavaleta himself eventually introduces states ("situations") into his account in order to handle the fact that necessarily true sentences are entailed by all other sentences (but not, for that reason, things we say whenever we say anything). But in doing so, he jeopardizes his account of what's going wrong with unacceptable reports of utterances whose complements are entailed by the sentence reported: namely, that they raise possibilities to salience which were not raised to salience by the person reported. I understand the suggestion that disjunctions raise possibilities to salience: they, in effect, list possibilities. But it is not clear in what sense a necessarily true sentence raises a possibility not raised by a contingent sentence other than that it simply expresses a different proposition—which cannot be treated as sufficient to have raised another possibility without forfeiting the account's ability to permit weak speech reports.

Furthermore, there are unacceptable reports whose complements are entailed by the reported sentence but which are neither necessary propositions nor disjunctions. For instance, consider a report variant of (17):

(22)
c. Kadi: Every raven is black.
d. Kadi said that there are no white spiders in your back yard that are ravens.

(22b) is unacceptable. It is quite mysterious what a salient possibilities account would have to say about it. The content-parthood analysis of indirect speech reports provides a unified account for reports whose complements are disjunctions, or necessary propositions, and examples like (22): the reports err by introducing extraneous content.

For these reasons, I prefer the content-parthood analysis over the salient possibilities analysis.

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