# Perspective in Context

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**ABSTRACT.** The received picture of linguistic communication understands communication as the transmission of information from speaker's head to hearer's head. This picture is in conflict with the attractive Lewisian view of belief as self-location, which is motivated by *de se* attitudes – attitudes about oneself – as well as attitudes about subjective matters such as personal taste. In this paper, I provide a solution to the conflict that reconciles these views. I argue for an account of mental attitudes and communication on which mental content and speech act content is understood as sets of *sequenced worlds* – roughly, possible worlds 'centered' on a sequence of individuals at a time. I develop a Stalnakerian model of communication based on sequenced worlds content, and I provide a suitable semantics for personal pronouns and predicates of personal taste.

**KEYWORDS.** *De se* attitudes, Taste, Assertion, Belief, Self-location, Centered worlds, Sequenced worlds, Predicates of personal taste, Relativism, Contextualism

## 1 Introduction

There is, or appears to be, a conflict between, on the one hand, the perspectival nature of many of our attitudes and, on the other hand, the received picture of linguistic communication. According to this picture, there is a single content which the speaker believes, expresses in speech, and which hearers come to believe if they understand and trust the speaker. But it is difficult to see how this picture fits with a natural account of two kinds of perspectival attitudes: so-called *de se* attitudes, i.e. attitudes about oneself, and attitudes about 'subjective' matters such as personal taste, like the belief that liquorice is tasty. According to this account, mental attitudes have so-called *centered content* – roughly, content whose truth depends on an individual at a world and time. I will argue that the conflict between the received picture of communication and the centered content view of perspectival attitudes can be resolved without giving up either of these attractive views. The solution I will propose is a unified account of mental attitudes and linguistic communication on which content is modelled not in terms of centered worlds but as a set of *sequenced worlds* – roughly, possible worlds that are 'centered' on a sequence of individuals at a time.

It has long been argued that *de se* attitudes – attitudes about oneself – are a distinctive category of thought.[1] On Lewis's elegant and influential proposal, the content of a thought one would express by using the words 'I am hungry' is a set of centered worlds, where a centered world is a possible world 'centered' on an individual at a time. To believe *that I am hungry* is to locate oneself in the set of centered worlds whose center is hungry. A number of philosophers and linguists have recently argued that thoughts about 'subjective' matters such as personal taste also have centered content.[2] To believe that liquorice is tasty is to

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[1] See, for instance, Castañeda (1966, 1967), Perry (1977, 1979), and Lewis (1979a)

[2] See, for instance, Egan et al. (2005), Egan (2007, 2010a), Lasersohn (2005) and Stephenson (2007)

locate oneself in the set of centered worlds to whose center liquorice tastes good.

How do we communicate these self-locating beliefs? The standard picture of communication says, very roughly, that we exchange information by simply passing it on, from speaker's head to hearer's head. But this widely endorsed picture is in conflict with self-locating belief. If I believe that I am hungry, and I say to you, 'I am hungry,' you do *not* come to believe the content I believe. For that would be for you to believe that you are hungry. Instead you come to believe another content, namely that I am hungry.

The conflict at hand suggests that we reject either the natural standard picture of communication or the elegant Lewisian account of self-locating belief. I will argue that neither is necessary. I will begin by stating the self-locating account of belief and other attitudes (§2), the received picture of linguistic communication (§3), and the conflict between these two views (§4). Then I will show that the sequenced worlds view affords an attractive reconciliation of the two views, and I will develop the sequenced worlds view in a broadly Stalnakerian picture of communication (§§5–11). Along the way, I will propose a suitable semantics for pronouns and predicates of personal taste that delivers sequenced worlds content (§§7, 8), and I will discuss the pragmatics of discourse about matters of taste (§§10, 11). I will close by pointing out some open issues (§12).

## 2 Contered Content

*De se* attitudes are thoughts about oneself when one thinks about oneself in the first-person way. They are thoughts one would typically express with a sentence containing a 1st-personal pronoun ('I', 'me', 'my').[3] David Lewis famously argued that the objects of *de se* attitudes cannot be understood as possible worlds propositions. Rather, he suggested, their contents must be (or determine) sets of *centered worlds*. A *centered world* is a possible world 'centered' on an individual inhabiting the world at some time. Just like possible worlds can be understood as ways the world might be, centered worlds can be understood as ways one might be in the world, as possible locations in logical space, or as perspectives one might have on the world. A centered world can be represented by an ordered triple $\langle w, t, x\rangle$ consisting of a world $w$, a time $t$, and an individual $x$ inhabiting $w$ at $t$. The triple determines the individual's spatiotemporal location in $w$ and every other fact concerning the individual in $w$ at $t$, including her attitudes towards matters of taste.[4] The content of my belief *that I am*

[3] *De se* attitudes are often understood in a wider sense to include *de nunc* attitudes – thoughts about when one is such as the thought *that the meeting starts now* – and thoughts about one's current location in space such as the thought *that this is the Mt. Tallac trail*. For simplicity, I will here focus on the narrow class of *de se* attitudes that are characteristically expressed by using 1st-personal pronouns.

[4] The view on which centered worlds *are* triples of a world, time, and persisting individual is attributed to Lewis (1979a, 1983b). The term *centered world* was originally coined by Quine (1969). For Quine, centered worlds are spacetime regions of worlds – quadruples $\langle w, x, y, z, t\rangle$ consisting of a world $w$, a location in space given by coordinates $x$, $y$, and $z$, and a time $t$. As Liao (2012) points out, both the Quinean conception and the Lewisian conception of centered worlds above face counterexamples: intuitively different ways one might be that, on the respective account, are identified with the same set-theoretic object. For instance, if I travel back in time to the year 2000, $\langle$@, DK, 2000$\rangle$ picks out both my younger and my time-traveling older self. If a conscious ghost is co-located in my current spacetime region, the same quadruple $\langle w, x, y, z, t\rangle$ picks out the ghost and me. One way to accommodate such cases is to take possible individuals as primitives, individuated by their unique 'identity' properties. (My current and my older self are different possible individuals, and so am I and a co-locating ghost.) Another option is to take centered worlds as primitives – positions for individuals to

*hungry* is the set of centered worlds in which the center is hungry:

(1) *HUNGRY*: $\{\langle w, t, x\rangle$: $x$ is hungry in $w$ at $t\}$.

At least three kinds of motivation have been given for the distinctiveness of *de se* thoughts. Let me quickly rehearse what I consider the strongest motivation: similarity arguments (to borrow Egan's (2010b) term).[5]

Mad Heimson believes that he is Hume, a belief he would express by saying 'I am Hume.' Hume, of course, also believed of himself that he is Hume. Hume and Heimson share a belief, they are doxastically similar, which explains similarities in their actions (given that their desires and background beliefs are similar). They introduce themselves as 'David Hume,' get angry when they hear Hume being badmouthed, sign with 'David Hume,' and so on. But there is no relevant possible worlds proposition that both Heimson and Hume believe that would explain this doxastic similarity. Why not? Heimson and Hume are worldmates. So any candidate possible worlds proposition is either true at their world or false at their world. If it is true, then both Heimson and Hume have a true belief. If it is false, both Heimson and Hume have a false belief. But Hume is right in believing that he is Hume because he *is* Hume, and Heimson is wrong in so believing. So the shared object of their beliefs, which explains their similarities in action, cannot be a possible worlds proposition. Lewis concludes that the shared object of Heimson's and Hume's beliefs is the property *being Hume*, which each of them self-attributes.[6] Equivalently, we can say that the shared object of their beliefs is the centered content that is the set of centered worlds whose center is Hume.

On a standard possible worlds account, one's overall belief state determines a set of possible worlds, the possible worlds compatible with what one believes. Analogously, on the centered worlds account, one's overall belief state determines a set of centered worlds, the set of centered worlds compatible with what one believes. A centered world $\langle w, t, x\rangle$ is compatible with what one believes iff one's beliefs do not rule out the possibility that one is $x$ in $w$ at $t$. One believes a centered worlds content $p$ iff every centered world compatible with what one believes is contained in $p$. Hume believes that he is Hume iff every centered world compatible with what he believes is a member of

(2) *HUME*: $\{\langle w, t, x\rangle$: $x$ is Hume in $w$ at $t\}$.

His belief in *HUME* at some time $t_1$ is correct iff in addition, his actual location at $t_1$, $\langle @, t_1, \text{Hume}\rangle$, is a member of *HUME*.

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occupy within worlds – rather than identify them with some set-theoretic object (Egan, 2009, 253 n.3). For my purposes here, it should be safe to ignore time-traveling and co-location cases and remain neutral with respect to the nature of centered worlds. For convenience of exposition, I will assume that a $\langle w, t, x\rangle$-triple represents a centered world.

[5] The second kind of consideration in favour of a distinctive category of *de se* thought comes from arguments that purport to show that while one may know all relevant standard (possible worlds) propositions, one may still lack knowledge about oneself (see for instance Lewis's (1979a) two gods case and Perry's (1979) case of Lingens in the Stanford Library). The third kind of motivation comes from the semantics of attitude verbs like 'expect, want,' and 'imagine,' whose truth conditions have been shown to be sensitive to the ascription of *de se* attitudes (see, e.g., Morgan (1970) and Chierchia (1989)).

[6] Cf. Lewis (1979a, 525-6). Perry (1977, 1979) draws the lesson that Hume and Heimson believe different propositions and that their doxastic similarity is to be accounted for by their shared 'belief state' – roughly, the first-personal mode of presentation of the propositions. I think there are good reasons against Perry's account and for preferring Lewis's analysis, but space prevents me from pursuing them here.

Lewis speaks of belief as self-attribution of properties. On centered worlds talk, belief is self-location in a set of centered worlds. Since properties correspond to sets of centered worlds, we will switch back and forth between these equivalent ways of talking.[7]

On the centered worlds account, *all* attitudes have centered content. However, not all centered contents are *de se* contents. Following Egan's (2006, 107) terminology, we can call a centered content *p boring* if it does not distinguish between locations in a world. More precisely, *p* is boring iff for every world $w$ and pairs $\langle t_1, x\rangle$, $\langle t_2, y\rangle$ of individuals inhabiting $w$ at times $t_1$ and $t_2$, respectively, *p* contains $\langle w, t_1, x\rangle$ iff it contains $\langle w, t_2, y\rangle$. Because boring centered contents distinguish between worlds but not between locations in a world, they are equivalent to possible worlds contents.[8] *De se* contents do distinguish between locations in a world. They are *interesting*. A centered content *p* is interesting iff there is a world $w$ and pairs $\langle t_1, x\rangle$, $\langle t_2, y\rangle$ of individuals inhabiting $w$ at times $t_1$ and $t_2$, respectively, such that *p* contains $\langle w, t_1, x\rangle$ but not $\langle w, t_2, y\rangle$.

