

Future time reference: Truth-conditional pragmatics or semantics of acts of communication?*

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1. Introduction and overview

The treatment of temporal reference in Discourse Representation Theory (henceforth, DRT, Kamp and Reyle 1993) is still work in progress and contains many unresolved questions. One of these questions is how to account for temporal reference that cannot be derived from the overt grammatical or lexical indicators of time. The temporal specification of an eventuality (represented in DRT as a state or an event) relies on information overtly specified in the sentence by means of grammatical markers of tense and aspect or by temporal adverbials. But, as is well known, some temporal information may come from the context of the utterance or discourse, some may also be assumed by default in the absence of overt indicators in the sentence. These pragmatic indicators of temporality are particularly important where there is a possibility of multiple reading of a construction or where the context suggests that there is a mismatch between the temporal information conveyed by the grammar and the temporal information intended in the given context. Needless to say, such pragmatic indicators are indispensable for languages without obligatory marking of tense or aspect – or both.¹

* Earlier stages of the project on futurity as modality were reported in the conference papers Jaszczolt 2003, 2006, and Chapter 6 of Jaszczolt 2005.

In this paper I propose how such pragmatic information can be incorporated in dynamic semantics modelled on DRT. For this purpose I use the example of future time reference in English and attempt to provide Semantic representation of expressions with regular future, futurative progressive, and so-called ‘tenseless future’ (Dowty 1979).

I propose a reanalysis of the type and degree of contextual input to discourse representation structures (DRSs) in such a way that they allow the pragmatic input to be regarded on a par with temporal information coming from grammar and the lexicon. Such pragmatics-rich representations of acts of communication (called *merger representations*, Jaszczolt 2003, 2005, 2006) differ from DRSs in the conception of the interaction between semantics and pragmatics and in particular in the sources of meaning information they distinguish. Next, I apply merger representations to expressions of futurity. In order to do so, I briefly state the reasons for supporting the view of futurity as modality and introduce a modal operator to merger representations (henceforth MRs) that accounts for all the three ways of expressing futurity introduced earlier. In the final part, I compare and contrast the foundational assumptions of the two currently dominant orientations pertinent to the issue of ‘pragmatization’ of semantics: truth-conditional semantics of DRT and the so-called truth-conditional pragmatics (Recanati 2003, 2004) and conclude that representing various ways of expressing futurity requires a truth-conditional account of meaning that allows for a contribution of information coming from pragmatic sources to truth conditions as understood in post-Gricean pragmatics rather than, as is normal practice in semantic theories, going ‘beyond truth conditions’ where the latter are applied to the output of syntactic processing. Consequently, I conjecture that such an incorporation of the pragmatic indicators of futurity can be accommodated within a semantic theory when the dependence of the latter on the syntactic structure is relaxed according to the guidelines provided in merger representations.

2. Future time reference

Futurity can be expressed in a variety of ways in English. In (1), it is expressed by means of an auxiliary *will*.

(1) Tom will play at the Royal Albert Hall tomorrow night.

In (2), present continuous is used for future time reference. This use is called *futurative progressive*.

(2) Tomorrow night Tom is playing at the Royal Albert Hall.

In (3), simple present is employed. This use is sometimes called *tenseless future* (see Dowty 1979) and this is the term I employ here.

(3) Tomorrow night Tom plays at the Royal Albert Hall.

Sentence (4) makes use of a periphrastic construction.

(4) Tom is going to play at the Royal Albert Hall tomorrow night.

The use of the auxiliary *will* for future time reference is relatively well researched (see e.g. Enç 1996; Dahl 1985; Abush 1988; Ogihara 1996).² *Will* is also well accounted for in DRT because it conforms to the requirement that when the auxiliary *will* is present, the eventuality is placed in the future with respect to the utterance time:

...[the feature] TENSE has three possible values, *past*, *present*, and *future*, signifying that the described eventuality lies before, at, or after the utterance time, respectively. The value of TENSE for a given sentence S is determined by the tense of the verb of S. When the main verb is in the simple past, TENSE = *past*; when it is in the simple present, TENSE = *pres*; and when the verb complex contains the auxiliary *will*, TENSE = *fut*.
Kamp & Reyle (1993: 512–513).

