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# Kaplan's Puzzle, Dynamic Senses, and Diachronically Individuated Propositions

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KAPLAN'S PUZZLE, DYNAMIC SENSES, AND DIACHRONICALLY  
INDIVIDUATED PROPOSITIONS

by

Jack Kingston

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ABSTRACT  
KAPLAN'S PUZZLE, DYNAMIC SENSES, AND DIACHRONIC PROPOSITIONS

by

Jack Kingston

The University of Wisconsin-Milwaukee, 2014  
Under the Supervision of Professor Michael N. Liston

The Fregean encounters a few interconnected problems in his account of indexical sentences, each posed in one way or another by Kaplan's puzzle of cognitive dynamics. For one, there's a problem defending the doctrine that the very same propositions can be expressed in relevantly different contexts. And two, there's the problem of cases where the same indexically expressed belief, the content of which is a Fregean proposition, seems to be retained by a subject yet the subject is unable to express her belief with the correct indexical due to contextual mislocation. Both are related to the puzzle of cognitive dynamics, but for the Fregean appear in the form of what I'll call *The Re-expressibility Problem*—since the more fundamental Fregean principle of propositional re-expressibility is being undermined. Consideration of other Fregean commitments shows that the only way to adjudicate the problem is by demonstrating that different coreferring indexicals can have the same sense. After demonstrating that different coreferring indexicals can have the same sense, it is then shown that these indexical senses must be dynamic entities, persisting through changes of context. The puzzle of cognitive dynamics reappears as something of an objection to the proposed solution to the *The Re-expressibility Problem*. The final portion of the paper is devoted to answering these objections and dispelling the puzzlement engendered by Kaplan's 'cognitive dynamics'.

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According to a well-known Fregean dictum, the very same thought or proposition, including propositions expressed with sentences containing indexicals, can be re-expressed at different times and places and by different speakers. As Frege once wrote,

If someone wants to say today what he expressed yesterday using the word “today”, he will replace this word with “yesterday”. Although the thought is the same its verbal expression must be different so that the sense, which would otherwise be affected by differing times of utterance, be readjusted. (296).<sup>1</sup>

But according to Frege, senses and only senses compose propositions; while propositions themselves are the senses of whole sentences. If the sense of a sentence is a proposition and different sentences have different senses, then different sentences will express different propositions. Thus it seems like ‘today’ used today and ‘yesterday’ used tomorrow *must* express the same sense; otherwise they won’t compose—with certain assumptions about compositionality—to express the same thought—which would contradict the above Fregean dictum.

Here, we will present two related objections to the Fregean view outlined above: Kaplan’s puzzle of cognitive dynamics, in which the retention and re-expression of indexically expressed beliefs is at issue, and the problem of propositional re-expressibility itself, in which detractors (e.g. Perry, Burge, and Kripke) suppose that the very same indexically expressed proposition cannot be re-expressed if such propositions are composed of senses and only senses. Since the two are related, this paper will take on both of them, arguing that, despite appearances, ‘today’ and ‘yesterday’ used on successive days *can* in fact express the same sense, thereby preserving the Fregean dictum according to which the very same indexically expressed proposition can be re-expressed with appropriate change of

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<sup>1</sup> Gottlob Frege, “The Thought: A Logical Inquiry,” *Mind*, The New Series, vol. 65, No. 259, (July 1956), pp. 289-311.

indexicals. Though this might strike some as counterintuitive—since such indexicals seem to be different modes of presentation of the referent—it is shown that such a supposition rests on certain assumptions about how to individuate the senses of temporal indexicals. Hence what’s called for is a motivated revision of the criterion employed in individuating these senses, but a revision that preserves the core of the unrevised criterion while supplementing it with other suitable constraints. This revision is related to another proposed revision: that we should not and cannot facilely equate the sense of a term with the mode of presentation expressed by the term, since there are cases in which different, coreferring indexicals are shown to have the same sense (on the revised criterion) while expressing different modes of presentation. It is then argued that there is a way to preserve the vying cluster of intuitions: by appealing to dynamic, diachronically persisting senses—and thereby diachronically individuated propositions. Though this might seem un-Fregean, it should be kept in mind that Frege himself once wrote, “Even the timeless, if it is to be anything for us, must somehow be implicated with the temporal.”<sup>2</sup>

### 1. Cognitive Dynamics: A Puzzle for Kaplanians and Fregeans

Near the end of his seminal “Demonstratives,” Kaplan asks the reader to consider the following:

Suppose that yesterday you said, and believed it, “It is a nice day today.” What does it mean to say, today, that you have retained *that* belief? It seems unsatisfactory to just believe the same content under any old character—where is the *retention*? You *can’t* believe that content under the same character (537).

Kaplan supposes this is problematic, raising what he calls the problem of ‘cognitive dynamics’:

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<sup>2</sup> *ibid.* 310

Thus the problem of cognitive dynamics can be put like this: what does it mean to say of an individual who at one time sincerely asserted a sentence containing indexicals that at some later time he has (or has not) *changed his mind* with respect to his assertion? What sentence or sentences must he be willing to assert at that later time (fn. 64, 538).

Recall that, on the Kaplanian framework, the character of an indexical sentence (being determined by the character of its component indexical) is a function from a context to a content (i.e. to a proposition). Moreover, the ‘character’ is never a part of the ‘content’ of the sentence—determining the content from the outside, so to speak—and the very *same* content can be determined by any number of characters—since such characters remain external to the contents themselves, that is, such characters are not constituents of the content or proposition. Likewise, different contents can be determined with the same characters in different contexts, accounting for the context-sensitivity of indexicals. The puzzle, however, is ultimately a matter of a believing subject not being in a position to appropriately adjust the character using a different indexical in a change of context. Thus determining whether or not a subject has retained a belief becomes somewhat puzzling, since it isn’t entirely clear which sentences the subject must affirm or deny in order to disclose her belief or a change thereof. It thus regards the *retention* of the belief in cases where a subject may have a belief with a certain content but be unable to express that belief with the appropriately coordinated character.<sup>3</sup> This coordination can break apart.

Suppose, as Kaplan does, that somebody wants to express today a belief they formed and expressed yesterday as, “It is a nice day today.” And suppose further that this subject thinks two days have past, thus expressing her belief by saying, “It was a nice day

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<sup>3</sup> By ‘appropriately coordinated’ I mean only that the character used to determine the content must be appropriate to the context, thereby matching content, context and character in such a manner that the intended proposition is expressed.

the day before yesterday.”<sup>4</sup> Though this subject seems to have a belief about the day in which she first uttered, “It is a nice day today,” it isn’t entirely clear that she is retaining that belief, because the only way she *could* determine that content—the only character at her disposal, given her erroneous contextual self-location (i.e. two days rather than one day after her initial utterance)—is with ‘the day before yesterday’. But of course this character, whether she likes it or not, determines a quite different content—thus giving voice to a quite different belief.

Since characters, together with contexts, determine the contents of beliefs, when there’s a shift of context—and in order to appropriately re-express the same belief—the content would seem to need to be believed under a different character. Kaplan wonders what indexical sentences a subject must be willing to assent to or dissent from in order to exhibit her retention of the original belief. On Kaplan’s account, it would seem that an appropriate change of character is required in order for the subject to be able to express and thereby retain the original belief. But there are cases in which a subject can neither believe the same content under the same character in relevant changes of context nor express or retain the same belief due to an inability to coordinate the context with the character. The Fregean, on the other hand, inherits this puzzle in a particularly perplexing form. Not only must the Fregean answer to a form of the puzzle adapted to the Fregean framework, in which senses and not objects are constituents of the content, but such an application reveals the more basic problem of propositional re-expressibility itself.

But in order to bring this into view, it will be helpful to briefly review a few of the relevant Fregean doctrines. First, there’s the famous distinction between *sense* and *reference*.

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<sup>4</sup> My example, not Kaplan’s. This is an adapted version of the Rip Van Winkle case we’ll take on later.

As it goes, the Fregean wants to suppose that the semantic contents of linguistic expressions are senses (*Sinne*). Without delving too deeply into the original motivation for positing such entities, it's important to have a minimum, working notion. So consider the following two sentences:

(1a) Cicero wrote *Hortensius*.

and

Tully wrote *Hortensius*.

Prior to Frege, it was widely supposed that these sentences must have the same truth-value, because 'Cicero' and 'Tully' refer to the same person and coreferring terms are supposed to be intersubstitutable *salva veritate*. Frege noted at least two important things. First, that there is an informative difference between 'Cicero is Cicero' and 'Cicero is Tully'—the former being trivial, the latter not. In the case of 'Cicero is Tully', it might have been a historical discovery that the referent of 'Cicero' and the referent of 'Tully' were in fact the same person. Fregean 'sense' is supposed to account for the non-trivially informative difference between these sentences. Second—and perhaps a more perspicuous illustration of sense—Frege noted that these sentences behave very differently in oblique contexts, especially in contexts of belief-ascription, where the individuation of sense is supposed to reflect the intensionality of belief and is determined within the context of a theory of what a subject is or is not rationally required to believe, given other related beliefs.<sup>5</sup> So consider these two belief reports:

(1b) Mona believes that Cicero wrote *Hortensius*.

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<sup>5</sup> See Heck [2002]

and

Mona does not believe that Tully wrote *Hortensius*.