Egan et al. (2005), Egan (2007, 2010a), Lasersohn (2005) and Stephenson (2007) have recently argued that the contents of our attitudes towards 'subjective' matters like personal taste are best understood as interesting centered contents, too. Intuitively, the truth of claims about what is tasty, fun, or entertaining depends not just on what the objects concerned are like, but on some subject not made explicit. The degree to which we differ in our beliefs about matters of taste seems to support this subjective dimension of taste judgments and stands in stark contrast to the convergence in the judgments about 'objective' matters which we pass with relative confidence. On the centered worlds account, to believe that a particular cookie is tasty is to locate oneself in the set of centered worlds to whose center the cookie tastes good:

(3) *COOKIE*: $\{\langle w, t, x\rangle$: the (contextually salient) cookie tastes good to $x$ in $w$ at $t\}$.

*COOKIE* can be true of one person but false of another. If the cookie happens to taste good to Ben, he is right in believing *COOKIE*, while Anna is wrong in believing *COOKIE* if the cookie does not taste good to her. *COOKIE* is an interesting centered content.

There are important differences between *de se* beliefs and beliefs about matters of personal taste. For the moment, however, notice their similarities. Crucially, both kinds of belief are beliefs in *interesting* centered contents and follow an egocentric belief norm:

EGOCENTRICITY Believe $p$ only if *you yourself* are correctly located by $p$.

Importantly, EGOCENTRICITY requires only the believer's correct location to be contained in $p$. An agent's *de se* belief that she is hungry is correct as long as that agent is hungry, even if she were to be the only person in logical space ever to be hungry. Similarly, an agent appropriately believes that some cookie is tasty as long as she herself is such that the cookie tastes good to her, even if she were the only person ever to enjoy its taste.[9]

[7] A property determines its extension at possible worlds and times. Given a world and time, it determines the set of individuals that instantiate the property at that world and time. A property can thus be thought of as a function from worlds and times to sets of individuals. This function is equivalent to a function from world-time-individual triples to truth values. The set characterized by the latter function is a set of world-time-individual triples $\langle w, t, x\rangle$ such that $x$ instantiates the property at $t$ in $w$ (cf. Lewis (1979a, 532)).

[8] See Nolan (2006), however, for objections to the claim that one can do with centered worlds whatever one can do with possible worlds.

[9] EGOCENTRICITY also applies to belief in boring centered contents, even though intuitively, the appropriateness of one's belief that, say, snow is white depends on more than just one's own location. However, an agent is

In addition to the interestingness of content and the egocentricity of belief, *de se* attitudes and attitudes about taste also have in common an account of believing-alike in terms of shared content. When Ben and Anna each believe, *I am hungry*, their similar disposition to act is explained by the shared interesting centered content of their beliefs. Likewise, when they each believe, *This wine is tasty*, they are disposed to similar behaviour (given similar background beliefs and desires); they are reaching for their glass frequently, will not refuse a refill, etc. Their similar disposition can also be explained by their believing-alike, which is accounted for by the shared content: $\{\langle w, t, x\rangle$: the (contextually salient) wine tastes good to $x$ in $w$ at $t\}$.

## 3 The Lockean Picture of Communication

Received wisdom paints a simple and attractive picture of linguistic communication as the transfer of information. This picture is famously expressed by John Locke:

> They suppose their words to be marks of the ideas in the minds also of other men, with whom they communicate: for else they should talk in vain, and could not be understood, if the sounds they applied to one idea were such as by the hearer were applied to another, which is to speak two languages. But in this men [...] think it enough that they use the word, as they imagine, in the common acceptation of that language; in which they suppose that the idea they make it a sign of is precisely the same to which the understanding men of that country apply that name. (*An Essay Concerning Human Understanding*, book III, ch. 2, §4)

The picture attributed to Locke and arguably endorsed by Frege and much of 20th century philosophy is this: a speaker succeeds in communicating when she has an idea in her head and uses the words that express this idea in language and arouse in the hearer the very same idea. The speaker's mental content is, as it were, transported from her head to the hearer's head, who comes to share this content.[10]

On the Lockean picture, one kind of content plays the following three roles:

1. Speaker's mental content: what the speaker believes and intends to communicate
2. Speech act content: what the speaker's (assertoric) speech act literally expresses
3. Hearer's mental content: what the hearer comes to believe, if she understands and trusts the speaker

correctly located by a boring centered content if and only if she and all of her worldmates are correctly located by it. Thus it is only the appropriateness of believing interesting centered contents that depends *merely* on the location of the attitude holder.

[10] For the attribution of the 'Lockean' picture of communication to Locke, as well as to Frege, and for a defence of the picture against criticism, see Pagin (2008). Interestingly, Frege has been interpreted by some to be committed to the view that contents ('thoughts') expressed by sentences involving indexicals like the first-person pronoun 'I' are private, non-shareable and incommunicable, contrary to the shareable nature of thoughts that Frege stresses in his writings (see for instance Kripke (2011) for this interpretation). First-personal thoughts being of a particular concern in this paper, I will have to leave it open whether Frege can correctly be claimed to endorse the Lockean picture of communication.

So if I believe that snow is white and intend to tell you, and I assert the right words, 'Snow is white,' I express my very belief. If you understand what I assert and trust me, you come to have a belief with the same content as I.

A theory of communication needs to say what plays these three roles. It also needs to say how Speaker's mental content, Speech act content, and Hearer's mental content are related:

> Belief-speech coordination: the connection between the speaker's belief content and the content of the speech act
>
> Speech-belief coordination: the connection between the speech act's content and the hearer's belief content

The Lockean picture again offers a straightforward account: These connections are simply the identity relation. Note that Speech act content is what the expressions used in a speech act semantically express. It coincides, roughly, with Grice's notion of *what the speaker says* rather than with Grice's *what the speaker means*, which may involve pragmatically implicated content.[11]

## 4 The Conflict

There is *prima facie* evidence that we do communicate our self-locating beliefs. If mad Heimson were to ask a sympathetic contemporary, 'Who am I?' and received the answer, 'You are Heimson,' it seems that he would be told just the piece of *de se* information that could set him straight.[12] But this datum is in conflict with the Lockean picture. Suppose Ben has the *de se* belief that he is hungry and says to Anna, 'I am hungry.' The Lockean picture predicts that he is expressing the interesting centered content of his belief, which Anna will come to believe if she understands and accepts his assertion. That is, Anna will come to locate *herself* in the content and will thus believe *de se* that *she* is hungry. But what Ben communicates is obviously some other information – information Anna grasps if she comes to have a belief to the effect that the speaker, Ben, is hungry. Call this problem the *de se problem*.[13]

The problem for self-locating belief on the Lockean picture gets worse. It may seem that the right conclusion to draw from the *de se* problem is that hearers systematically *infer* an appropriate self-locating belief centered on themselves from the fact that the speaker asserted a content centered on himself. For instance, Anna may infer the centered content such that the center is being addressed by someone hungry from the fact that Ben asserted the centered content such that the center is hungry. But this is not what happens in the communication of self-locating beliefs about matters of taste. Suppose Ben believes that some cookie is tasty and says to Anna, 'This cookie is tasty,' thereby expressing the centered content *COOKIE*.

[11] A complete account of linguistic communication will have to account for pragmatically conveyed information, disambiguation, indirect speech acts and other pragmatic phenomena as well. Here, I am interested only in that part which accounts for the connection between mental content, linguistically expressed content, and compositional semantic theory. By a 'theory of communication', I shall mean, following Lewis (1975, 1980), a systematic restatement of speakers' common knowledge of their practice of linguistic communication.

[12] See Torre (2010) for reasons to think that communication of *de se* information is possible.

[13] This problem was first raised by Stalnaker (1981, 146-7).

(3) *COOKIE*: $\{\langle w, t, x\rangle$: the (contextually salient) cookie tastes good to $x$ in $w$ at $t\}$.

What kind of thing will Anna come to believe if she understands and trusts him? She will *not* just come to locate herself in a content such that the center is addressed by someone to whom the cookie tastes good. On the contrary, if Anna accepts the claim, she will come to have the very self-locating belief that Ben has, viz. a belief with the centered content such that the cookie tastes good to the center. For Anna to accept an assertion of 'This cookie is tasty' is for her to locate *herself* in a cookie-liking location.

Centered worlds *de se* content and centered worlds content about matters of taste play incompatible roles in communication. With successful assertions about taste, the hearer comes to believe the same centered content as the speaker. With successful assertions about oneself, the hearer does not come to believe the same centered content. Call this problem the *incompatibility problem*.

It may seem that we have to give up either the centered content belief model or the Lockean picture of communication. But this would be hasty. In the next sections, I will propose an account that preserves the simplicity of the Lockean picture and the self-locating nature of belief by modifying the notion of centered content.[14]

## 5 Sequenced Worlds

A centered world is a possible way one individual may be. Centered worlds suffice for the modelling for belief as *self*-location, but not for communication. In communication, we are not just trying to locate ourselves individually. We are trying to locate ourselves as a group. We are trying to arrive at a common view about our collective location and everyone's position in it. And for that, the possible ways different individuals may be need to be represented. If I tell you, *It's my turn*, I am talking about myself in terms of my own possibilities. If I tell you, *It's your turn*, I am talking about you in terms of your possibilities. The fundamental problem with centered worlds content on the Lockean picture of communication is that the single center needs to represent sometimes the speaker, sometimes the addressee, and sometimes both.

The problem can be solved by introducing a *sequence* of centers. A *sequenced world*, or *multi-centered world*, is a possible world centered on a number of individuals at a time. It is a possible way that a plurality of individuals might be that does not conflate their individual possibilities. Formally, a sequenced world is a triple consisting of a world $w$, a time $t$, and a sequence of individuals $\langle x_1, \ldots, x_n\rangle$ inhabiting $w$ at $t$. A sequenced worlds content $p$ is the set of $\langle w, t, \langle x_1, \ldots, x_n\rangle\rangle$-triples such that $p$ is true at $\langle w, t, \langle x_1, \ldots, x_n\rangle\rangle$. Lewis

[14] There are alternative responses to the conflict. They fall in two groups: Those which give up the self-locating account of mental attitudes and preserve the Lockean picture of communication; and those which hold on to the self-locating account of mental attitudes but drop the Lockean picture of communication. For the *de se* problem, the first group of responses is represented by Perry (1977, 1979) and Stalnaker (1981), and the second group by Egan (2007, 2010a) & Moss (2012), Heim (2004) & Weber (2011), and Moltmann (2010). With the exception of Egan and Moltmann, none of these views address the incompatibility problem. In my dissertation, I sketch ways of extending these views to cover taste attitudes as well, and I discuss possible ways in which they might address the incompatibility problem. Let me here just state that even those of the extended alternatives that provide a solution to both the *de se* and the incompatibility problem still require giving up one of the natural and attractive views that the sequenced worlds account reconciles.

thought of centered worlds contents as properties of individuals. Similarly, sequenced worlds contents can be thought of as properties of ordered $n$-tuples of individuals.[15]

I will here present a sequenced worlds model of communication that is a development of Ninan's (2010b) and Torre's (2010) accounts, which use sequenced worlds content to solve the first of the above problems – the *de se* problem.[16] What I will show is that a suitably developed sequenced worlds model provides a solution to the whole problem. It yields a unified account of belief and communication for *de se* contents as well as contents about matters of taste.