Meaning representations of DRT, i.e. DRSs, are built on the foundation of the syntactic configuration. In other words, syntactic processing of a sentence (or, in dynamic approaches, of a string of sentences in discourse) leads to the establishment of the initial structure of discourse referents and discourse conditions. Such a representation must contain temporal information conveyed by the grammar and the lexicon: “The algorithm must represent the temporal information that is contained in the tense of a

sentence and in its temporal adverb (if there is one).” Kamp & Reyle (1993: 512).

Examples (1) and (4) conform to this desideratum: auxiliary *will* and the periphrastic construction ‘be going to + *verb*’ can be accounted for by means of a suitable algorithm. On the other hand, the futurative progressive and ‘tenseless future’ are much more problematic. The future time reference of (2) and (3) cannot easily be derived from a formal rule. The default use of the form in (2) is present time reference with continuous progressive aspect, while that of (3) is present time reference, normally with non-progressive or habitual/iterative aspect, largely depending on the adverbial, as well as on the aspectual class of the verb.³ In what follows, I shall focus on (2) and (3) as compared with (1), but not so much with respect to the nuances of meaning they convey in addition to conveying futurity, but rather mainly with reference to (i) the amount and (ii) particular sources of the *pragmatic input* required in order to use such expressions with future-time reference. As will become obvious from the discussion, the explanation of the differences in meaning between (1), (2) and (3) is a by-product of their analysis. The reason for this is that their future-time reference is explained by the modal character of the conveyed statements and the degree, or relative strength, of this modality in each of the sentences.

3. Pragmatic input to meaning representations

The next step is to take a stance concerning the object of which truth conditions are predicated. To repeat, in DRT, like in other formal semantic theories, truth conditions pertain to the logical form which is itself the output of sentence grammar. Then, the semantics can extend ‘beyond’ the truth conditions to account for, for example, the reference of indexical expressions. This orientation is sometimes classified as the ‘semantization’ of the pragmatic input to representations of meaning (see e.g. Levinson 1995; 2000). On the other hand, in post-Gricean pragmatics, truth conditions are predicated of utterances.⁴ The representation of meaning is then a logical form of the sentence that can be suitably developed in order to resemble the meaning intended by the speaker –or, rather, the meaning understood by the addressee as intended by the

speaker. The input to the truth-conditional analysis is then *what is said* (Recanati 1989), or an *explicature* (Sperber and Wilson 1995; Carston 1988). Now, I remarked in Section 2 that in order to give an account of future time reference performed by means of futurative progressive or ‘tenseless future’ as in (2) and (3) respectively, we have to have a way of incorporating pragmatic inference into the analysis of meaning. It seems that post-Gricean approaches, on which truth conditions are predicated of what is said, provide a suitable framework. What we have there is the so-called ‘pragmatization’ of truth conditions: truth conditions pertain to utterances. The consequence of this view is that there is no need to derive *all* the constituents of the representation of which truth conditions are predicated from the logical form. Some of the developments of the logical form may not pertain to any ‘slots’ in the logical form; they are, to use Recanati’s (2004) expression, top-down, rather than bottom-up:

...even if the semantic value of a word is fixed by language (and context, if saturation [i.e. filling in indexicals, ‘unarticulated constituents’, KJ] is necessary), composing it with the semantic values for other words often requires help from above [top-down process]. It is semantic composition which has a fundamentally pragmatic character.

Recanati (2004:139).

Such top-down processes result in embellishments of the logical form that are not triggered by the grammar but instead are results of inferences from the initially derived representation. On the first glance, it would seem that the advantages of this pragmatic move are unsurpassed. But truth-conditional pragmatics does not come with a strict formal procedure of deriving meaning. What it gains by opening the door to pragmatic inference, it loses in the domain of precision and clarity of formalization. So, the question arises, can we preserve the precision of the DRT algorithms and open it to the output of pragmatic inference that would account for, for example, futurative progressive and ‘tenseless future’? In other words, are DRT and truth-conditional pragmatics compatible? Can the first be enriched with the insights of the latter?