Again, on the pre-Fregean account, since coreferring terms are supposed to be intersubstitutable *salva veritate*, when Mona believes that Cicero wrote *Hortensius*, it should also be true of her that she believe that Tully wrote *Hortensius*. But our intuitions dictate a rather different assessment—that Mona ought to be credited with rational coherence despite identity of reference. Fregean ‘sense’ captures these intuitions: it’s not that the referents aren’t identical; rather the senses of the referents, or their ‘modes of presentation’, aren’t identical. As such, the Fregean endorses the distinction between sense and reference. This distinction is (very roughly) captured in the following principle—call it ***Sinn-Bedeutung***:

Coreferring terms can have different senses (*Sinne*), where the terms express informatively different modes of presentation (*Art des Gegebenseins*) of the same referent. In such cases, the terms are not intersubstitutable *salva veritate* within oblique contexts.

Since a subject is cognitively related not to the referent by itself but to the sense of the term referring to the object—again, its mode of presentation—the subject, say, Mona, is not contradicting herself in believing that Cicero but not Tully wrote *Hortensius*. Since Mona could coherently recognize the sentence ‘Cicero wrote *Hortensius*’ to be true yet not take the sentence ‘Tully wrote *Hortensius*’ to be true, ‘Cicero’ and ‘Tully’ have different senses. It would seem, then, that a subject could rationally take opposing attitudes towards sentences, otherwise the same, containing each name. We can elaborate this by appeal to a common version of Frege’s ‘equipollence’ criterion called the ‘Intuitive Criterion’,

which, because of its prevalence and generality, will be called ‘the naïve intuitive criterion’

(NIC)<sup>6</sup>:

The sense of sentence *S*, i.e. the proposition *p* associated with *S*, is different from the sense of sentence *S'*, i.e. the *p'* associated with *S'*, iff anyone who understands both *S* and *S'* can simultaneously take different attitudes towards each yet remain coherent.<sup>7</sup>

Supposing that ***Sinn-Bedeutung*** and NIC so specified tentatively suffice to situate the discussion, we can introduce the other fundamental principles governing a “Fregean” account of meaning and proceed to show precisely how Kaplan’s puzzle presents a somewhat intractable problem for the Fregean theory. The following then are the fundamental, though jointly problematic, principles endorsed by the Fregean (or, at least, Frege himself):

**Compositionality:** The sense of a sentence is the proposition it expresses and is determined by, or individuated by, the senses of its sub-sentential parts. Substitution

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<sup>6</sup> The following criterion is based largely on Evans’ (cf. 1.5 [1982]). It is widely endorsed, though, at least as a starting place; so it seems appropriate to let it situate the argument. See Schellenberg [2012]; quoting Frege: “two sentences *A* and *B* can stand in such a relation that anyone who recognizes the content of *A* as true must thereby also recognize the content of *B* as true and, conversely, that anyone who accepts the content of *B* must straight away [ohne weiteres] accept that of *A*. (Equipollence).”

<sup>7</sup> This seems to me to be the simplest formulation of the criterion. Other recent formulations can be found in Schellenberg [2012], where the criterion is formulated in terms of sameness of sense, cognitive equivalence, and ‘recognizing’ truth-value (instead of ‘taking an attitude toward’) as: “Two sentences *A* and *B* are cognitively equivalent iff anyone who understands both *A* and *B* and takes *A* to have a certain truth-value must recognize that *B* has the same truth-value and vice versa” (5). The aforementioned ‘recognizing’ as true will be here interchangeable with ‘taking an attitude toward’ as true when *appropriate* (we are only talking about belief-attitudes, which seem to necessarily traffic in truth-value). The criterion is also formulated in Dickie & Rattan [2010] as the ‘Standard Individuating Principle for Senses (SIP)’ as: “ ‘*a*’ and ‘*b*’ differ in sense iff a subject who understood both expressions could, at a single time, both assent to ‘*a* is *F*’ and withhold assent from, or reject, ‘*b* is *F*’ without loss of rational coherence” (142).

of one sub-sentential component with  $\text{sense}_1$  for another with  $\text{sense}_2$ , where  $\text{sense}_1 \neq \text{sense}_2$ , results in a sentence with a different sense.<sup>8</sup>

**Propositional Re-Expressibility:** Propositions (among which are included the contents of indexical sentences) are re-expressible: for proposition  $p$  expressed at  $t_1$  by  $S_1$  to be (re-)expressed at  $t_2$  by  $S_1$  or at  $t_1$  by  $S_2$ , the very same proposition must be expressed.

**Sense-Composition:** A proposition is composed of senses and only senses.

Now how might this version of Fregeanism fare with the puzzle being considered here—a puzzle about the contents of indexical sentences? The puzzle is still about belief-retention. However, the ‘character’ of an indexical isn’t determining its content (i.e. reference) while nevertheless remaining extraneous to the content. Recall that, for Kaplan, the character is not a part of the content of the sentence but merely determines it from outside. Or differently, indexicals contribute objects themselves and not, say, “meanings,” “intensions,” or “descriptions” to propositions. Here, rather, reference is determined by *Sinn*—which is itself a part of the content of the sentence—such that not only does the Fregean have the problem of belief-retention in cases involving contextual mis-location (let us say) but also the problem of belief-retention in basic cases where one is properly contextually located.

That is, the main problem is somewhat different for the Fregean than it is for the Kaplanian. For Kaplan, the puzzle centers around the coordination of character, context and content, with the former two determining the latter. In order to determine the in-

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<sup>8</sup> **Compositionality** can be variously deployed, in either weak, moderate, or strong ways; so I’ll try to remain non-committal throughout. In order to be forthright, however, I should confess that I’m unsympathetic to a strong or unrestricted principle of compositionality, primarily due to its explanatory ambitions and the difficulty of living up to them. Also, the relevance of the order or sequence of composition of the component senses for determination of the sense of the whole is being here bypassed, though of course this would be an issue if we were getting into problems about the unity of the proposition, multiple decomposability, how different sentences can express the same proposition, etc. For now, hopefully these matters can be set aside.

tended content (i.e. proposition) the subject must use the correct character. But the subject seems to be able to retain the belief even without having the correct character at his or her disposal. For Kaplan, this might undermine his supposition that characters function specifically as determinants of contents in contexts—and there doesn't seem to be much space for error there. The “dynamics” are those factors involved in bringing about an expression with a certain content, that is, expressing a certain proposition.<sup>9</sup> For the Fregean, on the other hand, there is not only the problem of accounting for the plausible intuition that one can retain a belief even without being able to determine its content with the specifically correct indexical, but also the related problem of re-expressing an indexically expressed proposition with appropriately different indexicals. The latter problem issues from the Fregean supposition that the indexical contributes a *Sinn* to the content of the sentence, contrary to the Kaplanian supposition that the indexical's character remains external to the content of the sentence. Though Kaplan confesses there's a problem here for his framework, the problem is even more pronounced for the Fregean.

This more fundamental problem is related both to some of Perry's objections to the notion of indexical *Sinne* and to a few recent attempts (Burge [1977, 2012], Kripke [2011]) at resolving the problem of the re-expressibility of Fregean propositions—how the same indexically expressed proposition can be re-expressed using appropriately different indexicals. So as Perry *inter alia* has supposed, if **Compositionality** and **Sense-Composition** hold, then sentences containing different indexicals, expressing different senses,

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<sup>9</sup> Though the “dynamics” also seem to be a matter of the cognitive rigidity or looseness by which subjects can or cannot retain beliefs under different characters. Sometimes Kaplan isn't entirely clear on what specifically he takes the problem to be—perhaps he's unclear because it can take a number of different forms.

can never express the same proposition.<sup>10</sup> Moreover, if *Sinn-Bedeutung* holds and the same terms with the same linguistic meaning have the same *Sinn*, then given the context-sensitivity of indexicals, a single sense can determine a multiplicity of different referents. Both are problematic—but for now, especially the former problem, since it is claimed here that subjects retain the same indexically expressed belief with the same content by appropriately exchanging indexicals.<sup>11</sup> In order to exhibit the problem, consider the following case (to which we will refer throughout):

(2a) Auggy says to Mona on Tuesday, “Today is gloomy.” Mona, in agreement, responds, “Indeed. Today is gloomy.” The next day, Wednesday, Auggy says to himself, “Today isn’t gloomy. Today is lovely. Yesterday was gloomy.” He then sees Mona and asks, “Wasn’t it gloomy yesterday?” And Mona responds, “Sure was, Auggy. Yesterday was gloomy. But today, today isn’t gloomy. Today is lovely.”

Though Auggy seems to express the same belief when he utters ‘Today is gloomy’ on Tuesday and ‘Yesterday was gloomy’ on Wednesday, the Fregean **Compositionality** and **Sense-Composition** principles, in conjunction with the assumption that the respective indexicals have different senses, preclude such an equation, since together they entail that different propositions are expressed on Tuesday and Wednesday. Hence, unless one wishes to discard **Propositional Re-Expressibility**, one must reject either **Compositionality** or **Sense-Composition**. Conciliatory Fregeans might either deny **Propositional Re-Expressibility** in favor of **Compositionality** and **Sense-Composition** (following Kripke [2011]) or insist on **Propositional Re-Expressibility** at the expense of **Sense-Composition** (following Burge [1977, 2012]). However, the

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<sup>10</sup> See, for example, Perry’s “Frege on Demonstratives”

<sup>11</sup> As Frege claimed: “If someone wants to say today what he expressed yesterday using the word ‘today’, he will replace this word with ‘yesterday’. Although the thought is the same its verbal expression must be different so that the sense, which would otherwise be affected by differing times of utterance, be readjusted.” Gottlob Frege, “The Thought: A Logical Inquiry,” *Mind*, The New Series, vol. 65, No. 259, (July 1956), 296

Fregean view espoused here (that is, a Fregeanism of the obstinate variety) will deny the implications and abjure any such capitulations.<sup>12,13</sup>

The Fregean thus encounters a problem of belief-retention. Since the contents of beliefs are, for the Fregean, “thoughts” or propositions, and the indexical used to express such contents contributes a *Sinn* to the proposition, the problem of *belief*-retention is fundamentally a problem about the re-expressibility of indexical (or indexically expressed) contents as such. As was suggested, the puzzle of cognitive dynamics and the problem of belief-retention are just another form of Perry-style objections, which have been more recently manifest in the debate between Burge and Kripke.