Speaker's mental content, Speech act content, and Hearer's mental content are now sets of sequenced worlds, with one slot in the sequence for each conversational participant. Whose possibilities each slot carves out must be stable in communication. Otherwise our two problems would persist. If the first center, say, were to carve out Ben's possibilities when he believes the content, but were to carve out Anna's possibilities when she comes to believe the content, their individual possibilities would again be conflated. In order to stabilise what the content of speech acts and beliefs held during conversation represents, we relativise it to a *conversational context c*, a triple of a world $w_c$, time $t_c$, and an ordered list of conversational participants in $w_c$ at $t_c$. Call the ordered list of conversational participants the *conversational sequence*. It is determined by the conversational facts. Who the participants to a conversation are depends on the mutually recognised intentions of speaker and audience. The order of the list of conversational participants does not matter, as long as we keep it stable for the entire conversation.[17]

Let us see how this helps with *de se* communication. We stipulate that for the conversation between Ben and Anna in $w_c$ at $t_c$, $\langle w_c, t_c, \langle \text{Ben, Anna} \rangle \rangle$ is the conversational context. Then the content of Ben's assertion of 'I am hungry' is the sequenced worlds content $HUNGRY_1$:

(4) $HUNGRY_1$: $\{\langle w, t, \langle x_1, x_2 \rangle \rangle$: $x_1$ is hungry in $w$ at $t\}$

$HUNGRY_1$ says, roughly, that the first center $x_1$ is hungry. Given the conversational sequence $\langle$Ben, Anna$\rangle$, Ben's possibilities are represented by the first center, and Anna's possibilities by the second center. So for Ben to believe $HUNGRY_1$ is for him to believe *de se* that he is hungry. For Anna to believe $HUNGRY_1$ is for her to believe *de te* – 'of you' – that Ben is hungry. It is not for her to believe *de se* that she herself is hungry. So if Ben believes what he says and if Anna understands and accepts Ben's assertion, he and Anna will come to believe the same sequenced worlds content $HUNGRY_1$. However, their doxastic states are not exactly the same, as they dispose them to different actions. (We will come back to this difference in section 6.) This solves the *de se* problem.

[15] Lewis (1983a, 28) himself provided the idea of worlds with multiple centers but did not use them to account for centered communication: 'Besides possible individuals, world-sized and smaller, there are still other possibilities: joint possibilities for two or more individuals. These are ordered pairs, triples, etc. ... or even infinite sequences of possible individuals, all from the same world. An ordered pair of compossible individuals, for instance, is a way that a pair of individuals might possibly be.'

[16] The model I develop here is close to Ninan's in some key respects. Any shortcomings of the model are, of course, my responsibility. The model differs from Torre's in technicalities and one important philosophical respect: Torre gives up the Lockean picture of communication.

[17] The set of conversational contexts is a proper subset of the set of sequenced worlds – those sequenced worlds in which the individuals of the sequence are in a conversation with each other. For a given moment in a conversation, there are as many formal objects I call conversational contexts as there are ways of combining the participants into an ordered sequence.

Talk about taste need not distinguish between centers in the same way that *de se* communication must. If Ben successfully communicates 'This cookie is tasty' to Anna, they will each come to locate themselves in a cookie-liking location. On the sequenced world picture, we get this result if taste contents place conditions on every center. Let us again take $\langle w_c, t_c, \langle \text{Ben, Anna} \rangle\rangle$ as the conversational context. If Ben believes and asserts 'This cookie is tasty' in *c*, he expresses the sequenced worlds content $COOKIE_{1\&2}$:

(5) $COOKIE_{1\&2}$: $\{\langle w, t, \langle x_1, x_2 \rangle\rangle$: the cookie tastes good to $\langle x_1, x_2 \rangle$ in $w$ at $t\}$

If communication is successful and Anna accepts Ben's assertion relative to the conversational sequence ⟨Ben, Anna⟩, she comes to locate herself in the set of sequenced worlds such that the cookie tastes good to *all* centers. And that seems right. If Ben wishes to establish that the cookie is tasty by asserting 'This cookie is tasty,' he has succeeded if they both locate themselves among the cookie-likers. This solves the incompatibility problem: *de se* and subjective sequenced worlds contents do not play incompatible roles in communication. The communication of either is successful in case the hearer comes to believe the same content the speaker believed and expressed in speech.

Belief in $COOKIE_{1\&2}$ is different from purely egocentric belief whose correctness depends only on one's own correct location. Anna should believe $COOKIE_{1\&2}$ only if she believes that the cookie tastes good to the speaker and that it tastes good to herself. The latter belief egocentrically concerns her taste, the former is safe as long as she takes Ben's assertion to be sincere. Sequenced worlds content on the Lockean picture captures the fact that success in the communication of subjective, evaluative claims involves acceptance of a common perspective on the matter.

This is in a nutshell the sequenced worlds solution to the conflict between the Lockean picture of communication and a self-location account of belief and other attitudes. In the rest of the paper, I will fill in the details of the sequenced worlds view. I will first talk about the notion of belief (§6), will then address semantic questions (§§7–8), and will finally turn to the pragmatics of discourse about oneself and about matters of taste (§§9–11).

## 6 Belief in Context

Sequenced worlds content, on the Lockean picture, is what is expressed and believed by speaker and audience. To believe a sequenced worlds content in a conversational context is to have a belief with a content whose sequenced worlds have sequences with as many individuals as there are parties to the conversation. It is to locate oneself as well as everyone else in the conversation; it is to locate the group of which one is a member, in a way that allows for the perspectives of the members to differ. If belief in centered worlds content is self-location, then belief in sequenced worlds content during conversation is location of the conversational group of which one is a member. It is self-and-group-location.

The notion of believing a sequenced worlds content must be relativised to a conversational context and a believer. Here is why. Suppose Lingens says to his cousin Ortcutt, 'I am tired of reading.' If he is communicating successfully, then relative to the conversational context $\langle w_c, t_c, \langle \text{Lingens, Ortcutt} \rangle\rangle$ they will both end up believing $TIRED_1$:

(6) $TIRED_1$: $\{\langle w, t, \langle x_1, x_2 \rangle\rangle$: $x_1$ is tired of reading in $w$ at $t\}$

But even when Lingens and Ortcutt believe the same sequenced worlds content $TIRED_1$ relative to the conversational context, there is still an important difference between their belief states. Their beliefs will dispose them to different actions – perhaps a disposition to stop reading for Lingens, and perhaps a disposition to say, 'Why don't you take a break?' for Ortcutt. This difference in belief states is accounted for by relativising belief to agents in conversational contexts. The complete account of sequenced worlds belief is as follows:

n-Belief in a conversational context

> An agent $A$ $n$-believes a sequenced worlds content $\{\langle w, t, \langle x_1, \ldots, x_u\rangle\rangle$: $p(w, t, \langle x_1, \ldots, x_u\rangle)\}$ in the conversational context $\langle w_c, t_c, \langle y_1, \ldots, y_u\rangle\rangle$ iff
>
> (i) $A = y_n \in \{y_1, \ldots, y_u\}$
>
> (ii) there are relations $R_1 \ldots R_u$ such that in $w_c$ at $t_c$, $y_n$ is uniquely $R_1$-related to $y_1$, …, and $y_n$ is uniquely $R_u$-related to $y_u$ (where $R_n$ is the identity relation) and $y_n$'s standing in $R_1 \ldots R_u$ to $y_1 \ldots y_u$ establishes a conversation between $y_1 \ldots y_u$
>
> (iii) every sequenced world $\langle w', t', \langle x'_1, \ldots, x'_u\rangle\rangle$ compatible with what $A$ believes in $w_c$ at $t_c$ is such that $p(w', t', \langle x'_1, \ldots, x'_u\rangle) = 1$.

Informally, n-Belief in a conversational context says that an agent $n$-believes a sequenced worlds content $p$ in a conversational context just in case (i) the agent is the $n$th member of the conversational sequence, (ii) the agent stands in relations to every member of the conversational sequence which establish a conversation between them, and (iii) the agent believes that she might be the $n$th member of a group of which $p$ is true.

n-Belief in a conversational context entails that Lingens 1-believes $TIRED_1$ in the conversational context $\langle w_c, t_c, \langle$Lingens, Ortcutt$\rangle\rangle$ just in case (i) Lingens $\in \{$Lingens, Ortcutt$\}$, (ii) there are conversation-establishing relations $R_1$ and $R_2$ such that in $w_c$ at $t_c$ $R_1$ uniquely relates Lingens to himself (identity) and $R_2$ relates Lingens to Ortcutt (e.g., the addressing relation), and (iii) every sequenced world $\langle w', t', \langle x'_1, x'_2\rangle\rangle$ compatible with what Lingens believes in $w_c$ at $t_c$ is such that $x'_1$ is tired of reading in $w'$ at $t'$. A sequenced world $\langle w', t', \langle x'_1, x'_2\rangle\rangle$ is compatible with what Lingens believes in $w_c$ at $t_c$ if Lingens thinks in $w_c$ at $t_c$ that he might be the member $x'_1$ of a group $\langle x'_1, x'_2\rangle$ in $w'$ at $t'$ whose members are related by $R_1$, $R_2$.[18]

There is nothing mysterious about an agent's believing a sequenced worlds content in a conversational context, once we accept centered worlds content and individual self-location. We can, if we want, translate sequenced worlds belief into centered worlds belief. Put simply, the idea is that to ascribe a property to the group of which one is a member is equivalent to self-ascribing the property of being a member of a group that has this property. For Ortcutt to believe the sequenced worlds content $p$ expressed by Lingens' assertion of 'I am tired of reading' in the conversational context $\langle w_c, t_c, \langle$Lingens, Ortcutt$\rangle\rangle$ is for him to be addressed

[18] In solitary thinking and soliloquy, in which the thinker is not addressing anyone in a second-personal way, belief is location of the 'group' that consists just of the thinker herself. That is, her belief content is a set of sequenced worlds whose sequences have a single center – i.e., it is a centered worlds content. So in solitary contexts, belief naturally amounts to self-location. n-Belief in a conversational context captures self-location if we allow the identity relation that a thinker bears to herself as a limit case of a conversation-establishing relation in clause (ii).

by Lingens and to believe the centered worlds content $p'$ = $\{\langle w, t, x\rangle$: there is a $y$, $x$ is $y$'s addressee in $w$ at $t$, and $p(w, t, \langle y, x\rangle)\}$. More generally, the following equivalence holds:

Sequenced worlds belief and centered worlds belief

> An agent $A$ $n$-believes a sequenced worlds content $\{\langle w, t, \langle x_1, \ldots, x_u\rangle\rangle$: $p(w, t, \langle x_1, \ldots, x_u\rangle)\}$ in the conversational context $\langle w_c, t_c, \langle y_1, \ldots, y_u\rangle\rangle$ iff
>
> (i) $A = y_n \in \{y_1, \ldots, y_u\}$,
>
> (ii) there are relations $R_1 \ldots R_u$ such that in $w_c$ at $t_c$, $y_n$ is uniquely $R_1$-related to $y_1$, …, and $y_n$ is uniquely $R_u$-related to $y_u$ (where $R_n$ is the identity relation) and $y_n$'s standing in $R_1 \ldots R_u$ to $y_1 \ldots y_u$ establishes a conversation between $y_1 \ldots y_u$
>
> (iii) $A$ believes the centered worlds content $\{\langle w, t, x\rangle$: there are individuals $x_1, \ldots,$ $x_u$ such that $x$ is uniquely $R_1$-related to $x_1$, $x$ is uniquely $R_2$-related to $x_2, \ldots,$ and $x$ is uniquely $R_u$-related to $x_u$ in $w$ at $t$, and $p(w, t, \langle x_1, \ldots, x_u\rangle)\}$.