On the first sight, the answer is negative: while DRT goes ‘beyond’ truth conditions in the construction of DRSs, truth-conditional pragmatics applies a truth-conditional analysis to what is said, the meaning of the sentence that is enriched with the result of various kinds of pragmatic

inference: (i) those for which the syntax gives us an indication that there is some pragmatic task to be performed, as in reference assignment to deictic expressions in (5), as well as (ii) those for which no such syntactic trigger exists, as the narrowing of the domain of quantification in (6). Symbol ‘+>’ stands for ‘con conversationally implicates’:

(5) *He is here now.*

(6) *Everybody came to the party. +> Everybody who was invited came to the party.*

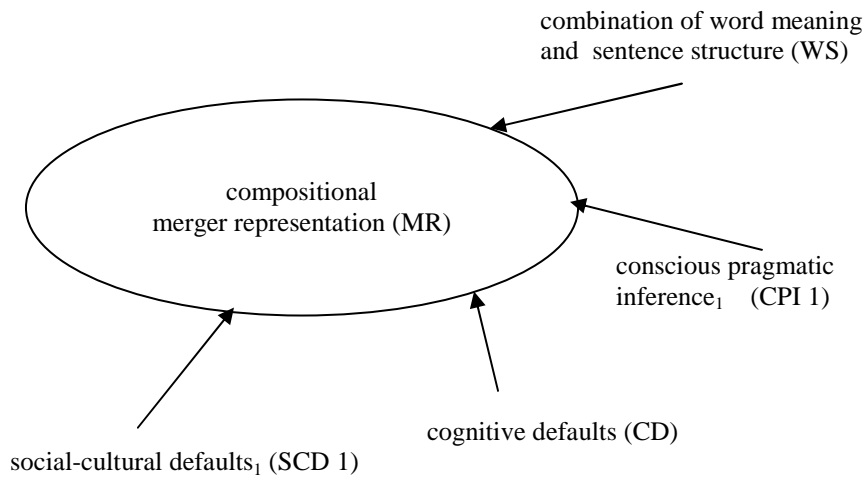
On a closer analysis, though, it seems that the formal apparatus of DRT can also be applied, so to speak, ‘one level higher’, to the output of processing the structure of the sentence combined with what is pragmatically implied in the discourse. There are some serious conceptual hurdles to overcome, the main one being the level at which compositionality is predicated. I present a detailed defence of compositionality on the post-inference level elsewhere and am not going to discuss this issue here.⁵ In what follows, I confine my task to proposing how the discourse referents and conditions of DRT, amended with a modal operator, can be applied to such a ‘post-pragmatic inference’ representation in order to account for futurative progressive and ‘tenseless future’. The framework that combines the orientation of truth-conditional-pragmatics and the semantization of meaning of DRT is already being developed and is called Default Semantics (Jaszczolt 1999a, b, 2002, 2003, 2005, 2006). I shall use this framework in what follows.

Default Semantics (henceforth DS) uses an adapted and extended formalism of DRT but applies it to the output of the merger of these sources of meaning. The representation of the truth-conditional content is a merger of information from (i) word meaning and sentence structure, (ii) conscious pragmatic processes, and (iii) default meanings. Utterance processing can now be captured as on Fig. 1. Stage 1 pertains to the processing of what is said (our MR), and Stage 2 to the processing of implicatures. Two types of default interpretations are distinguished in Default Semantics: defaults pertaining to the properties of the human cognitive mechanism (cognitive defaults) and defaults that arise as a result

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of an experience of social and cultural patterns in a community (social-cultural defaults).

Stage 1



Stage 2

social-cultural defaults₂ (SCD 2)
conscious pragmatic inference₂ (CPI 2)

Fig. 1 Utterance interpretation in Default Semantics (adapted from Jaszczolt 2005: 73)

Now, in DRT, sentence (1) repeated below, obtains a DRS as in Fig. 2. 'e⊆t' stands for 'event *e* is temporally included in time *t*', and 'n<t' for 'the present time *n* precedes the time *t* of the event'.