So at first glance, in order to keep the fundamental Fregean principles jointly intact, it must be demonstrated that different coreferring indexicals can, contrary to appearances, express the same sense. This is counterintuitive. But without demonstrating this point, the same (indexical) proposition cannot be re-expressed using appropriately different indexicals, thus contradicting **Propositional Re-expressibility**. That is, if different coreferring indexicals must express different senses, and propositions are composed of senses and only senses, and the sense of the sentence, i.e. the proposition expressed, is determined by the senses of its parts, then the very same (indexical) propositions can never be expressed using different coreferring indexicals. Conciliatory Fregeans select different ways out of this dilemma, discarding one or another of the fundamental

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<sup>12</sup> The contending views are, of course, legitimately “Fregean,” at least of some sort, depending on what one takes to be authentically “Fregean.” Perhaps one might even think the view defended here is not “Fregean,” despite it being labeled ‘obstinate’.

<sup>13</sup> Let me note: this paper doesn’t pretend to be a historical treatment of Frege’s thought itself or to engage in the exegetical quarrels surrounding it.

principles. But in order to preserve all four principles, the obstinate Fregean must demonstrate that different coreferring indexicals *can* in fact have the same sense—a formidable task indeed.

## **2. *The Re-expressibility Problem*: RP-NIC**

Contrary to the Kaplanian, for whom the indexical character changes or ‘adjusts’ the determination of content but is not itself a part of the content, and thus changes in character do not necessarily result in changes of content, the Fregean takes the indexical to contribute a *Sinn* to the content. Hence if the indexical sense-constituent changes along with change of indexicals, i.e. if different indexicals have different senses, then by **Compositionality** so too does the content expressed with the indexical terms. Thus setting aside, for the moment, the unique problem posed by cognitive dynamics in the form of puzzle cases where the subject has either lost track of time or is unable to keep track of time, the Fregean (of the obstinate variety) must resolve *The Re-expressibility Problem*.

*The Re-expressibility Problem* is manifest in a couple of ways. The most urgent involves the above criterion of individuation (call it ‘RP-NIC’) which presents the problematic nature of attempting to preserve **Propositional Re-expressibility** while demonstrating that different coreferring indexicals can have the same *Sinn*.<sup>14</sup> RP-NIC seems to be soluble if it can be demonstrated that the indexical sentences *do* have the same content and the component indexicals *do*, despite being different indexicals, express the same sense. If such a demonstration could be supplied, the Fregean would be well on her way

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<sup>14</sup> ‘RP’ abbreviates “the re-expressibility problem,” while ‘NIC’ abbreviates “naive intuitive criterion.” We take up RP-NIC in this and the next section. The other way in which RP is manifest – RP-MM – we take up in section 4.

to preserving **Propositional Re-expressibility** and resolving *The Re-expressibility Problem*.

To begin with, the problem issues from an initial analysis of the sentences uttered in (2a)—whether or not they express the same proposition. According to NIC, if a subject can coherently take different attitudes towards two sentences, then the sentences express different senses. So we ask: could Auggy take opposing attitudes to the sentence ‘Today is gloomy’ uttered on Tuesday and the sentence ‘Yesterday was gloomy’ uttered on Wednesday? That is, on an obstinately Fregean view (henceforth, OF) could Auggy remain rationally coherent if the following scenario obtained:

(2b) Auggy says to Mona on Tuesday, “Today is gloomy.” The next day, Wednesday, Auggy once again runs into Mona and says, “Today is gloomy. I wish today were like yesterday. Yesterday was not gloomy.”

On first appearances it might appear that Auggy is being coherent. Since ‘today’ and ‘yesterday’ express different modes of presentation of Tuesday, the former presenting Tuesday as *today* and the latter as *yesterday*, it would then seem eminently plausible to suppose that Auggy could take different attitudes towards each sentence, given the intensionally fine-grained modes under which the referent is being presented. After all, Auggy doesn’t seem to be contradicting himself on Wednesday, that is, it’s not as if he’s saying, “Yesterday was gloomy and not gloomy,” or “Yesterday was gloomy. Yesterday was not gloomy.” There’s nothing contradictory about Auggy’s beliefs on Wednesday—he’s recognizing only one sentence to be true, namely, ‘Yesterday was not gloomy’. Moreover, it could be informative to Auggy on Wednesday that the day he’s referring to with ‘yester-

day' is in fact the same day he referred to when he said to Mona, "Today is gloomy"—he might not know that it's Wednesday and nevertheless be coherent in not knowing. In this case, NIC seems to prescribe an analysis in which the sentences in fact express different propositions, such that on Wednesday Auggy isn't contradicting his Tuesday utterance and therefore isn't rendering himself rationally incoherent. Since (2b) is a scenario in which the subject is preserving rational coherence despite coreference, recognizing one to be true and the other not, it follows that the sentences Auggy utters in (2a) also do not in fact express the same belief, because the content of his belief on Tuesday is not the same as the content of his belief on Wednesday. As such, OF cannot account for **Propositional Re-expressibility** and belief-retention.

But first appearances are sometimes misleading, and in this case they are: Auggy is rationally incoherent in (2b) despite appearances, and the problem leading to the appearance of rational incoherence is not OF itself, but a fallacious assumption underlying this interpretation of (2a) and (2b) that generates RP-NIC in the first place: the *NIC uniformity assumption*. The supposition that *today* and *yesterday* (as expressed on day  $n$  and day  $n+1$ , respectively) are different senses, apparently leading to Auggy's being able to take different attitudes to the two sentences in (2b), is premised on the assumption that NIC is a uniformly applicable criterion for individuating *Sinn*. But this presupposes that the criterion employed in synchronic cases, such as those represented in (1b), can be extended to diachronic cases, such as those illustrated in (2a) and (2b). To some, it might seem that (2b) ought to be matched up with the case in which Mona believes both that Cicero wrote *Hortensius* and that Tully did not. As such, NIC would be applied and issue the standard result that: some subject  $A$  (Mona) could believe at  $t_1$  (Tuesday) that  $a$  is  $F$  (Today is

gloomy) and then believe at  $t_2$  (Wednesday) that  $b$  is not  $F$  (Yesterday was not fine), where ‘ $a$ ’ (‘today’) and ‘ $b$ ’ (‘yesterday’) are coreferring, yet retain rational coherence, and thereby generate different senses corresponding to ‘ $a$ ’ and ‘ $b$ ’,  $a$  and  $b$  (*today* and *yesterday*), respectively.

Though NIC rightly places conditions on what would conform to certain implicit standards of rational coherence—what a subject is rationally permitted or compelled to believe or not believe at the same time—it confines itself to precisely those cases where the sentences are utterable at the same time, in which the subject, upon recognizing the truth-value of one sentence, must recognize or decline to recognize a certain truth-value of another sentence—upon being presented with it—in order not to lose coherence. However, what rationally counts in the temporally indexical cases are sentences with different but coreferring terms that are utterable only at different times, either expressing the same content across time or different contents at different times. But these cases elude NIC; we can’t assess the rational coherence of the subject across time by appeal to the sentences to which she would or would not take different attitudes at the same time. The *NIC uniformity assumption* isolates portions of the subject’s cognitive rational life, permitting analysis of coherence without reference to prior commitments and without regard for the subject’s diachronic unity. So whether or not Mona can in fact retain rational coherence or unity and exhibit the conflicting attitudes expressed in (2b), NIC alone won’t be the criterion issuing the verdict.

### 3. A Partial Solution to RP-NIC

Despite the fact that ‘today’ used on Tuesday and ‘yesterday’ used on Wednesday are only coreferring at different times and never simultaneously, the *NIC uniformity assumption* together with the appearance of rational coherence implies that each contributes a different sense to the propositions expressed by the sentences in which they occur; then OF implies that each indexical expresses a different sense, a different mode of presentation of Tuesday. Since OF couldn’t rightly deny at this point that each indexical expresses a different mode of presentation, it must target the other side of the NIC biconditional—it must question whether Auggy can, contrary to appearances, take different attitudes to ‘Today is gloomy’ (uttered on Tuesday) and ‘Yesterday was gloomy’ (uttered on Wednesday). OF must focus, then, on the legitimacy of the NIC criterion for individuating *Sinn* and the objections that follow therefrom.