For $n \neq m$, $n$-believing and $m$-believing in a conversational context are two different doxastic states, with different potential effects on action. If Lingens and Ortcutt communicate successfully, both come to have beliefs with the same sequenced worlds content $p$. However, in the conversational context $\langle w_c, t_c, \langle$Lingens, Ortcutt$\rangle\rangle$, Lingens will come to 1-believe $p$, which probably disposes him to stop reading, while Ortcutt will come to 2-believe $p$, which will not dispose him to such action. Sequenced worlds belief and centered worlds belief makes this evident: When Lingens 1-believes and Ortcutt 2-believes $p$, they believe the same content $p$, but for each the centered worlds belief equivalent to his belief in $p$ is different.

A word of clarification on Sequenced worlds belief and centered worlds belief. The equivalence between sequenced worlds belief and centered worlds belief can be read in three ways. First, as stating an equivalence between two equally basic and theoretically useful notions of belief. Second, as stating a reductive explanation of believing a sequenced worlds content in terms of believing a centered worlds content. The fundamental notion of belief then is individual self-location. Third, the equivalence can be read as stating a reductive explanation of belief in centered worlds content in terms of belief in sequenced worlds content. The fundamental notion of belief then is collective self-location, or group-location. On the last option, individual self-location is a special case of collective self-location where the group consists of only one member. I am inclined to think the fundamental notion is group-location, but I will not offer independent arguments here. Suffice it to say that taking sequenced worlds belief and sequenced worlds content as fundamental supports the Lockean assumption that communication essentially involves the sharing of a single content. If centered worlds belief is fundamental and speaker and hearer in successful communication have beliefs with different centered worlds contents, introducing a shared content at the non-fundamental level of sequenced worlds belief hardly goes a long way towards saving the Lockean picture.

# 7 A Semantics for Pronouns and Predicates of Personal Taste

Understanding SPEECH ACT CONTENT in terms of sequenced worlds was the key to solving the *de se* and incompatibility problems in a way that reconciles the self-locating account of belief with the Lockean picture of communication. But so far I have merely claimed that SPEECH ACT CONTENT is sequenced worlds content. I have not yet shown what the relation is between sentences – such as 'This cookie is tasty' and 'I am hungry' – and this kind of speech act content. For the sequenced worlds model to be plausible, it needs to be completed with a semantics of predicates of personal taste and of personal pronouns and an account of how the semantics determines sequenced worlds speech act content.

The sequenced worlds model does not require a radical departure from existing semantic proposals. For instance, the standard Kaplanian treatment of personal pronouns can be combined with a slightly modified version of Stephenson's (2007) semantics for predicates of personal taste to make room for sequenced worlds content. Other options are available, but for concreteness I will introduce a combination of the above in this section.[19] In the next section, I will show how this semantics delivers sequenced worlds speech act content.

Our starting point is a Kaplan-style intensional semantic theory on which extensions are assigned relative to a context $c$ and an index $i$.[20] An expression's semantic value is a function from a context and an index to an extension; we will also say that an expression's semantic value *at a context and index* is an extension. A context $c$ is a possible occasion of use of an expression, which determines at least a world, a time, a speaker and addressee(s), and a location. Formally, we will represent a context as a sequenced world $\langle w, t, \langle x_1, \ldots, x_n \rangle\rangle$, where $x_1, \ldots, x_n$ are in a conversation with each other. An index $i$ is a sequence of independently shiftable features of context, called coordinates. In the semantics we need, the index is a triple $\langle w, t, \langle x_1, \ldots, x_n \rangle\rangle$.[21] The index is the first modification of Stephenson's system, which has $\langle w, t, x\rangle$-triples as indices. The double brackets '$[\![\ ]\!]$' denote the interpretation function, a three-place function that maps an expression, a context and an index to an extension.

The extensions of standard one-place predicates like 'hungry' depend on the world- and time-coordinate of the index, but not on any individual in the sequence.

(7) $[\![\text{hungry}]\!]^{c,i} = [\lambda y_e.$ y is hungry in $w$ at $t]$,
for $i = \langle w, t, \langle x_1, \ldots, x_n \rangle\rangle$[22]

Predicates of personal taste (PPTs) such as 'tasty' and 'fun',[23] on Stephenson's view, are two-place predicates. They are functions from an experiencer and experienced object or

[19] For instance, a semantics with sequenced worlds indices can also be formulated by modifying Lasersohn's (2005; 2008) semantics for predicates of personal taste.

[20] For a clear exposition of an 'orthodox' version of the system with possible worlds as the only coordinates of the index, see Heim and Kratzer (1998, ch.12) and von Fintel and Heim (2011).

[21] The index may or may not be a sequenced world depending on whether a possible situation corresponds to the combination of world, time, and individuals. For instance, $\langle$@, 16 June 1902, $\langle$Frege, Russell$\rangle\rangle$ is a sequenced world but $\langle$@, 16 June 2012, $\langle$Frege, Russell$\rangle\rangle$ is not, since Frege and Russell inhabited @ in 1902 but not in 2012. Both triples, however, can be values of the index.

[22] The subscript '$e$' indicates $y$'s semantic type. $e$ is the semantic type of individuals, $s$ stands for worlds, $i$ for times, and $t$ for truth values; combinations such as '$et$'/$\langle e, t\rangle$ stand for functions from the first type ($e$) to the second ($t$). Read '$[\lambda y_e.$ y is hungry in $w$ at $t]$' as 'the function which maps every $y_e$ to 1 (truth) if y is hungry in $w$ at $t$, and to 0 (falsity) otherwise.'

[23] I shall for the most part restrict my attention to paradigm examples of predicates of personal taste such as 'fun' and

individual, and a context and an index, to truth values.

(8) $[\![\text{tasty}]\!]^{c,i}$ = $[\![\text{taste good}]\!]^{c,i}$ = [$\lambda y_e$.[$\lambda z_e$. z tastes good to y in $w$ at $t$] ]
$[\![\text{fun}]\!]^{c,i}$ = [$\lambda y_e$.[$\lambda z_e$. z is fun for y in $w$ at $t$] ]

The entries for PPTs do not directly make their extensions dependent on the individuals in the index. However, in first-personal uses of PPTs, i.e. in bare taste claims such as 'This cookie is tasty' which are based on the asserter's taste preferences but which do not have an overt experiencer argument in the sentence's surface structure, there is a covert, phonologically null nominal item '$\text{PRO}_\text{C}$' at the appropriate level of logical form.[24] Simplifying the logical form, and ignoring tense and the contribution of the copula, (9) has the following structure.

(9) This cookie is tasty.
[ This cookie ] [ is tasty $\text{PRO}_\text{C}$ ]

$\text{PRO}_\text{C}$ takes as its referent the sequence of centers in the index:

(10) $[\![\text{PRO}_\text{C}]\!]^{c,i} = \langle x_1, \ldots, x_n \rangle$,
where the index $i = \langle w, t, \langle x_1, \ldots, x_n \rangle \rangle$.

$\text{PRO}_\text{C}$ is the second modification of Stephenson's system, in which the nominal item $\text{PRO}_\text{J}$ refers to the single judge given by the index. Like $\text{PRO}_\text{J}$, $\text{PRO}_\text{C}$ is 'not a pronoun in the sense of being able to be bound or controlled, nor is it an indexical since it takes its reference from the index rather than the context of utterance.' (Stephenson, 2007, 500) $\text{PRO}_\text{C}$ thus introduces dependence of first-personal uses of PPTs on the individuals in the index into the system.[25] The meaning of (9) is computed in (11).[26]

'tasty'. The grammatical demarcation of a class of predicates of personal taste from aesthetic and other evaluative predicates is difficult, as Lasersohn (2005) observes. (See Lasersohn (2008, §1.2), though, for a non-definitional demarcation of predicates of personal taste based on the interaction of perspective with scalarity.)

[24] First-personal uses of PPTs must be distinguished from so-called 'exocentric' uses, in which the taste preferences of a contextually salient individual are at issue, as well as from explicitly relativized uses with overt prepositional phrases such as 'for Ben.' In this short introduction, I focus on first-personal uses, but see footnote 25 on exocentric and explicitly relativized uses of PPTs.

[25] Treating PPTs as two-place predicates provides a straightforward handling of uses of PPTs with an overt prepositional phrases such as 'for Ben' in 'The roller coaster is fun for Ben' and of so-called 'exocentric' uses of PPTs, which have no overt experiencer but in which the context of utterance makes a particular individual salient, as in (1) (adapted from Lasersohn (2005, 672)):

(1) Anna: How does Bill like the rides?
Ben: Well, the merry-go-round is fun, but the water slide is a little too scary.

The treatment of these two uses of PPTs on the sequenced worlds semantics does not differ from Stephenson's treatment. The interested reader is referred to Stephenson (2007, §4.4).

[26] It is worth noting that a sentence like 'This cookie is not tasty' has two readings when it takes the silent $\text{PRO}_\text{C}$ as experiencer argument. The first reading says roughly that it is not the case that the cookie tastes good to all conversational participants. The second reading says roughly that the cookie does not taste good to either of the conversational participants. This is due to a scope ambiguity. On the first reading, negation takes wide scope. Leaving aside many details, the sentence's LF is thus *Not this cookie is tasty* $\textit{PRO}_\textit{C}$. On the second reading, negation takes narrow scope and $\text{PRO}_\text{C}$ moves to the front: $\textit{PRO}_\textit{C}$ *this cookie is not tasty*. Note that sentences that explicitly take a plural experiencer argument, such as 'This liquorice is not tasty to Ben and Sal,' also have

(11) $[\![\text{This cookie is tasty}]\!]^{c,i}$ =
$[\![\text{tasty}]\!]^{c,i}$ ($[\![\text{PRO}_{\text{C}}]\!]^{c,i}$) ($[\![\text{this cookie}]\!]^{c,i}$) = 1 iff
the cookie tastes good to $\langle x_1, \ldots, x_n \rangle$ in $w$ at $t$

Personal pronouns like 'I'/'me' and (2nd person singular) 'you' receive a standard Kaplanian treatment.