- (1) Tom will play at the Royal Albert Hall tomorrow night.

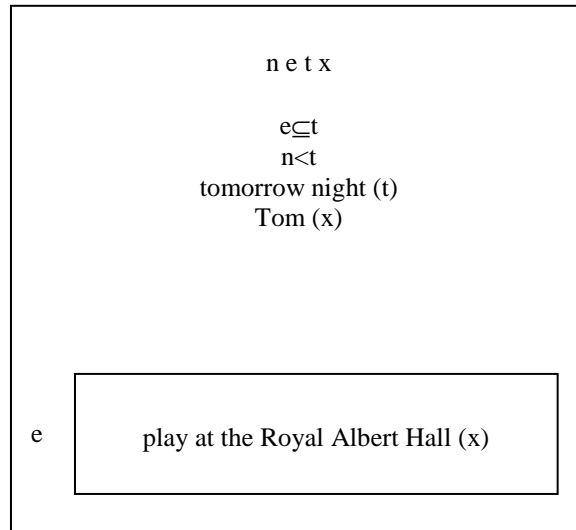


Fig. 2: The DRS for sentence (1)

However, constructing an analogous DRS for sentences (2) and (3) would be problematic. The verb forms ‘is playing’ and ‘plays’ do not normally indicate that the eventuality should be placed in the future. This information has to be inferred from the temporal adverbial ‘tomorrow night’, or, in its absence, it has to be pragmatically inferred from the situation of discourse. Now, MRs of DS account for such pragmatic input. They can also account for the differences in meaning between (1), (3) and (4). Such MRs are the topic of Section 4.

4. Future time reference in merger representations

Examples (1)-(4), albeit all pertaining to a future event, differ in their meaning. (1) and (4) are closer to being neutral as to expressing the commitment to the future event than (2) and (3). Leaving the periphrastic

expression in (4) aside, let us now compare (1), (2), and (3). Futurative progressive in (2) is normally associated with the sense of planning.⁶ ‘Tenseless future’ in (3) is quite restricted in use and comes with a strong commitment on the part of the speaker to the truth of the future event. In other words, ‘Tom plays a concert tomorrow’ means that the speaker has strong reasons to believe that the event will take place. The differences in meaning between these three ways of expressing the future are not vast. They essentially pertain to the strength of the speaker’s commitment. So, we would expect a semantic theory to be able to capture this similarity and account for the different strength with which the statements are made.

Now, in semantic terms, commitment to the eventuality is best handled as modality – possibility, necessity, or simply the kind of evidence one has for making a claim.⁷ In DS, we shall assume that futurity is best handled by a modal operator. Unlike the past and the present, the future shares many properties with what are undisputable epistemic or deontic modal contexts (see e.g. Enç 1996; Jaszczolt 2006). I shall thus attempt to cater for all three ways of expressing futurity exemplified in (1)-(3) by means of introducing a modal operator on events, loosely modelled on Grice’s (2001) acceptability operator. The latter proposal can be summarised as follows. According to Grice’s Equivocality Thesis, all modal expressions can be subsumed under one general category. More precisely, in his unfinished investigation, Grice attempted to derive practical (deontic) and alethic modalities from a common core of acceptability by means of introducing an operator on propositions:

$Acc \vdash p$ ‘it is (rationally) acceptable that it is the case that p ’

and

$Acc !p$ ‘it is (rationally) acceptable that let it be the case that p ’.

Leaving aside Grice’s incomplete argument for their common source, let us focus on *Acc* itself and the possibility of its utilisation for (1)-(3). We have to make two adjustments though. Firstly, if *Acc* applies to alethic modalities, let us assume that it will also apply to epistemic modalities since, conceptually, the latter are, so to speak, ‘alethic modalities’ seen from the perspective of human cognition. Next, and more importantly, in

view of the earlier discussion of the need to incorporate pragmatic inference into the unit of which truth conditions are predicated (MR), let us form an acceptability operator on *events*, written as $ACC\ e$. At this point we can attempt to introduce this operator to the semantics – first conceptually, and then formally.