The *NIC uniformity assumption* doesn’t necessarily follow from adherence to the ‘intuitive criterion’ as such, but rather a naïve version of the criterion—or perhaps just a naïve application. Such ‘intuitive’ criteria are, after all, a species of Fregean ‘equipollence’, the very same kind of criterion summoned by the Fregeanism defended here. So OF can’t propose a repudiation of intuitive criteria as such, but must rather adapt such kinds of criteria to the needs of diachronic rationality. The basic aim of an equipollence-based criterion is making maximal rational sense of those subjects whom we are inclined to credit with rational coherence and unity, disclosing what propositions a subject must or need not recognize to be true given the prior or simultaneous recognition of truth-values of other relevant propositions. But in the case of propositions expressible

with temporally indexical sentences, we appear to get *difference* in sense where we might want *sameness* of sense. Näive (synchronic) applications of NIC neglect the constraints of diachronic coherence, permit the proliferation of *Sinne* wherever there's the apparent possibility of a subject taking contrary attitudes, and thus individuate sense in an excessively fine-grained manner. OF needs a criterion that resists this tendency, one that allows the 'consolidation' of senses with a granularity appropriate to the constraints of diachronic rather than merely synchronic rationality.<sup>15</sup>

But there are clear cases in which coarse-grained consolidative tendencies seem the more sensible option. Consider an example (from Dickie & Rattan [2010]) in which the composition ( $\circ$ ) of an invertible function  $f$  and its inverse  $f^{-1}$  yields the identity function  $I$ , such that  $(f^{-1} \circ f) = I$ .<sup>16</sup> Now consider the manner in which the following inference is, or is not, valid:

$(f^{-1} \circ f)(a)$  is F

$I(a)$  is G

Therefore, something is both F and G

This is, it would seem, a valid inference. On any theory of sense, in order even to be eligible for attributions of rational coherence or incoherence, the subject must be sufficiently linguistically competent, understanding the expressions used and having properly functioning faculties. As we will say—collecting those preconditions into one category—the subject must have the ability to linguistically “keep track.” In this case, the subject's com-

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<sup>15</sup> I follow Dickie & Rattan [2010] in promoting a consolidative criterion, though I don't take up the matter of interpersonal communication.

<sup>16</sup> *ibid.* 144.

plete understanding of ' $f^{-1} \circ f$ ' implies knowledge that  $(f^{-1} \circ f) = I$ . As such, one can straightaway existentially generalize the conjoined predications of F and G.

In this example (call it 'IEK', or CASE 1), we deliberately postpone the issue of whether or not the terms express different modes of presentation and instead focus on the alternative strategy for individuating *Sinn* which appeals to the informativeness of identity statements. According to IEK, if ' $(f^{-1} \circ f) = I$ ' were an informative identity statement, then the identity premise would be crucially missing in the inference, thereby permitting the subject rationally to withhold the conclusion. But this would be to suppose that the expressions are not transparently coreferring, that a subject could understand ' $f^{-1} \circ f$ ' without knowing that  $(f^{-1} \circ f) = I$ . But *ex hypothesi* not knowing that  $(f^{-1} \circ f) = I$  only evinces an incomplete understanding of ' $f^{-1} \circ f$ '. Without such understanding, rationality never comes into play—at least, that is, rationality as it is relevant to belief-ascriptions and the individuation of *Sinn*.

In the case of the composition of  $f$  and its inverse, no such additional premise is required; it wouldn't turn an invalid argument into a valid one. A subject would not qualify as understanding ' $f^{-1} \circ f$ ' without thereby knowing that  $(f^{-1} \circ f) = I$ . If a subject were to lack complete understanding of the terms in the premises, the inference would indeed seem *to the subject* to require an additional premise in order to render it deductively valid. But an inference is deductively valid or invalid despite the subject inferring. So if a subject does completely understand all the terms involved yet neglects to derive the conclusion, she can be charged with rational incoherence, because the inference is valid of itself. The logical properties of the terms obviate the need for, or utility of, an additional identity

premise. In order to see this more clearly, it might be helpful to adduce a few formally similar examples—that is, cases in which we know, say, that  $a$  is  $F$  and  $b$  is  $G$ , and thereby infer that something is both  $F$  and  $G$ . First, then, consider the coreferring proper names ‘Cicero’ and ‘Tully’ (CASE 2). Suppose Mona makes the following inference:

Cicero wrote *Hortensius*.

Tully wrote *De Amicitia*

Therefore, somebody wrote both *Hortensius* and *De Amicitia*.

Strictly speaking, this isn’t formally valid, since the inference omits the identity premise ‘Cicero=Tully’. But if Mona knows that Cicero is Tully, she’s simply suppressing the identity premise and making an enthymematic inference.<sup>17</sup> But because, strictly speaking, the inference would need to include the identity premise in order to render the conclusion deductively valid, without which an uninformed subject could not derive the conclusion, CASE 2 is one in which there is difference of sense. As such, the conclusion of this inference is clearly not rationally compulsory.

A second inference (CASE 3) of the same logical form is one in which the meanings of the singular terms are, so to speak, drawn closer together, but not so close that understanding them implies *immediate* knowledge of coreference. For example, a subject might know both that  $2^4 + 5$  is the legal drinking age and that  $3+3+3+3+3+6$  is the number of times I’ve changed my writing sample topic, without thereby concluding *Something is the legal drinking age and the number of times I’ve changed my writing sample topic*.<sup>18</sup> The sub-

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<sup>17</sup> Cf. Campbell [1987]

<sup>18</sup> Dickie & Rattan [2010] use an arithmetical example, as well.

ject who fails to draw the conclusion immediately cannot be charged with rational incoherence. Though there's no need for an additional identity premise, doing the arithmetic, that is, *proving* the identity of ' $2^4 + 5$ ' and ' $3+3+3+3+3+6$ ', is required, which of course might take time. If so, then the subject is not rationally compelled to "immediately" draw the conclusion. But CASE 3 is clearly different from CASE 1, in which no additional time would be needed to know or *prove* that  $(f^{-1} \circ f) = I$  after having already understood  $(f^{-1} \circ f)(a)$  is  $F$ . Though an additional identity premise wouldn't contribute anything to the validity of the inference in either case, in the former case the subject could completely understand ' $2^4 + 5$ ' without yet having computed  $3+3+3+3+3+6$  and thus without knowing that they corefer. In the latter case, by contrast, an understanding of  $(f^{-1} \circ f)$  that excluded understanding that  $(f^{-1} \circ f) = I$  would not be complete understanding at all. As such, the conclusion of this second inference is mediately rationally compulsory.

Though CASE 2 and CASE 3 resemble CASE 1 insofar as they share the same logical form, the logical properties of the terms in the premises are different and, as a result, their inferential properties are different. The conclusion of the first is neither deductively valid (without the identity premise) nor rationally compulsory; the conclusion of the second is deductively valid (the identity premise would not contribute to its validity) but not rationally compulsory (does not *immediately* entail the conclusion). IEK (or CASE 1), however, is both deductively valid (the identity premise would not contribute to its validity) and rationally compulsory (does *immediately* entail the conclusion).

The parallel being drawn here is between IEK, which is both valid and immediately compulsory, and the cross-contextual use of a sentence with coreferring indexical

terms, which, OF should claim, can also be deductively valid and immediately rationally compulsory. To see this, let us adapt IEK to fit the cases exhibited in (2a) and (2b), such that upon recognizing ' $f^{-1} \circ f$ ')(a) is F' to be true, we must know immediately that ' $I(a)$  is F' is true, as well. Since the knowledge that ' $I(a)$  is F' is true sets in immediately upon completely understanding ' $f^{-1} \circ f$ ')(a) is F' and recognizing it to be true, there's no logical space for an additional identity premise. Therefore, there's neither the opportunity for a subject to coherently take different attitudes to the sentences, nor a rational excuse for the subject in failing to recognize the truth-value of the latter upon being appropriately presented with it. Thus given immediate knowledge of coreference without the aid of an identity statement, the terms have the same sense.

To see the parallel, first recall that in (2b) *Today is gloomy* is the belief being ascribed to Auggy on Tuesday, which we can state explicitly as follows (setting aside, for convenience, the actual days of the week, Tuesday and Wednesday):

(a) Auggy believes on  $d$  that today is gloomy.

In believing that today is gloomy and expressing his belief with the sentence 'today is gloomy', Auggy must also believe that the sentence 'today is gloomy' as uttered on Tuesday thereby expresses his belief. Furthermore, in taking this (belief) attitude toward *today is gloomy*, Auggy is asserting the truth of his utterance and thereby the truth of the sentence used to make the utterance. As such, we can also ascribe to Auggy the belief that the sentence 'today is gloomy' is true as used by him on  $d$ , which we represent as follows:

(b) Auggy believes on  $d$  that 'today is gloomy' is true.

Moreover, since Auggy must have sufficient understanding of ‘today’ in order to refer to the current day as “today”—that is, he must know that any use of ‘today’ refers to the day in which the term is used—it follows that he must know also know that ‘today is  $\psi$ ’ is true iff it is true today that today is  $\psi$  iff ‘today is  $\psi$ ’ is true today. As such, it must also be the case that,

(c) Auggy believes on  $d$  that ‘today is gloomy’ is true today.

Now, keeping (c) in mind, could we make the following belief-report while nevertheless crediting Auggy with rationality:

(d) Auggy does not believe on  $d$  that ‘yesterday was gloomy’ will be true tomorrow.

If (c) and (d) were to obtain, we would be inclined to suppose that Auggy is revealing he didn’t fully understand ‘today is gloomy’ in not believing also that ‘yesterday was gloomy’ will be true tomorrow. So in order to completely understand ‘today’ in ‘today is gloomy’, Auggy must also immediately—that is, just in virtue of understanding ‘today’—know that, tomorrow, the referent will be determined by ‘yesterday’—or, rather, presented as *yesterday*. As such, Auggy knows that ‘today’ on  $d$  (Tuesday) and ‘yesterday’ on  $d+1$  (Wednesday) are coreferring, and he knows this immediately upon understanding ‘today’ and ‘yesterday’.