(12) $[\![\text{I}]\!]^{c,i}$ = the speaker/agent of $c$
$[\![\text{you}]\!]^{c,i}$ = the addressee of $c$

Since we represent contexts by sequenced worlds, the entries for these pronouns are to be understood as follows. In $c = \langle w_c, t_c, \langle x_1, \ldots, x_n \rangle$, 'I' refers to the $x_i$ of $\langle x_1, \ldots, x_n \rangle$ that is the speaker in $w_c$ at $t_c$; 'you' refers to the $x_i$ of $\langle x_1, \ldots, x_n \rangle$ that the speaker in $c$ addresses. Ben's utterance in (13) has the meaning given in (14).

(13) Ben: I am hungry.

(14) $[\![\text{I am hungry}]\!]^{c,i}$ = $[\![\text{hungry}]\!]^{c,i}$ ($[\![\text{I}]\!]^{c,i}$) = 1 iff Ben is hungry in $w$ at $t$

We now have what we need for a compositional semantic theory for simple sentences expressing claims about taste and *de se* attitudes.

## 8 Speech Act Content

How do we get the sequenced worlds speech act content we need from the semantic values given above? In short, by taking the diagonal of a sentence's Kaplanian character. Let us start with sentences expressing *de se* attitudes.

Kaplan took 'what is said' – the speech act content expressed – by an assertoric utterance of a sentence in context to be the function from index to truth values. Let us call this content, in our system, the Kaplan horizontal:

Kaplan horizontal of $\Phi$ at $c$: $\lambda i.[\![\Phi]\!]^{c,i}$ =
$\{\langle w, t, \langle x_1, \ldots, x_n \rangle\rangle\colon [\![\Phi]\!]^{c,\langle w,t,\langle x_1,\ldots,x_n\rangle\rangle} = 1\}$[27]

Given the standard Kaplanian semantic values of the pronouns 'I'/'me' and 'you,' their reference is resolved in the derivation of the Kaplan horizontal from context. Thus, the Kaplan horizontal of (13) is (15).

these the two readings. The narrow scope reading is usually the strongly preferred reading of such sentences even when the overt experiencer argument is not moved to the front at surface level. Consider (i).

(i) ? This liquorice isn't tasty to Ben and Sal, but it is tasty to Ben.

While (i) has a true reading, it is *prima facie* odd. Its oddity is explained by the contradiction that arises between the narrow scope reading (but not the wide scope reading) of the first conjunct and the second conjunct. It is plausible to assume that sentences with covert $\text{PRO}_{\text{C}}$ also have a default narrow scope reading.

[27] Sequenced worlds contents can be characterized as sets of sequenced worlds and as the characteristic functions of such sets. For indices that take sequenced worlds with sequences of *n* individuals, $\lambda i.[\![\Phi]\!]^{c,i}$ is the characteristic function of the set $\{\langle w, t, \langle x_1, \ldots, x_n \rangle\rangle\colon [\![\Phi]\!]^{c,\langle w,t,\langle x_1,\ldots,x_n\rangle\rangle} = 1\}$. The two formulations are essentially equivalent, and I will use both.

(15) $\lambda i.[\![\text{I am hungry}]\!]^{c,i} = \{\langle w, t, \langle x_1, \ldots, x_n\rangle\rangle$: Ben is hungry in $w$ at $t\}$

But (15) is not the interesting sequenced worlds content which, as we saw above, is communicated by assertions involving 1st-personal pronouns. Fortunately, the Kaplan horizontal is not the only speech act content definable from the semantics. As Lewis (1980) showed, the intensional semantic theory does not determine one unique candidate for the role of speech act content. To be sure, it it is convenient if the content that is the input to intensional operators – i.e., here the Kaplan horizontal – is also the content expressed in communication. But speech act content *need not* be identical to the content that combines with intensional operators to yield a sentence's semantic value in context.[28] It is this freedom that allows us to define the right interesting sequenced worlds content from the semantic value of sentences containing 1st-personal pronouns.

Suppose Ben utters 'I am hungry' in the conversational context $\langle w', t', \langle$Ben, Anna$\rangle\rangle$. As we saw above, the interesting sequenced worlds content he communicates is $HUNGRY_1$, repeated in (16).

(16) $HUNGRY_1$: $\{\langle w, t, \langle x_1, x_2\rangle\rangle$: $x_1$ is hungry in $w$ at $t\}$.

$HUNGRY_1$ is the Kaplan diagonal of the sentence 'I am hungry' as asserted by Ben. The Kaplan diagonal of a sentence $\Phi$ is the set of contexts at which $\Phi$ is true.

$$\begin{aligned}\text{Kaplan diagonal of } \Phi\text{:}\quad \lambda c.[\![\Phi]\!]^{c,c} = \\ \{c\text{: } [\![\Phi]\!]^{c,c} = 1\} = \\ \{\langle w, t, \langle x_1, \ldots, x_n\rangle\rangle\text{: } [\![\Phi]\!]^{\langle w,t,\langle x_1,\ldots,x_n\rangle\rangle,\langle w,t,\langle x_1,\ldots,x_n\rangle\rangle} = 1\}\end{aligned}$$

Recall that a context $c$ is modelled by a sequenced world. So the Kaplan diagonal is a sequenced worlds content. Recall also that for every conversational situation, there are several equivalent sequenced worlds representations of that situation, which only differ in the order of their centers. Since for Ben's speech situation, we have represented the context by $\langle w', t', \langle$Ben, Anna$\rangle\rangle$ – in which Ben, the speaker, comes first, the resulting choice for the Kaplan diagonal is one in which the speaker-center is the first in the sequence. Ben's utterance of 'I am hungry' is true at all contexts in which the speaker is hungry, which given the choice of context-representation is just the set of contexts $\langle w, t, \langle x_1, \ldots, x_n\rangle\rangle$ such that $x_1$ is hungry in $w$ at $t$. So the Kaplan diagonal of Ben's assertion in a conversation with one addressee is $HUNGRY_1$, as required. The definition of speech act content is as follows:

Speech act content$_{SW}$

> The content of an utterance of $\Phi$ in $c$ is the the Kaplan diagonal of $\Phi$ in $c$.

Speech act content$_{SW}$ also yields the desired content for first-personal taste claims. Such taste claims put conditions on every center of the sequence. Since the experiencer argument $PRO_C$ takes its value from the index, the intension (function from index to extension) of a sentence involving PPTs on first-personal uses does not vary from context to context. So the Speech act content$_{SW}$ of a sentence with a PPT, on first-personal uses, is in fact

[28] Ninan (2010a) offers a clear and illuminating exposition of Lewis' point, as well as the various options for defining speech act content in a Kaplan-style intensional semantics.

equivalent to the Kaplan horizontal of the sentence (barring other indexical expressions in the sentence).[29] The speech act content of 'Liquorice is tasty' is (17).[30]

(17) $\lambda\langle w, t, \langle x_1, x_2\rangle\rangle.[\![\text{Liquorice is tasty PRO}_{\text{C}}]\!]^{\langle w,t,\langle x_1,x_2\rangle\rangle,\langle w,t,\langle x_1,x_2\rangle\rangle}$
$= \{\langle w, t, \langle x_1, x_2\rangle\rangle\text{: } [\![\text{Liquorice is tasty PRO}_{\text{C}}]\!]^{\langle w,t,\langle x_1,x_2\rangle\rangle,\langle w,t,\langle x_1,x_2\rangle\rangle} = 1\}$
$= \{\langle w, t, \langle x_1, x_2\rangle\rangle\text{: liquorice tastes good to } \langle x_1, x_2\rangle \text{ in } w \text{ at } t\}$

# 9 Conversation and the Common Ground

On the sequenced worlds model, Speaker's mental content, Speech act content, and Hearer's mental content are one and the same sequenced worlds content. Thus Belief-speech coordination and Speech-belief coordination are given by the identity of these contents. The basic Lockean idea that one piece of information travels from speaker's head to hearer's head is preserved.

The sequenced worlds model also fits naturally with a Stalnakerian implementation of the Lockean picture. I will first sketch Stalnaker's original account and then make the changes needed to accommodate sequenced worlds content.

According to Stalnaker, linguistic communication is primarily a matter of updating and establishing a body of shared information – the common ground.[31] Speech acts serve to influence this body of information in various ways. In particular, the essential effect of assertion is to add the asserted content to the common ground. The attitude that speakers strike towards the common ground is the attitude of *presupposition*:

> . . . the presuppositions of a speaker are the propositions he takes for granted as part of the background of the conversation. A proposition is presupposed if the speaker is disposed to act as if he assumes or believes that the proposition is true, and as if he assumes or believes that his audience assumes or believes that it is true as well. (Stalnaker, 1978, 84)

[29] The Kaplan diagonal abstracts over entire contexts. It thus affects the interpretation of all expressions whose semantic value varies with context. For instance, the speech act content of an assertion of 'This is Big Ben' in a conversation with two interlocutors is something like (i):

(i) $\{\langle w, t, \langle x_1, x_2\rangle\rangle\text{: the object demonstrated in } \langle w, t, \langle x_1, x_2\rangle\rangle \text{ is Big Ben in } w \text{ at } t\}$

Treating the contribution of all context-sensitive expressions on a par with that of 1st- and 2nd-personal pronouns is required if we accept that the class of *de se* attitudes include *de hic* (locational) attitudes and *de nunc* (temporal) attitudes, whose expression involves locationally and temporally context-sensitive vocabulary. (Perry's cases of the hiker lost in the wilderness and of the professor desiring to attend the department meeting on time (1979, 4) provide motivation for widening the class of *de se* attitudes; cf. fn. 3). It is worth noting that we could adopt a semantics of pronouns and other context-sensitive expressions and diagonalise in a way that allows 'this' and similar expressions to provide their referents to the speech act content.

[30] Sequenced worlds speech act content depends on facts about the context, namely the number of participants in the conversation. As a result, assertions of the same sentence by the same speaker may express different sets of sequenced worlds in contexts that differ only with respect to the number of interlocutors. There is a clear sense, however, in which 'what is said' by these assertions is the same. A sequenced worlds content is a way of distinguishing between alternative possibilities – between alternative ways a number of people might be. It can be understood as a partition of a space of possibilities, a space which may itself differ in kind from context to context, depending on the number of people whose possibilities are represented. The same content, understood as a partition, can thus yield different sets of sequenced worlds – sets of worlds with sequences of different length – depending on the space of possibilities on which it operates.

[31] Stalnaker's views on the pragmatics of communication are developed in his 1970, 1974, 1978, and 2002, among others.

Presupposition, in this sense, is a public attitude: one presupposes a proposition *p* only if one presupposes that everyone else in the conversation also presupposes *p*. A speaker's presuppositions are represented by the speaker's *context set*: the set of possible worlds compatible with what the speaker presupposes. (Propositions, for Stalnaker, are also sets of possible worlds; a speaker's context set is the intersection of the propositions she presupposes.) There is a context set for each participant in a conversation, but when things go as they should, all participants make the same presuppositions and the speakers' context sets coincide with the *conversation's context set*. The common ground is represented by the conversation's context set, which is the intersection of the propositions in the common ground. A conversation is *defective* when the conversation's participants do not all make the same presuppositions.[32]

Assertions are proposals to add information to the common ground. When an assertion of *p* is understood and accepted by all participants in a conversation, its content *p* becomes presupposed in the conversation, and its effect is to eliminate all the non-*p* worlds from the conversation's context set. 'To engage in conversation is, essentially, to distinguish among alternative possible ways that things may be.' (Stalnaker, 1978, 85) An assertion's primary contribution is to narrow down what the participants commonly take to be the possible relevant ways the world might be.