Contrary to the complete understanding a subject might manifest in immediately drawing the conclusion in IEK cases, where the compulsion to recognize ‘ $I(a)$  is F’ as true follows immediately upon recognizing ‘ $(f^{-1} \circ f)(a)$  is F’ to be true, and hence transpires synchronically or in a single context, the complete understanding manifest in cases of

coreferring terms in temporally indexical sentences is only manifest cross-contextually, as one context (say, Tuesday) converts into another (Wednesday). That is, such understanding is only manifest diachronically, even though immediate knowledge of coreference is tacitly present in, for example, Auggy's first recognition that 'today is gloomy' is true. But in order for Auggy to be able to manifest this complete understanding, he must 'keep track' of the day, knowing his own temporal position and the referent's relation to that position. If Auggy does so keep track of the referent as time proceeds, then Auggy will manifest his complete understanding of 'today' and 'yesterday', synchronically tacit in his knowledge that on Wednesday 'yesterday was gloomy' will be true, by immediately recognizing on Wednesday that 'yesterday was gloomy' is true. 'Keeping track' is, then, quite literally a part of complete understanding in these diachronic, temporally indexical cases.

As such, Auggy's immediate knowledge of coreference in complete understanding is present in two ways: Auggy knows both *immediately that on Wednesday* (synchronically tacit) and *immediately on Wednesday that* (diachronically manifest) he must recognize 'yesterday was gloomy' to be true if he has recognized 'today is gloomy' to be true on Tuesday. As the belief-reports from above have indicated, this synchronically tacit understanding is 'built in' to the understanding of the indexical. Nobody can understand 'today' without knowing that, tomorrow, one will need to refer to today with 'yesterday'. One already makes a distinction between today, tomorrow, and yesterday in using 'today'. What one understands in understanding a temporal indexical sentence is not confined to the context of utterance but is, rather, projected into the future (or past). In understanding 'Today is gloomy' and thereby grasping its sense, *Today is gloomy*, Auggy immediately knows that if

he asserts today that today is gloomy he cannot deny tomorrow that yesterday was gloomy (unless he's re-deliberated the matter, or done something else relevantly akin to deliberation). And all of that, just in virtue of understanding the sentence, that is, grasping its sense: *Today is gloomy*. This proposition, as Rödl writes, “breaks free from the given time.”<sup>19</sup>

#### 4. RP-MM and Dynamic *De Re* Senses

Let us take a moment to recap. Recall that RP-NIC has been discharged by our having defended the following conditional: if ‘today’ and ‘yesterday’, used on  $d$  and  $d+1$ , respectively, can be known immediately to corefer in virtue of complete understanding of the terms, then the indexicals have the same *Sinn*. OF then demonstrated that the conditional’s antecedent obtains: in fact, a subject who completely understands ‘today’ and ‘yesterday’, usable on  $d$  and  $d+1$ , will both know immediately on  $d$  that on  $d+1$  ‘today’ (on  $d$ ) and ‘yesterday’ (on  $d+1$ ) will corefer (synchronically tacit) and know immediately on  $d+1$  that ‘yesterday’ (on  $d+1$ ) and ‘today’ (on  $d$ ) corefer (diachronically manifest). Since the antecedent obtains, the indexicals have the same sense. Moreover, since the indexicals each express a *Sinn* and contribute that *Sinn* to the propositions expressed by the sentences in which they occur, and ‘today’ on  $d$  and ‘yesterday’ on  $d+1$  have the same sense, the sentences ‘today is gloomy’ on  $d$  and ‘yesterday was gloomy’ on  $d+1$  express the same sense, the same proposition, and a rationally coherent subject cannot take different attitudes toward each sentence, recognizing one to have a certain truth-value while not recognizing the other to have the same truth-value. As such, sentences containing different but coreferring indexicals, utterable only at different times, can express the same proposition—

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<sup>19</sup> 74 [2012]

thereby solving RP-NIC and, partially, *The Re-expressibility Problem* with which this paper is primarily concerned.

For the Fregean, then, jointly preserving **Compositionality**, **Sense-Composition**, and **Propositional Re-expressibility** is a viable option. Contrary to the assumptions behind Perry's objections, and Kripke's and Burge's worries about keeping all three fundamental principles intact (the former denying **Propositional Re-expressibility**, the latter **Sense-Composition**), OF is able to retain all three and *Sinn-Bedeutung* by demonstrating that different coreferring indexicals can express the same sense. In this way, senses and only senses compose the proposition (**Sense-Composition**), while the sense of the whole sentence is still determined by the senses of its parts (**Compositionality**), which thereby allows the same proposition to be expressed upon substitution of one coreferring indexical for another in the appropriate context (**Propositional Re-expressibility**).

As we might recall, RP-NIC is only one aspect of *The Re-expressibility Problem*. There's a related problem in the vicinity: RP-MM, which derives from the common Fregean equation of sense and mode of presentation, according to which there is sameness of sense if and only if there is sameness of mode of representation. Thus, even if we grant that 'today' and 'yesterday' have the same sense, if they express different modes of presentation of **d**, it would still seem problematic, or at least un-Fregean, to suppose that a single *Sinn* contains innumerable many modes of presentation. In reply, the Fregean can argue that RP-MM presupposes the *NIC uniformity assumption*, carving up the rational cognitive unity of the subject across time into separately analyzable pieces of belief, when in

fact the cognitive life of the subject is a matter of preserving unity across time and thereby satisfying the constraints of diachronic rationality. As Evans once claimed, “the thought-units of the atomist are not coherent, independent thoughts at all, but, so to speak, cross-sections of a persisting belief state.”<sup>20</sup> According to OF—of which we here take Evans to be representative—RP-MM presupposes a very thin, very impoverished notion of Fregean *Sinn*. But this isn’t at all compulsory, nor is it desirable. If the constraints of diachronic rationality are taken seriously, no such notion of Fregean sense is warranted. Recall that criteria for individuating *Sinn* are a matter of what a subject is or is not rationally committed to given certain other commitments. If subjects have rational commitments that constrain them across time, then clearly sense must be individuated accordingly and must be as robust as the constraints of diachronic rationality.

As such, OF suggests a way of conceiving of indexical *Sinne* that befits the diachronic unity of rational subjects: as ‘dynamic’. If *Sinn* is dynamic in the way proposed here, then it makes little sense to abstract specific modes of presentation from the dynamically persisting *Sinn* as if it were a ‘coherent, independent’ *Sinn* by itself, collecting each abstraction into an aggregate of ‘modes’, lacking a necessary unity and logical coordination. If a conception of sense as dynamic is viable, the Fregean would be able to dissolve, rather than need to solve, RP-MM.

We can elucidate this notion of dynamic sense by invoking another potential objection, one resting on another unwarranted assumption. Consider, then, this Kaplan-inspired objection: assuming we have the appropriate linguistic facility, it would seem that

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<sup>20</sup> 309 [1993]

we already completely understand the relevant temporal indexicals *at* any given time. Right now, for example, I know that ‘today’ takes as its referent the day in which I am making an utterance; I know that ‘yesterday’ takes as its referent the day prior to the day in which I am making an utterance; and so on. And, of course, I know this without taking them to corefer. In fact, completely understanding them precludes me from taking them to corefer. Their reference does, after all, shift. It could then be supposed by our antagonist both that subjects do not manifest such understanding only diachronically but rather, and primarily, at any given moment, i.e. *synchronically*, and that complete understanding of indexicals doesn’t imply knowledge of coreference. The obstinate Fregean, however, simply denies the assumption motivating this objection: what a subject understands in completely understanding, say, ‘today’ is not the term’s ‘standing meaning’, ‘character’, ‘linguistic meaning’, or ‘role’. The *Sinn* of indexicals need not be so conceived. Rather, they can be conceived of as *de re*, object-dependent senses, in which a subject must on a given occasion bear the appropriate relation to the object on which the sense depends in order to understand the indexical having the sense.

Recall that the *Sinn* of a singular term is the mode of presentation of the referent. ‘Today’ is such a term: it has a *Sinn* which is the mode of presentation of the day in question. Since now indexical propositions are object-dependent, in order to understand the proposition and its constituents (e.g. the sense of ‘today’) one must bear the appropriate relation to the object on which the sense of the indexical and thus the proposition depend. Each token indexical (together with its coordinated, coreferring indexicals across time) has its own object-specific sense. This *Sinn*—that which one understands or what one ‘grasps’ in understanding—is not a *Sinn* at all independently of the object of which it

is a mode of presentation.<sup>21</sup> So the sense of ‘today’ in the proposition that today is gloomy (the content of Auggy’s belief in (2a) on Tuesday) and the sense of ‘yesterday’ in the proposition that yesterday was gloomy (the content of Auggy’s belief in (2a) on Wednesday) are object-dependent, *de re* senses specific to Tuesday, the day in question. Moreover, when one understands on Thursday, today, that today is gloomy, and also understands on Thursday, today, that yesterday was gloomy, this does not show, as it is alleged to show, that one can understand these indexical terms at the same time yet know that they *don’t* corefer. The ‘today’ one understands on Thursday—today—is not the ‘today’ one understands on Friday. Each term has a different referent and thus a different *de re* sense. So clearly they wouldn’t corefer. The antagonist tries to saddle the Fregean with a commitment to the senses of indexicals as their “standing meaning,” character, et al.—but this, the obstinate Fregean claims, is by no means compulsory. On this, OF agrees with Burge.