On the sequenced worlds model, the conversation's context set is a set of sequenced worlds whose sequences have as many centers as the conversation has participants. To engage in conversation is to distinguish between alternative ways that the conversational participants might be, where this does not require that they all share the ways they *individually* might be. Intuitively, the purpose of conversation is the coordination of individual perspectives, sometimes with the result of sharing a perspective, sometimes with the result of having one's individual perspective noticed.

Assertions serve this purpose, if successful, by adding the sequenced worlds content they express to the common ground. When in the common ground, that content is presupposed by all conversational participants. We can define the notion of speaker presupposition for a context set containing sequenced worlds on the basis of *n*-belief in a conversational context:

Speaker presupposition$_{SW}$

> A speaker *S* *n*-presupposes a sequenced worlds content *p* in a conversational context $\langle w_c, t_c, \langle x_1, \ldots, x_u \rangle\rangle$ iff $S = x_n \in \{x_1, \ldots, x_u\}$ and *S* is disposed to act as if she *n*-assumes or *n*-believes *p*, and as if she *n*-assumes or *n*-believes that for all $x_i \in \{x_1, \ldots, x_u\}$, $x_i$ *i*-assumes or *i*-believes *p* as well.

If a sequenced worlds content *p* is part of the common ground in the default case where the common ground is common belief, every participant in the conversation $x_n$ *n*-believes *p*.

The Stalnakerian model with sequenced worlds content vindicates the Lockean idea that one content is what is expressed by the speaker and believed by all participants if communic-

[32] In the default case, the common ground will be common knowledge or common belief. But it need not be. Interlocutors may take different non-public attitudes towards what is presupposed, depending on the purpose of the conversation. When the purpose is to establish truth, the attitude is, plausibly, knowledge or belief; when speakers are interested in exploring a hypothetical situation, the mutually recognised non-public attitude is supposition; asf. What the right non-public attitude to take is, may itself be a matter of negotiation between interlocutors. I will for the most part focus on the default case where the common ground is common belief. Even when presupposition entails belief, however, the converse is not true. Given the public nature of presupposition, a speaker typically believes a variety of things she does not believe her audience to believe, or she may believe that her audience believes them but not that they believe that she believes them, etc.

ation is successful. At the same time, belief on the model still involves self-location, although belief in a conversational context involves locating not just oneself but the conversational group of which one is a member. The model solves the *de se* problem and the incompatibility problem by keeping centers and individual possibilities separated where necessary and allowing for joint possibilities to be established where this is, intuitively, the effect of successful assertion. Thus, the conflict between the Lockean picture of communication and the self-locating belief model can be resolved without giving up either of them.

## 10 Norms of Assertion

We saw that belief in context is location of the conversational group of which one is a member. The correct belief-norm is not Egocentricity but a group-centric norm that requires the group to be correctly located in the believed sequenced worlds content. What about assertion and acceptance of sequenced worlds content in conversation? Our model of communication should tell us under which conditions it is felicitous for speakers to assert a sequenced worlds content $p$, and when it is a good idea for hearers to accept $p$ into the common ground.

Clearly, egocentric norms will not make the right predictions. To see that, let us consider one mainstream approach to norms of assertion, which states the crucial necessary condition for felicitous assertion in terms of truth of the asserted content. First, it will be helpful to distinguish between two kinds of perspectives at which a content may be true.

Individual perspective $\mathrm{P}^{\mathrm{I}} = \langle w, t, x \rangle$

> An individual perspective $P^I$ represents the perspective of a single individual (her and only her location and world view) in the world $w$ at the time $t$.

The conversation's perspective $\mathrm{P}^{\mathrm{N}} = \langle w_c, t_c, \langle x_1, \ldots, x_n \rangle \rangle$

> The perspective of a conversation is $\langle w_c, t_c, \langle x_1, \ldots, x_n \rangle \rangle$, where $w_c$ and $t_c$ are the world and time at which the conversation takes place, and $\langle x_1, \ldots, x_n \rangle$ is the conversational sequence for the conversation. $\langle w_c, t_c, \langle x_1, \ldots, x_n \rangle \rangle$ represents the individual perspectives of all conversational participants $x_1, \ldots, x_n$ in $w_c$ at $t_c$.

Let us say that a sequenced worlds content is true from an individual perspective just in case it correctly represents the location of that individual – no matter the location of the other individuals in the sequence. We can then give the following egocentric truth norm of assertion:

Egocentric Truth Norm

> $\textsc{Assert}_{\mathrm{E}}$ A speech act content $p$ is appropriately assertable in context $c$ only if $p$ is true from the speaker's individual perspective $P^I_c$ in $c$.

$\textsc{Assert}_{\mathrm{E}}$ may seem to make the right predictions for *de se* assertions. Intuitively, Heimson may assert 'I am Heimson' only if the center-slot representing Heimson correctly locates him in the world at the time. But $\textsc{Assert}_{\mathrm{E}}$ fails to make the correct predictions for *de te* assertions. It does not prohibit speakers to tell anyone except Heimson, 'You are Heimson,' as it should. The speech act content expressed by 'You are Heimson' places a constraint only

on a center different from the center representing the speaker. So as long as someone in the world and at the time of the conversation is Heimson, the speech act content is true from the speaker's individual perspective.

The right norms of assertion and acceptance, which go hand in hand with belief in context as group-location, are group-centric norms. In a first attempt, we can formulate them as follows.

Group-centric truth norms

ASSERT$_{\text{G}}$ A speech act content $p$ is assertable in context $c$ only if $p$ is true from the conversation's perspective in $c$.

ACCEPT$_{\text{G}}$ A speech act content $p$ is acceptable in context $c$ if $p$ is true from the conversation's perspective in $c$.

Suppose Ben tells Heimson in a context of utterance $c$, 'You are mad.' Let the conversational context be $\langle w_c, t_c, \langle$Ben, Heimson$\rangle\rangle$ so that the speech act content of Ben's assertion is $\{\langle w, t, \langle x_1, x_2\rangle\rangle$: $x_2$ is mad in $w$ at $t\}$. The conversation's perspective $P^2_c$ is $\langle w_c, t_c, \langle$Ben, Heimson$\rangle\rangle$. According to ASSERT$_{\text{G}}$, Ben's assertion is appropriate only if $\{\langle w, t, \langle x_1, x_2\rangle\rangle$: $x_2$ is mad in $w$ at $t\}$ is true from $\langle w_c, t_c, \langle$Ben, Heimson$\rangle\rangle$. This is as it should be. Ben should make the assertion only if – and Heimson should accept the assertion if – Heimson is mad at the time and world of speaking.[33]

For talk about taste, the group-centric norms entail that, for instance, 'This cookie is tasty' is assertable only if the cookie tastes good to speaker *and audience*. That is because all interlocutors have to be correctly located in the content, which says of each one of them that the cookie is tasty to them.

This prediction might seem too strong. Why should a speaker have to make sure that she and her audience have a common outlook on taste in order to guarantee that her assertion about the cookie's tastiness is appropriate? It may seem after all that the subjectivity of taste claims is better captured by an egocentric norm like ASSERT$_{\text{E}}$. Yet we have also seen that egocentric norms deliver wrong results for *de se* assertions.

I will argue that the intuitive judgments motivating a weaker requirement on the appropriateness of bare taste assertions can be given their due place on the sequenced worlds view without denying that the above group-centric norm plays an important role in governing bare taste assertions in conversation.[34] As I will show momentarily, two norms of assertion – a strong group-centric norm and a weak speaker-oriented norm – hold sway over discourse, each related to a different conversational purpose. The basic picture is this. Conversations are cooperative enterprises with the goal of locating the conversational group, i.e. reducing the group-possibilities in the context set. When bare taste assertions are made, this goal

[33] Note that to assess whether $\{\langle w, t, \langle x_1, x_2\rangle\rangle$: $x_2$ is mad in $w$ at $t\}$ is true from $\langle w_c, t_c, \langle$Ben, Heimson$\rangle\rangle$, one need not be able to identify $x_2$ *de re* as Heimson. We use the names 'Ben' and 'Heimson' to state what the conversational sequence is merely for convenience. All that is needed to determine whether some content is true from the conversational perspective is the ability to keep participants apart and consistently track them in derivations of content from context. For participants in one-to-one conversations, the ability to distinguish between oneself and not-oneself and to track them, respectively, suffices.

[34] By 'bare taste assertions' I mean first-personal uses of PPTs that are covertly relativised to PRO$_{\text{C}}$ (cf. section 7). There are of course other uses of PPTs on which they are covertly relativised to a contextually salient experiencer ('exocentric uses', cf. fn. 25) or on which an experiencer variable is bound by a quantifier. In this section, I put such uses aside.

requires that participants agree on the tastiness of the food in question (or agree to disagree). But while the maximally cooperative, group-centric communicative purpose of bare taste claims is to establish a shared perspective on the tastiness of the food, bare taste claims also serve the more speaker-oriented purpose of giving voice to the speaker's own perspective. Each of these two purposes gives rise to a norm of assertion, which is conditional on the purpose. Judgments about the appropriateness of assertions may reflect either of the norms, depending on the purpose guiding the judgment.

The plan for the rest of this section is as follows. I will first show what explanatory work is done by the strong group-centric norm of assertion. I will then turn to intuitive judgments about the appropriateness of bare taste assertions that are weaker than those guided by the strong norm. This will require discussing the expressive-persuasive nature of bare taste assertions and how it is accounted for on the sequenced worlds model. At the end of the section, we will be in a position to state the two norms of assertion.

Let us start with the strong group-centric norm of assertion, $\textsc{Assert}_{\textsc{G}}$, and the conversational goal of establishing a shared perspective on the tastiness of a food in question. Disputes about taste often become unreasonable when it is clear that no agreement can be reached. There is a sense in which bare taste claims, but not explicitly relativised taste claims, are pointless and uncooperative conversational moves when it has already been established in conversation that speaker and audience do not share tastes. It is often, but not always, unreasonable to keep insisting that some food is tasty when one's interlocutor has made it plain that she strongly disagrees with that judgment. In this kind of situation, however, it *is* reasonable to retreat to the claim that the food is tasty to oneself. For illustration, consider the following example.

(18) a. Ben: Schnitzel is tasty.
b. Anna: No, it's not tasty! It is bland.
c. Ben: Well, it's tasty to *me*, at least.

(19) a. Ben: Schnitzel is tasty.
b. Anna: No, it's not tasty! It is bland.
c. Ben: ? Well, it is tasty.