So, then, a subject’s understanding of ‘today’ and ‘yesterday’, conceived as having *de re* senses, does indeed show that understanding can only be *manifest* diachronically, since the referent of ‘today’ won’t “become” presented as *yesterday* until tomorrow. Herein enters another crucial component of OF about indexicals and indexical propositions: understanding, grasping the sense, requires keeping track of the object, the day. Understanding, as used in the preceding, is only manifest diachronically, such that understanding ‘today’ in ‘today is gloomy’ and ‘yesterday’ in ‘yesterday was gloomy’, each as having a *de re* sense, means one can only understand *Yesterday was gloomy*, with its constituent *Sinn*,

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<sup>21</sup> This shouldn’t be too problematic a claim for cases involving demonstratives or indexicals, but perhaps could be challenged in cases of proper names. See Evans (1982) sec. 1 & 6 and McDowell (1998).

when ‘yesterday’ is (or becomes) expressive of the object-dependent sense, when ‘yesterday’ expresses the mode of presentation of the day. This only happens at a different time than when ‘today’ had the object-dependent sense expressing the mode of presentation of the day, the same day.

These *de re* indexical *Sinne* are therefore ‘dynamic’.<sup>22</sup> We can see, then, how this notion helps dissolve RP-MM, which supposes that the Fregean must reject the equation of *Sinn* and *mode of presentation*, because Tuesday’s ‘today’ and Wednesday’s ‘yesterday’ patently express different modes of presentation of the day. As such, either the equation of sense and ‘mode of presentation’ must be rejected, or ***Sinn-Bedeutung*** as applied to indexicals must be disavowed. However, once again, this objection rests on an unwarranted imposition. For OF, not all *Sinne* are static and immutable. This is the point of regarding at least a subclass as dynamic. The notions of ‘dynamic’ *Sinn* and ‘keeping track’ are, in this manner, mutually explicable. As noted, in order to completely understand one of these indexical propositions, recognizing one to be true immediately implying recognition of the other to be true, one must ‘keep track’ of the referent. Keeping track is a basic condition on completely understanding the indexicals. Temporal indexicals have the unique feature of possessing their meaning, or having their object-dependent *Sinn*, cross-contextually (that is, not merely contextually, *pace* Kaplanians). Furthermore, according to OF, one never merely keeps track of the bare, cognitively unclothed referent, to which one might ‘directly’ refer under no mode of presentation at all, as if the object itself were a constituent of the thought (*pace* Burge). Rather, one must keep track through—or

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<sup>22</sup> The idea here derives from Evans (1982) [Ch.6, Appendix] and (1983) [310] where he proposes, without much development, “dynamic Fregean thoughts.” The thesis of this paper can be regarded as Evans-inspired.

“of”—the *de re* mode of presentation of the referent—the day under its specific mode of presentation. And just as the day (qua object) recedes into the past, successively becoming yesterday, the day before yesterday, etc., so too does the mode of presentation “change” from *today* to *yesterday* to *the day before yesterday*, etc. The *Sinn* of the indexical is, then, very aptly called ‘dynamic’.

Since indexical *Sinne* are in this way constituted cross-contextually, what’s important about indexical terms isn’t their standing meaning or that they take different referents in different contexts in virtue of their standing meaning, but, instead, that the *referent* of an indexical, where the term has a *de re* sense, remains the *same* across contexts—that, instead, the “meaning” of the indexical,<sup>23</sup> its *Sinn*, does not remain constant across contexts.<sup>24</sup> This is to suppose that the meaning of temporal indexicals is captured first and foremost as dynamic modes of presentation *specific to the referent* and only then do they have constant meaning. The constant meaning of indexical terms can then be conceived of as “sorts” of *de re* senses. That is, *de re* modes of presentation are able to incorporate constancy of linguistic meaning because ‘a sort of *de re* sense may determine a *de re* sense (if one cares to put it like that)’.<sup>25</sup> This is to say, object-specific, *de re* senses can present their objects in the same sorts of ways; there can be distinct modes of presentation of objects

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<sup>23</sup> OF isn’t denying that indexicals have constant linguistic meanings. So I’m not here claiming the standing or linguistic meaning of, say, ‘today’ changes. That would be absurd. By “meaning,” I mean the semantic content of the relevant part of the sentence, i.e. whatever the relevant constituent of the proposition might be.

<sup>24</sup> Burge [1979] also says things like “sense shifts with context” (405) but this is primarily meant to mark the difference between the sense of indexicals and their linguistic meaning, where, e.g., ‘today’ on different occasion of use expresses a different sense. But for Burge, though the linguistic meanings of the coreferring indexicals ‘today’ and ‘yesterday’ may determine the same sense, this is only in virtue of a contribution from the context, where the context is a *constituent* of the thought expressed using the indexical. Burge, in this regard, does not share the OF commitment to **Sense-Composition**.

<sup>25</sup> McDowell (1998) 221

that nevertheless present their objects in the same sort of way. Therefore the constancy of linguistic meaning might be something like a second-order sense, if you like, consequent upon the dynamic, object-specific mode of presentation (the first-order sense). In order to dispel puzzlement, consider, for example, a subject perceptually encountering an object (the referent, whatever it might be) in the environment, in which the object is presented in some way specific to the object, say, as *here*; but the way that the object presents itself, as *here*, is the same sort of way other objects present themselves, perhaps in a similar perceptual encounter. That ‘here’, in these cases, possesses univocal linguistic meaning can be attributed to the fact that distinct objects—the referents of demonstratives or indexicals—can be presented to subjects in the same *here*-sort of way.

So, instead of the reference shifting, *Sinn* shifts; instead of *Sinn* remaining constant, the referent remains constant. Take, for example, the indexical term ‘today’ as it is linguistically the same across contexts. Since indexicals express *de re* senses, the sense of ‘today’ will shift across contexts: Tuesday’s *today*, Wednesday’s *today*, Thursday’s *today*, et al. are different senses.<sup>26</sup> Conversely, Tuesday as *today* on *d*, Tuesday as *yesterday* on *d+1*, Tuesday as *the day before yesterday* on *d+2*, et al. are the same sense.<sup>27</sup> The indexical *Sinn* would then be, as Frege claimed, ‘wherein the mode of presentation is contained’.<sup>28</sup> Here, we see, the

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<sup>26</sup> Again, this part of the account resembles some aspects of Burge’s, but what motivates both this thesis and its implications are vastly different.

<sup>27</sup> Indeed, this inversion of the commonplace conception might seem somewhat counterintuitive. But others seem to be sympathetic. Ludlow (ms.) 108, *The Dynamic Lexicon* e.g., suggests that sense can “shift”—though, of course, there are no accompanying OF commitments. Ludlow seems, in fact, to corroborate a point made by Branquinho that “It does not make much sense...to think of the thoughts [propositions] as being themselves subjected to any sort of change or re-alignment.” I disagree.

<sup>28</sup> Beaney (1997), 152. (from “On Sense and Reference”)

*de re* sense contains the mode of presentation dynamically as *today*, *yesterday*, et al. in a single *de re* indexical *Sinn*. And since the indexical contributes a *Sinn* to the proposition, the proposition itself is dynamic—or, perhaps more palatably, “diachronic.”

### 5. An Objection: Kaplan’s Rip Van Winkle Case Adapted

Now that we have at least a plausible account of how different coreferring indexicals can have the same sense and likewise have exhibited how a sense can be dynamic, persisting through changes of the modes under which the day-referent is being presented, and hence we have tentative solutions to RP-NIC and RP-MM, we must return to the specific problem presented in Kaplan’s discussion of ‘cognitive dynamics’, which will function here as an objection to the preceding. It culminates in the case of Rip Van Winkle, from which Kaplan concludes that retaining a belief cannot merely be a matter of believing the same content (proposition) only under a different character. For consider Rip, who on *d* says and believes, “Today is a nice day.” Rip has the habit of losing track of time, and hence never quite knows his temporal-contextual location. So let us suppose that Rip falls asleep on *d* and wakes up a week later. Taking himself to have slept only through the night, Rip attempts to reiterate the belief he expressed on *d* by saying, “Yesterday was a nice day.” Rip seems, according to Kaplan, to retain his belief about *d*; however, Rip isn’t able to express that belief, since he’s not in a position to appropriately coordinate context, character, and content. Instead, Rip is determining a content or expressing a proposition “about” *d*+6.

Consider the perhaps more familiar error exemplified by the character “Jones” in a (slightly adapted) scenario imagined by Branquinho [1999]: at 11:58pm on *d*, Jones says

and believes, “Today is fine,” but three minutes later, ‘being unaware that midnight had already passed,’ Jones says and believes, thinking it is still  $d$ , “yesterday was not fine.” This scenario presents two problems—one related to belief-retention, the other related to (in)coherence. Regarding the former, it seems as if Jones isn’t in a position to retain on  $d + 1$  the belief he expressed on  $d$  with ‘today is fine’, since he’s unable, given the circumstances, to locate himself in the correct temporal context. If the indexically expressed belief is essentially indexical, as Perry [1979] seems to have shown it must be, then Jones lacks the resources to indexically express that belief. If the content of the belief is, for whatever reason, inexpressible, and the belief is moreover essentially temporally indexical, such that a descriptive belief would not be the very same belief, then Jones can’t retain the very same belief. Regarding the latter, Jones’ belief on  $d$  that today is fine and his belief on  $d + 1$  that yesterday was not fine seem to exemplify a certain incoherence in Jones’ beliefs—Jones is manifestly making contradictory assertions about  $d$ . At first glance, then, it would seem that OF is committed to charging Jones with rational incoherence, because he’s disclosed his failure to keep track of time by believing on  $d$  that today is fine while also believing on  $d + 1$  that yesterday was not fine.

Jones and Rip are presented as counterexamples to a Fregean account, such as the Fregean view defended here, according to which neither Jones nor Rip is able to retain his respective belief, since Rip’s ‘yesterday’ and Jones’ ‘yesterday’ fail to determine the intended referent and neither seem to be able to appropriately coordinate context and character—Rip doesn’t know a week has passed and Jones doesn’t know midnight has passed. Since, according to Kaplan, we are naturally inclined to suppose that both Rip

and Jones *do* in fact retain their beliefs, there must be something wrong with the account that results in the contrary supposition. Likewise, it might seem, Auggy in (2b) could have forgotten his Tuesday belief—perhaps Mona “accidentally” bopped him on the head with a broom for his heresy, causing Auggy to lose some of his memories—or perhaps he lost track of time like Rip and Jones, not knowing it was Wednesday. But since OF deems Auggy in (2b) rationally incoherent for failing on  $d+1$  to recognize as true what he recognized on  $d$  to be true (affirming one, denying the other), it must be rejected.

In reply, the obstinate Fregean must claim that such a diagnosis rests on a basic misunderstanding both of *Sinn* and of the constraints of diachronic rationality that figure in the individuation of *Sinn*. Since OF endorses a version of the ‘equipollence’ criterion, in which sameness of sense is individuated by appeal to the requirements of rational coherence, it can diagnose these puzzle cases as either unproblematic instances of a failure to re-express an original belief or as breaches of the constraints of diachronic rationality. As Schellenberg observes, criteria of sense are “a matter of what a person is rationally committed to [...and] the fact that someone may be distracted or may not be a competent speaker of the language is neither here nor there. One is nonetheless rationally committed to recognizing  $B$  to be true, once one has recognized  $A$  to be true” (9). As such, the Fregean can retain the spirit, if not the letter, of NIC by regarding *Sinn* as serving the purpose primarily of making maximal sense<sup>29</sup> of subjects where such sense, such rationality, is due; where, despite coreference, the subject is being rationally coherent or incoher-

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<sup>29</sup> As McDowell notes (172 [1998]), if there’s a pun here, it’s an instructive one.

ent by anybody's standards.<sup>30</sup> The obstinate Fregean will claim, then, that *a subject is being rationally coherent or incoherent depending on whether or not the subject does or does not recognize the truth-value of certain propositions given the prior or simultaneous recognition of the truth-value(s) of other relevant propositions* (e.g. ones expressed with coreferring terms).

Therefore, regarding Auggy in (2b)—and Rip and Jones alike—in order to determine whether or not he's rationally coherent, it must first be determined exactly what sentence(s) he is or is not rationally *committed* to recognizing to be true given the prior recognition of related sentences to be true. Kaplan identifies this as the crux of the matter, as well, claiming that it must be determined which sentence or sentences the subject must be willing to assert in changes of context.

## 6. A Solution to the Puzzle Cases: The Constraints of Diachronic Rationality

A brief summary is called for: Kaplan's puzzle of cognitive dynamics, adapted to the Fregean view and manifest in *The Re-expressibility Problem*, brings into view the alleged untenability of a Fregean theory of indexical *Sinne* that adheres to the principles of

**Compositionality, Sense-Composition, and Propositional Re-expressibility.**

As we recall, *The Re-expressibility Problem* has two aspects: RP-NIC and RP-MM. It was first argued that RP-NIC rests on the fallacious *NIC uniformity assumption*, which OF could only dismantle by first demonstrating that, in the cases at hand, the subject could not, despite appearances, take different attitudes to the sentences in question. In cases where the *NIC uniformity assumption* prescribes the contrary interpretation and results in difference of

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<sup>30</sup> An appeal to what's rationally coherent or incoherent doesn't settle the issue, nor does it pretend to. Rather, it merely functions as the guiding maxim for an inquiry into the individuation of sense.

sense, the Fregean can resist such an interpretation by appeal to IEK: if a subject has immediate knowledge of coreference in virtue of complete understanding of the terms, thus obviating the need for, or utility of, an identity statement, then the subject cannot remain rationally coherent and take different attitudes towards the sentences containing those terms. However, puzzle cases in which subjects lose track of time or suffer a loss of memory seem to undermine the notion that the subject is rationally incoherent by being unable to recognize the appropriate sentences to be true. That is, it doesn't *seem* like a subject is rationally incoherent in cases involving circumstances where the appropriate belief is, according to Kaplan, in some sense retained (or not retained at all) but the subject is nevertheless unable to express the belief due to some manner of interference with his or her unity across time. In other words, it seems eminently plausible to suppose that subjects can retain beliefs but be unable to express them by losing track of time, or by excluding former beliefs from their memory and thereby undoing their commitment to them, such that a contrary attitude following the loss of memory wouldn't stand in opposition to a prior belief to which one might still be committed.

However, as was suggested at the end of section 2, just as the *NIC uniformity assumption* issuing from NIC tends to segment portions of the subject's cognitive rational unity across time in an effort to determine what is and is not coherent merely *at a time*, so too do these puzzle cases presuppose a fallacious version of NIC by failing to recognize that in coming to form certain beliefs and recognizing certain propositions to be true, subjects make rational commitments that constrain them diachronically. To suppose otherwise is to disregard the imperatives of rational unity and coherence across time and the constraints imposed on subjects in order to preserve such unity and coherence. The puzzle

cases exploit the fallible capacities of subjects that render them susceptible to disruptions of rational unity and continuity of belief across time. Whereas in synchronic cases, the subject can be bluntly confronted with two sentences at the same time, in which commitment to one utterable *at that time* implies or doesn't imply commitment to the other utterable *at that time*, thereby manifesting complete understanding synchronically, in diachronic cases, the subject can only be confronted with sentences in the manner in which they were ascribed to Auggy in (c) and (d) above, where he has synchronically tacit immediate knowledge of coreference. The subject's coherence, however, can only be *manifest* across time, which necessarily permits the possibility of incoherence in acts of fallible rational capacities in which the subject's unity is disrupted.

Since we are here individuating *Simm* by appeal to evident rational commitments—what sentence(s) a subject must recognize to be true given prior or simultaneous recognitions of other relevant sentences—but are encountering seemingly intractable diachronic cases involving temporally indexical sentences, it will be helpful to recall the more tractable, synchronic cases involving sentences utterable at the same time. If we can discern parallel structures in the synchronic and diachronic cases, and have the resources to straightforwardly adjudicate the synchronic cases, we'll have a clue as to how to adjudicate the diachronic cases.

As such, consider the following belief-ascription, where the subject is very evidently breaching the constraints of rationality by taking opposing attitudes toward the proposition expressed by the sentence, recognizing the content of one to be true and the other false: (1) Mona believes that Cicero wrote *Hortenius* and *De Amicitia*; (2) Mona does not be-

lieve that Cicero wrote *De Amicitia*. Here, it's conspicuously evident that Mona is incoherently taking opposing attitudes towards the sentences in (1) and (2). Hence we would straightaway charge Mona with rational incoherence. Given (1), Mona is breaching her rational commitment to recognize *Cicero wrote De Amicitia* to be true. Mona would *not* be exhibiting rational incoherence in not believing *Tully wrote De Amicitia*, or even in believing *Tully did not write De Amicitia*, because she doesn't know, and needn't be expected to know, that Cicero=Tully. Thus the identity premise would be legitimately informative. 'Cicero=Cicero' is clearly not informative; hence it isn't needed before Mona moves from, say, believing that Cicero wrote *Hortenius* and *De Amicitia* to believing that Cicero wrote *De Amicitia*.<sup>31</sup> When Mona denies the latter, she implicates herself in rational incoherence. In (2) Mona seems to have lost track of the tokens of the same name in the sentences toward which she is taking opposing attitudes. She must have lost track; the identity of the tokens would contribute nothing to the validity of an inference from the former to the latter.

The preceding cases, it would seem, instantiate some ability to 'keep track' or fail to keep track; it is a basic phenomenon governing inference, belief-formation, and extension of belief. Mona must "keep track" of both the complex predication and the tokens of 'Cicero', which, because it's so effortlessly exercised, is taken for granted. Coreference *ought* to be evident to Mona, and it ought to be so evident *immediately*. Any such failure to keep track and thereby immediately identify coreference results in a violation of one's rational commitment. In Mona's case, we unproblematically acknowledge this failure and, therefore, charge her with rational incoherence. This parallels the rational incoherence

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<sup>31</sup> I know some might think that the tokens of the name 'Cicero' might require an additional identity premise. But this would result in an infinite regress, as Campbell (76 (1994)) has shown.

exhibited by Auggy in (2b), where, just as Mona must keep track of the tokens of the name and the components of the complex predication, Auggy must keep track of the day across contexts. Both subjects exemplify a failure to satisfy the precondition of being rational.<sup>32,33</sup> Just as Auggy might gently inform Mona that, if she believes that Cicero wrote *Hortensius* and *De Amicitia*, then she cannot (or rationally *should* not) also fail to believe that Cicero wrote *De Amicitia*, so too might Mona, who was the addressee of Auggy's Tuesday utterance, inform Auggy that he's contradicting himself when, on Wednesday, he says that yesterday was not gloomy. Upon being chastened by Mona, Auggy would undoubtedly reply, "Oh that's right. Yesterday *was* gloomy." This would restore Auggy's rational coherence. So Auggy, like Mona, is recognizing what he *must* believe on Wednesday in order to be coherent.