The strong group-centric norm $\textsc{Assert}_{\textsc{G}}$, but no egocentric norm, explains the difference in assertability between (18c) and (19c).[35] Egocentric norms predict that both (18c) and (19c) are felicitous, since from Ben's perspective at the time of his second utterance, it is both true that Schnitzel is tasty and that Schnitzel is tasty to Ben himself.[36] In contrast, the group-centric norm predicts that (19c) is not appropriate to assert in this kind of situation because the asserted content is not true from the conversation's perspective. But it makes no such prediction for (18c) because the asserted content – the set of pair-centered worlds such that Schnitzel tastes good to the speaker-center – is true from the conversation's perspective in the case where Schnitzel tastes good only to Ben. The group-centric norm captures the

[35] Ben's assertion in (18c) amounts to a 'partial retraction' of his first assertion. Cf. Pearson (forthcoming, §4.6) on 'partial retraction' and what Schaffer (2011) calls 'entrenchment' for a related phenomenon. The example in (18) is adapted from Pearson (forthcoming, §4.6).

[36] Of course, an explanation of the conversational impropriety of (19c) may appeal to other norms than the norm of assertion. But the example shows at the very least that egocentric truth norms are blind to conversational circumstances that transcend the speaker's individual perspective.

reasonableness of bare taste assertions, because their appropriateness conditions reflect the conditions of fully cooperative communicative success, which consists in an update of the common ground that entails that all interlocutors agree on the tastiness of Schnitzel. When in such situations we judge that a bare taste assertion is uncooperative and inappropriate, our judgments are guided by the fully cooperative, group-centric communicative purpose of bare taste claims.

It is a consequence of the strong group-centric norm of assertion that if there is significant divergence in our views on matters of taste, many of our taste assertions are likely to be inappropriate. But very often, especially at the beginning of a conversation about matters of taste, it seems perfectly appropriate to make a bare taste claim such as 'This cookie is tasty,' even when someone among our audience as a matter of fact disagrees. How can we explain such judgments of conversational appropriateness?

Bare taste claims are aimed at establishing a shared perspective. But they also serve the purpose of voicing our own individual perspective. Under normal circumstances, I want my audience to share *my* perspective, and for that I need to put my perspective out there, in the hope that my audience will agree. In many cases, this hope is well-founded. Our perspectives are very often very similar. It is very often reasonable to assume that we are alike in our perspectives on the tastiness of the food in question, be it because it is reasonable to assume that as humans, we share a basic physiological make-up, or because we are similar in our dispositions to enjoy foods according to their taste, or because we belong to a community of values whose members arrive at similar evaluative judgments due to normative pressure towards the coordination of attitudes. Even when there is resistance from my audience that indicates they do not share my perspective, it might be reasonable – up to a point – to sustain the assumption of relevant similarity because there is good reason to think that they might *come to* share my perspective as a result of the conversation. Where the purpose of voicing one's perspective – with an eye to persuading the audience of adopting the perspective – is in the foreground, assertions seem appropriate only if they correctly voice the speaker's perspective and there is some chance that the audience can be persuaded of adopting the perspective. Appropriateness in this sense is captured by the weak norm of assertion that is tied to the more speaker-oriented purpose of voicing one's perspective.

Before we can state the weak norm of assertion, we need to get clearer on the expressive-suggestive nature of bare taste assertions. This requires making precise the assumption of relevant similarity on the sequenced worlds framework. For conversational participants to assume that they are similar with respect to their perspectives on the tastiness of some food is for them to presuppose that they have a *joint perspective* on the sequenced worlds content $p$, which says that the food is tasty.

Joint perspective on p

> $\langle w, t, \langle x_1, \ldots, x_n\rangle\rangle$ is a joint perspective on a sequenced worlds content $p$ iff for all individuals $x_i$ and $x_j \in \{x_1, \ldots, x_n\}$: either both
> $\langle w, t, \langle x_1, \ldots, x_i, x_j, \ldots, x_n\rangle\rangle \in p$ and $\langle w, t, \langle x_1, \ldots, x_j, x_i, \ldots, x_n\rangle\rangle \in p$, or both
> $\langle w, t, \langle x_1, \ldots, x_i, x_j, \ldots, x_n\rangle\rangle \in \neg p$ and $\langle w, t, \langle x_1, \ldots, x_j, x_i, \ldots, x_n\rangle\rangle \in \neg p$.[37]

[37] Note that the negation, $\neg\Phi$, of a bare taste sentence $\Phi$ on a first-personal use has two readings depending on the scope of the negation. Where $\Phi$ is the sentence '*X* is tasty,' the default wide scope reading says, very roughly:

For a pair-centered content *p*, this means that the sequenced world $\langle w_1, t_1, \langle$Ben, Anna$\rangle\rangle$ is a joint perspective on *p* just in case either both $\langle w_1, t_1, \langle$Ben, Anna$\rangle\rangle \in p$ and $\langle w_1, t_1, \langle$Anna, Ben$\rangle\rangle \in p$, or both $\langle w_1, t_1, \langle$Ben, Anna$\rangle\rangle \in \neg p$ and $\langle w_1, t_1, \langle$Anna, Ben$\rangle\rangle \in \neg p$. Where *p* is a content expressed by a bare taste claim, this intuitively says that Anna and Ben have a joint perspective on the tastiness of some food in $w_1$ at $t_1$ just in case the food tastes good either to both of them or to neither of them in $w_1$ at $t_1$. A *presupposition* (in the sense defined in section 9) *of joint perspective on p* is in place in a conversation with participants $x_1, \ldots, x_n$ just in case the context set contains only joint perspectives on *p*. For a conversation between Ben and Anna this means that a presupposition of joint perspective on a pair-centered content *p* is in place just in case for every sequenced world $\langle w, t, \langle x_1, x_2\rangle\rangle$ in the context set, either both $\langle w, t, \langle x_1, x_2\rangle\rangle \in p$ and $\langle w, t, \langle x_2, x_1\rangle\rangle \in p$ or both $\langle w, t, \langle x_1, x_2\rangle\rangle \in \neg p$ and $\langle w, t, \langle x_2, x_1\rangle\rangle \in \neg p$.

Provided that speakers know their own taste and the context set contains the conversation's perspective (the 'actual' sequenced world), an assertion will not be inappropriate (in either weak or strong sense) in a conversation in which a correct presupposition of joint perspective is in place.[38]

Let us now move on to the expressive-suggestive nature of bare taste assertions. It is crucial to realise that the point of bare taste assertions is never just to state one's perspective. We noted that there is a difference between asserting 'This cookie is tasty' and 'This cookie is tasty to me.' The latter is a statement of one's perspective, and it can function as a 'partial retraction' of one's bare taste claim. The former cannot function in this way (cf. (18), (19) above). So what is it about the bare taste assertion that distinguishes it from the mere statement of one's perspective?

Emotivists and others have long noted that evaluative claims have a persuasive, or recommending, force.[39] They recommend a particular attitude towards the object, event, or action in question. On the sequenced worlds model, it is not hard to see how this could be so. If Ben asserts that liquorice is tasty, he proposes to add to the common ground the content that liquorice tastes good to all participants. For his assertion to be appropriate (in the weak sense), a presupposition of joint perspective has to be in place. If no such presupposition is yet in place and liquorice does not taste good to the addressee, she faces a choice. She can either reject the claim or she can *accommodate* the presupposition of joint perspective. In the default case where the common ground is common belief, she accommodates the presupposition if she comes to believe that food of the relevant kind either tastes good to both the speaker and herself or to neither of them (and believes that the speaker believes this and so on). Knowing from the speaker's assertion that liquorice tastes good to the speaker, she will sincerely believe that it tastes good to both of them only if she changes her individual perspective on the tastiness of liquorice, thus bringing it about that the taste claim is true. The kind of accommodation is just what accommodation of any type of presupposition (on the Stalnakerian model) amounts to, viz. adding the missing presupposition to the common

it is not the case that *X* is tasty to all of the conversational participants. The default narrow scope reading says: *X* is not tasty to either of the conversational participants. For the definition of Joint perspective on p to deliver the intuitively correct result, $\neg p$ must be the content expressed by the narrow scope reading of $\neg\Phi$. Thus, where $\Phi$ is a bare taste sentence, $\ulcorner\neg p\urcorner$ does not denote the complement set of *p*. On negated taste claims, see also footnote 26 above.

[38] See Egan (2007, 2010a) and López de Sa (2008) for two accounts on which a presupposition of relevant similarity is a necessary condition for the felicity of assertions of bare taste sentences.

[39] See, for instance, Stevenson (1963, ch.2)

ground.[40] It is a peculiarity of the sequenced worlds framework that adding the presupposition of joint perspective may involve changing one's own perspective: For the conversation's perspective to be a joint perspective on the asserted content, the addressee must like what the other participants like. If she does not do so already, she has to change her taste or that of the other participants. Thus, the persuasive force of bare taste assertions amounts to the potential need for accommodation on the hearers' part, which they bring about by changing their perspectives.[41]

We can thus explain why even when it is understood that the audience disagrees with the speaker about the tastiness of some food, it may still be sensible for the speaker to insist on her judgment as long as she has reason to think that her audience is in a position to accommodate. And even when she has little reason to think that her audience will in fact accommodate, the practical pressure of having to coordinate her perspective with her hearers' perspectives – for instance, when they have to take a collective decision on which food to order in a restaurant – may provide sufficient reason to insist on a bare taste claim in light of opposition.[42]

Let me summarise. Judgments about the propriety of bare taste assertions may be guided by different conversational purposes. On the one hand, they may be guided by maximal cooperativeness – a property an assertion possesses if everyone in the conversation can appropriately accept it. These judgments are accounted for by the strong group-centric norm of assertion. They track reasonableness – what a dispute about matters of taste lacks when 'it makes no sense' to keep disputing. On the other hand, judgments may track a much lower threshold of appropriateness. In that case, they are guided by the speaker-oriented purpose of voicing one's perspective and persuading one's audience of sharing one's perspective. An assertion counts as appropriate in this weaker sense only if it correctly represents the speaker's perspective and there is a chance that the hearers may be persuaded – that is, the hearers are in a position to accommodate in such a way as to bring about the asserted content's truth from the conversational perspective.

In talk about objective matters, these two purposes do not come apart. But in talk about subjective matters, the changes an assertion proposes to make to the common ground may be appropriate relative to the speaker-oriented purpose, yet fail to be appropriate with respect to maximal cooperativeness. Judgments may be guided by the strong group-centric norm of assertion or by the weak speaker-oriented norm of assertion.

Strong group-centric norm of assertion

> ASSERT$_G$ A speech act content $p$ is appropriately assertable in context $c$ only if $p$ is true from the conversation's perspective in $c$.

[40] It is widely (though not uncontroversially) assumed that a rule of accommodation applies to speech acts that carry presuppositions: If a speech act requires presupposition $q$ to be appropriate and $q$ is not yet presupposed, then *ceteris paribus* the presupposition $q$ comes into existence (cf. Lewis (1979b, 340)).

[41] Relativists like Egan (2010a, 273), MacFarlane (2007, 20), and Recanati (2007, 93 n.35) have noted the link between the process of accommodation (in Lewis' sense) and the purpose of establishing a shared viewpoint. For Richard (2008, 101), the process of 'accommodation and negotiation' can be found wherever we use vague scalar expressions that give rise to relative truth.

[42] The discussion in this section owes much to Egan (2010a), with whose general outlook on the reasonableness of disputes about taste I am in large agreement. Of course, no claim is made about the converse agreement.

Weak speaker-oriented norm of assertion

Assert$_{W}$ A speech act content $p$ is appropriately assertable in context $c$ only if $p$ correctly locates the speaker and the hearers in $c$ are in a position to accommodate in such a way as to bring about $p$'s truth from the conversational perspective at $c$.

A speech act content$_{SW}$ $p$ correctly locates a speaker $S$ just in case $p$ contains a triple consisting of the speaker's actual world @, her current time $t$, and a sequence with $S$ in the position that represents $S$ relative to the conversational sequence: Given the conversational sequence $\langle S,\ldots\rangle$, there is a triple $\langle @, t, \langle S,\ldots\rangle\rangle$ such that $\langle @, t, \langle S,\ldots\rangle\rangle \in p$.

## 11 An Objection from 'tasty to us'

With the most important details of the sequenced worlds view in place, let me finally address an objection from our use of PPTs.

Objection. On the sequenced worlds model, an assertion of 'X is tasty' may have the same content as an assertion of 'X is tasty to us' made in the same context. For instance, in a conversation between two people assertions of 'Liquorice is tasty' and 'Liquorice is tasty to us' both express (20).

(20) $\{\langle w, t, \langle x_1, x_2\rangle\rangle$: liquorice tastes good to $\langle x_1, x_2\rangle$ in $w$ at $t\}$

But intuitively, an assertion of 'Liquorice is tasty to us' is about what tastes good to the group, whereas an assertion of 'Liquorice is tasty' is not. This difference shows in the different assertability conditions of the assertions. For instance, in a conversational context in which it is common belief that liquorice fails to taste good to at least one of the addressees, the assertion 'Liquorice is tasty to us' seems infelicitous. In contrast, a speaker to whom liquorice tastes good can still felicitously assert 'Liquorice is tasty' in that context. This strongly suggests that the two assertions have different truth conditions.

Reply. It will be helpful to first restate the objection in a rigorous way. I will then make a clarificatory remark before I explain why the two assertions may *seem* to have different assertability conditions.

Here is the step-by-step reconstruction of the objection.

1. Let $c$ be a conversational context in which it is common belief that liquorice fails to taste good to one of the addressees. The sequenced worlds content expressed by an assertion of 'Liquorice is tasty' in $c$ = the sequenced worlds content expressed by an assertion of 'Liquorice is tasty to us' in $c$ = $\{\langle w, t, \langle x_1, \ldots\rangle\rangle$: liquorice tastes good to $\langle x_1, \ldots\rangle$ in $w$ at $t\}$ [Premise]
2. For any $c'$, if two assertions made in $c'$ express the same content (have the same truth-conditions), then they have the same assertability conditions in $c'$. [Premise]
3. So in $c$, an assertion of 'Liquorice is tasty' and an assertion of 'Liquorice is tasty to us' have the same assertability conditions. [from 1, 2]

4. But the two assertions do not have the same assertability conditions in *c*. The assertion of 'Liquorice is tasty to us' is infelicitous and the assertion of 'Liquorice is tasty' is felicitous. [Premise]

5. Contradiction [3, 4]

6. Hence premise 1 is false: the content expressed by an assertion of 'Liquorice is tasty' in $c \neq$ the content expressed by an assertion of 'Liquorice is tasty to us' in *c*, *pace* the predictions of the sequenced worlds model. [from 1, 5]

The objection crucially relies on the claim about the sequenced worlds model in premise 1 and the principle linking truth conditions and assertability conditions in 2. But notice that the conversational context *c* is not sufficiently specified to guarantee the truth of premise 1. 'Tasty $\text{PRO}_C$' and 'tasty to us' express the same content only on one of several possible readings of 'us.' The first-person plural pronoun 'we'/'us' can pick out any group that includes the speaker. In particular, it can pick out groups including none of the addressees, some or all of the addressees.[43] It is only in contexts in which 'us' picks out the group consisting of speaker, all addressees, and no one else that 'tasty $\text{PRO}_C$' and 'tasty to us' express the same content in conversation. So the context *c* has to be a context that triggers this contextual interpretation if it is to establish the truth of premise 1. But this use of 'tasty to us' seems rare. Typically, PPTs are explicitly relativised to present people to mark a difference between them; hence the use of 'tasty to me' when retreating from a bare taste claim in the face of opposition. Likewise, the more natural use of 'tasty to us' is the exclusive reading, which underlines that some food tastes good to some group including the speaker, even if not to (all of) the addressees. So the scope of cases of which premise 1 is true is limited.[44]

The reason the objection fails, however, is that premise 4 is false. The assertions of 'Liquorice is tasty' and 'Liquorice is tasty to us' do have the same assertability conditions in a suitable context *c* in which 'us' picks out the conversational group. Both assertions are not appropriately assertable in *c* according to the strong group-centric norm because it is not true that liquorice tastes good to all of the conversational participants. But there may very well be good reason to think that agreement is still possible because the disagreeing addressee is in a position to accommodate. So both assertions are appropriately assertable according to the weak speaker-oriented norm of assertion. Our impression that the assertions come apart in appropriate assertability is due to the fact that the difference in overt linguistic material makes different purposes and thus different norms of assertability salient. The speaker-oriented purpose of a bare taste assertion, even in a situation in which it is understood that someone in the conversation disagrees with the claim, is to voice the speaker's perspective and persuade the hearers of adopting that perspective. As long as there

[43] More precisely, 'us'/'we' allows of inclusive and exclusive readings. On the exclusive reading, the referent is a group that includes the speaker but excludes the addressee ('I and others but not you'). On the exclusive reading, 'tasty' and 'tasty to us' do not express the same content in conversation. On inclusive readings, the addressee is included in the group referred to by 'we'/'us.' Inclusive readings can further be distinguished. On so-called 1+2 readings (the numbers refer to first and second person), the group referred to consists only of speaker and addressee(s). On 1+2+3 readings, the group referred to consists of speaker, addressee(s) and third parties.

[44] It is also worth noting that premise 2 is far from obvious. Indeed it is routinely dismissed in accounts of the communicative effects of assertions that appeal to pragmatic implicatures, semantic or pragmatic presuppositions, or information structural properties like focus. In the example above, however, I do not think that any of these phenomena is responsible for the perceived difference in assertability conditions. So I will not dispute premise 2 here.

is a chance that hearers can be persuaded, the assertion satisfies the weak norm. Our judgments of appropriate assertability of 'Liquorice is tasty' are guided by the speaker-oriented weak norm. In contrast, the explicit relativisation 'to us' in 'Liquorice is tasty to us' makes the group's perspective on the tastiness of liquorice salient and draws attention to the purpose of maximal cooperativeness, which is geared at getting the group's perspective right. In *c*, where it is understood that the perspectives of the members diverge, 'to us' makes salient that no joint perspective is in place. Thus 'to us' draws attention to the falsity of the assertion's content and the failure of the strong norm. As a result, the speaker-oriented purpose gets trumped in salience, and our judgments are guided by the strong group-centric norm.[45]

## 12 Further Issues

I have argued that the conflict between a Lewisian view of belief as self-location and the received Lockean picture of communication can be resolved by conceiving of the contents of mental attitudes and speech acts as sets of sequenced worlds – possible worlds 'centered' on a sequence of individuals at a time. Sequenced worlds content is the kind of centered information that is transferred from speaker's head to hearer's head in successful communication. Communication, on the sequenced worlds view, is the project of distinguishing between possible ways the group of interlocutors might be and involves the coordination of participants' individual perspectives. The point of assertions about matters of taste is to reach a joint perspective. The aim of *de se* assertions is to establish the speaker's individual possibilities.

A number of questions have been left open. Here are some that I address in my dissertation.

**Alternative approaches.** There are alternative solutions to the *de se* problem (cf. §4, footnote 14). They fall in two groups. Some of these give up either the self-locating account of mental attitudes (e.g., Perry (1977, 1979); Stalnaker (1981, 2008)). Others give up the Lockean picture of communication (e.g., Egan (2007, 2010a); Moss (2012); Heim (2004); Weber (2011); Moltmann (2010)). With the exception of Egan (2007, 2010a), these views do not address the incompatibility problem. It is an open question whether and how these views can be extended to answer the incompatibility problem and provide an account of *de se* and taste attitudes in communication.

**Relativism and Contextualism.** It can be shown that the sequenced worlds view as stated is compatible with both a relativist and a contextualist outlook on predicates of personal taste. More precisely, the view allows of refinements that service either truth relativists or

[45] Recanati (2008) endorses what he calls 'moderate relativism' about aesthetic predicates on which "It is beautiful' means something like *It is beautiful for us*, that is, for the community to which the speaker and his audience belong.' (59) He discusses a problem similar to the objection above: Why, in light of opposition, do speakers sometimes not retreat to a weaker explicit statement about their own aesthetic perspective but keep asserting 'It is beautiful'? Recanati suggests that the disputants appeal to a community standard which they try to shape with their assertions, with 'one foot in the future' (quote from an unpublished manuscript by Johan Brännmark that Recanati cites). What Recanati's account does not explain is why it is significantly less natural to try and shape one's community's standards by making the explicitly relativised aesthetic assertion with the same content. It is an advantage of the pragmatic account I favour that it can account for the difference between bare uses of PPTs and uses on which the predicate is explicitly relativised to the conversational group.

nonindexical contextualists (to use MacFarlane's (2009; 2012) classification of views). The decision in favour of or against the sequenced worlds view is thus largely independent of one's views on relativism vs contextualism. The decision between relativism and contextualism turns primarily on empirical data from our use of PPTs, such as eavesdropping, retraction, and disagreement. A nonindexical contextualism-friendly account of the data can be given on the sequenced worlds view, and so can a truth relativism-friendly account.

**Inter-conversational phenomena.** The sequenced worlds view as stated only provides an account of conversation. It is neutral on communicative phenomena arising from the relationship of different conversations. For instance, judgments of truth and falsity can be passed regarding claims made in other conversations; retraction may concern speech acts made in previous conversations; disagreements can happily be reported even when the disagreeing parties have never been in a conversation together. There are various ways of extending the sequenced worlds view to address the variety of inter-conversational phenomena.

**The temporal *de se* and the common ground.** The sequenced worlds view as stated is a form of propositional temporalism: there are many contents that are temporally neutral, i.e. their truth value can change over time. For instance, the speech act content of 'Bill is sitting' is the sequenced worlds content that is true at Sitting-Bill-times but false at Standing-Bill-times. Temporalism raises a problem for the view that the effect of successful assertions is the addition of their content to the common ground. I can successfully assert at $t_1$ that Bill is sitting and at a later time $t_2$ assert that Bill is not sitting, without contradiction myself. But on a temporalist common ground model, I have added two incompatible contents, thus rendering the common ground inconsistent. To solve this problem, the temporalist's common ground model of conversation needs to address the passage of time in conversation and the contribution speakers make with their assertions of temporally neutral contents.[46]

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