As we established in section 3, Auggy must have both synchronically tacit knowledge of coreference and diachronically manifest knowledge of coreference. But the Kaplan-style counterexamples resisted this claim by appealing to cases of subjects losing track of time and therefore not exhibiting rational incoherence—in the Rip and Jones cases, the belief was retained but, in some sense, inexpressible; in the Auggy case, there was a loss of memory and therefore no obtaining contrary attitude. But we have just here discerned a parallel structure between synchronic and diachronic cases—both require some measure of 'keeping track'; both require subjects to satisfy certain preconditions in order to acquire and maintain complete understanding. However, in the synchronic cases,

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<sup>32</sup> The need for Mona to 'keep track' of tokens of a name *is not* merely a metalinguistic affair but also a matter of taking those tokens to be the name of the same *object*. I hope this is clear in the text.

<sup>33</sup> It is, as Evans [1983] claims, not "an optional addition to, but a precondition of, temporal thought" (309).

failures to ‘keep track’ that result in violations of rational commitments *do not* absolve the subject of rational incoherence—we straightforwardly charge the subject with rational incoherence for failing to appropriately recognize each sentence’s truth-value. Likewise, given the parallel structure and our unproblematic inclination to charge such subjects with rational incoherence, we ought to charge Rip, Jones, and Auggy with rational incoherence despite the fact that they have lost track of time. Since the ability to keep track must be presupposed in order for subjects to be rational in the first place, any rational commitments that rely on these abilities are equally constrained in order to retain rational coherence.

Our reluctance to make such charges of incoherence, as evinced by the almost irresistible appeal of Kaplan-style puzzle cases, only serves to disclose a failure to take seriously the constraints of diachronic rationality in the individuation of sense. An obstinate Fregean, however, is not in the position to neglect such constraints. Since individuating indexical *Sinn* is a matter of keeping commitments and remaining coherent across time, what a subject is committed to and must know immediately to corefer is a matter not of what in fact *is* evident to a subject but of what *ought* to be evident to a subject. Tokens of names in successive premises of an inference, for example, or cases of the form and content exhibited in IEK, ought to be perspicuously evident to the rational subject, even if something *could* interfere with such evidence. The fallible rational capacities of subjects will always permit this possibility.<sup>34</sup> Even if the subject for some reason did not immediately draw the appropriate conclusion (say, concluding ‘Something wrote both *Hortensius*

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<sup>34</sup> Consider the way in which we must base many of our judgments about the environment on perceptual experiences, even though perceptual experiences could always be non-veridical due to our general susceptibility to error, i.e. our fallibility.

and *De Amicitia*’ from ‘Cicero wrote *Hortensius*’ and ‘Cicero wrote *De Amicitia*’) an identity premise would contribute nothing to the validity of the inference containing the tokens of the name ‘Cicero’. Likewise, it has been argued, an identity premise would be uninformative to a subject who has complete understanding of ‘today’ and ‘yesterday’, used on  $d$  and  $d+1$ , respectively, since a condition of complete understanding is ‘keeping track’ of the day in just the same way—with perhaps some additional exertion and mental stamina—as keeping track of tokens in synchronically representable inferences or cases of transparent coreference (i.e. IEK).

But there’s a complication here. Take Jones, for example. In order for Jones to be contradicting his belief on  $d$  about  $d$  that today is fine, the constituent indexical *Sinn* of ‘today’ used on  $d$  must be the very same indexical *Sinn* as that of ‘yesterday’ used on  $d+1$ , otherwise by **Compositionality** it isn’t the same proposition being expressed. That is, if they do not express the same sense Jones wouldn’t be recognizing to be true and recognizing to be false sentences expressive of the same proposition, for the indexical in the negated sentence on  $d+1$  does not express the same sense as the indexical used on  $d$ . Given that these indexical senses are dynamic and a precondition of re-expressing the same content in different contexts is ‘keeping track’ of the day-referent under its shifting modes of presentation, if one has lost track of the day-referent, then one cannot re-express the same sense as originally expressed. But what, then, is Jones asserting when he says, “yesterday was not fine,” given that he has lost track of time?

The complication derives from the indexicality of these sentences. The sentence type ‘yesterday was not fine’ can express innumerable many propositions, according to

the Fregean. Given a specific context, it will express just one proposition. But as the Fregean claims, if recognizing one sentence to be true rationally commits one to recognizing certain other sentences to be true, those sentences have the same sense. However, when it comes to indexical sentences, it's only sentence uses to which one is committed. In other words, the Fregean already knows that when Jones recognizes 'today is fine' to be true on  $d$ , he rationally commits himself to recognizing 'yesterday was fine' to be true on  $d+1$ , since both sentences express the same proposition. But when Jones says on  $d+1$ , "yesterday was not fine," Jones thinks it's still  $d$  and thus his use of the sentence evinces a failure to keep track of time, so it isn't clear it's the same sentence Jones has committed himself to in recognizing 'today is fine' to be true. The question, then, is this: does Jones' 'yesterday' express the same sense as his use of 'today'? If so, he's being rationally incoherent. If not, he's not being rationally incoherent.

OF seems to have two options here. There's the externalist option and (what I'll call) the non-referring indexical option. Regarding the former—which seems to be implicit in the position expounded in section 4 on object-dependent senses—there is some fact of the matter as to what the day actually *is*. So  $d$  in the Jones case is or is not yesterday. If  $d$  has passed over into  $d+1$ , then  $d$  has become yesterday. So whether Jones knows it or not, he inhabits the context of  $d+1$ . As such,  $d$  is being presented—as a matter of external "fact"—under the mode *yesterday*. Likewise  $d-1$  is being presented under the mode *the day before yesterday*. These days are being presented under certain modes, even if they're not so presented *to Jones*. Just as Venus is being presented as *Hesperus* in evening even if one doesn't know this, or takes the object that is Venus to actually be a distant star. Returning

to the point: since Jones' environment at least partially determines the content of his belief, and the environment, in this case, is a matter of the day-context, the content of Jones' belief—determined or expressed by his use of the sentence 'yesterday was not fine'—is about  $d$  and not  $d-1$ . In this way, Jones' use of 'yesterday' on  $d+1$  expresses the same sense as his use of 'today' on  $d$ . Since the sentences used express the same proposition on their respective occasions of use, Jones is being rationally incoherent.

Another option might suggest itself here: Jones' use of 'yesterday' is determining no content whatsoever. Or rather, Jones' 'yesterday' contributes no mode of presentation of a referent at all to the proposition Jones attempts to express. This implies that Jones' use of 'yesterday' on  $d+1$  does *not* have the same sense as his use of 'today' on  $d$ . Given the notion of object-dependent senses, since 'yesterday' has no referent, it does not contribute a sense to a proposition, and thus no proposition is expressed by Jones' use on  $d+1$  of 'yesterday was not fine'. This is a peculiar view because (pure) indexicals are not ordinarily the kinds of lexical items that could be non-referring. But if one takes some pure indexicals to be in part semantically individuated by the intention of the speaker, then it seems plausible to suppose that failures of reference can be due to failures of the intentions of the speaker to match up with facts about the environment. In this way, the indexical has an incomplete content, that is, the intention in using the indexical somehow contributes a partial content, but since it fails to match up with the world, there's a certain gap in the quasi-proposition expressed.

Though somewhat spooky, the view isn't unintelligible. Consider, for example, an utterance involving a demonstration: 'that is on the table'. Now, the character of 'that' in

this context doesn't, all by itself, determine a referent. According to Kaplan, it needs to be supplemented with a demonstration or, perhaps, an intention of the speaker. Well, suppose the speaker intends the referent of 'that' to be some solid crystal geometrical figure. However, as a matter of fact, there is no such figure on the table but rather the false appearance of such a figure caused by, perhaps, the lighting and some objects in the room. There's nothing particularly unintelligible about 'that' being a non-referring demonstrative here—and non-referring because of failure of the intention of the speaker to match up with the world. If the speaker is pointing at the table, intending to point at the geometrical figure, the speaker is pointing at *something*, say, a dust particle, but it's not what the speaker intends to be demonstrating. Likewise, 'today' is "pointing" at something, namely, the day in which the utterance is made, but it's not determining the referent (or presenting the referent under its actual mode, if that makes sense) the speaker intends to determine.

But here, we'll set aside this latter option. Though I believe the non-referring indexical option is compatible with the Fregeanism defended here, it doesn't seem to be in spirit of its implicit externalism. As such, since Jones has synchronically tacit immediate knowledge of coreference and is rationally constrained to have diachronically manifest knowledge of coreference (that is, he must keep track of time and be able to completely understand his use of 'yesterday was not fine'), he is being rationally incoherent in recognizing one sentence to be true and the other false.

## 7. Conclusion

The puzzle of cognitive dynamics isn't, or shouldn't be, about *how* subjects retain belief. That would seem to be a bit of idle speculation. Rather, the puzzle is about what

sentences the subject must be willing to assert in order to express his belief, and how we might determine what belief a subject might have by the sentences such a subject would assert. We have focused on cases in which one takes oneself to have a certain belief but, in fact, the content of the belief they take themselves to have is quite different from the content of the belief they actually have. Perhaps Evans was gesturing at this diagnosis when he said he saw nothing wrong in supposing a person “who [habitually] loses track of time cannot retain beliefs.”<sup>35</sup> Given externalist assumptions, this seems to be true. And given the way the Fregean individuates *Sinn*, it seems committed to this assessment of the cases.

Moreover, there’s nothing in the account sketched above that precludes a subject from “getting back on track,” such that a subject could locate the appropriate belief-content by, say, being reminded of her contextual position. There’s nothing in the notion of ‘keeping track’ that precludes a subject from getting off track, being interrupted, etc. and then being put back on track and re-focused on the referent.

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<sup>35</sup> fn. 311 [1983]

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