As was observed earlier, simplifying somewhat, (1)-(3) differ in the degree of commitment to the prospect that the stated eventuality is going to take place. We can represent this degree by means of the degree n of the modality Δ . In the following simplified neo-Davidsonian⁸ logical form, Δ^n stands for the degree n of granularity of Δ as in [?](7):

$$^?(7) \quad \exists\Delta\exists e\exists n(\Delta^n \ \& \ ACC_{\Delta}^n \ (\text{Playing-at-the-Royal-Albert-Hall} \ (e) \ \& \ \text{Subject} \ (\text{Tom}, e) \ \& \ \text{Tomorrow-night} \ (e)))^9$$

Δ can take on Grice's '┆' or '!' for 'it is the case that...' and 'let it be that...'. But, since we do not want to commit ourselves to Grice's 'alethic/practical' divide, we allow for the possibility that ACC may require more types of Δ . The latter issue cannot be resolved quickly, it is a topic for an in-depth, data-based investigation. So, let us assume that for the purpose of investigating futurity, $\Delta = \text{┆}$. We can now construct a *unified*, general MR for regular future, futurative progressive, and 'tenseless future' as in Fig. 3. The value n is left unspecified and can vary between those ascribed to (i) regular future where the commitment is weak and modality high; (ii) futurative progressive where the commitment is higher and modality weaker; and (iii) 'tenseless future' with the strongest commitment and weakest modality. In Fig. 3, the subscript CD stand for cognitive defaults, and WS for the combination of word meaning and sentence structure, which are two of the sources of information that contributes to MR depicted in Fig. 1. [] stand for the material to which these sources pertain.

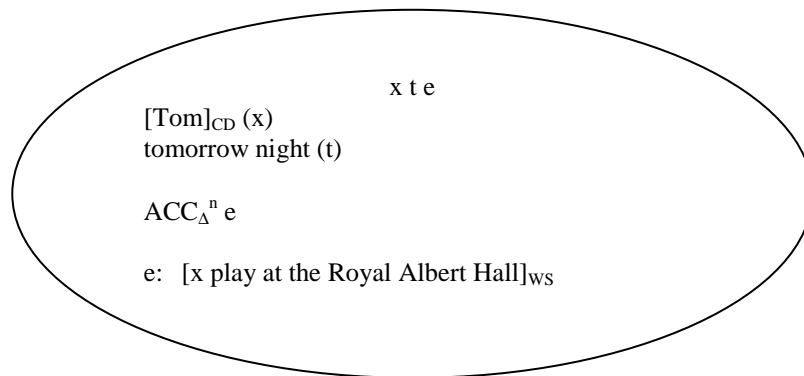


Figure 3. Generalized MR

Now, the strength of the speaker’s commitment in each of these three ways of expressing futurity can be placed on an indicative scale as in Fig. 4. The ‘1’ end of the scale signifies the strong commitment to *e* that comes with the speaker’s strong informative intention. Strong commitment means, *a fortiori*, low degree of detachment from the stated eventuality, and hence ‘low degree’ of modality. The ‘0’ end corresponds to the weak commitment and therefore ‘strong’ epistemic modality. In Fig. 4, *tf*, *fp*, and *rf* stand for ‘tenseless future’, futurative progressive, and regular future respectively. The absolute values for *tf*, *fp* and *rf* are, naturally, not specified. Their relative values are all that matters – and, possibly, all that can be conjectured without substantial empirical research.

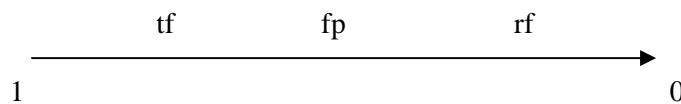


Figure 4. Gradation of commitment and modality for *tf*, *fp*, and *rf*

The MRs for (1)-(3) can now be constructed as in Figs (5)-(7). The superscript n has been replaced by the value (degree) of modality that is carried by the forms rf , fp , and tf respectively.

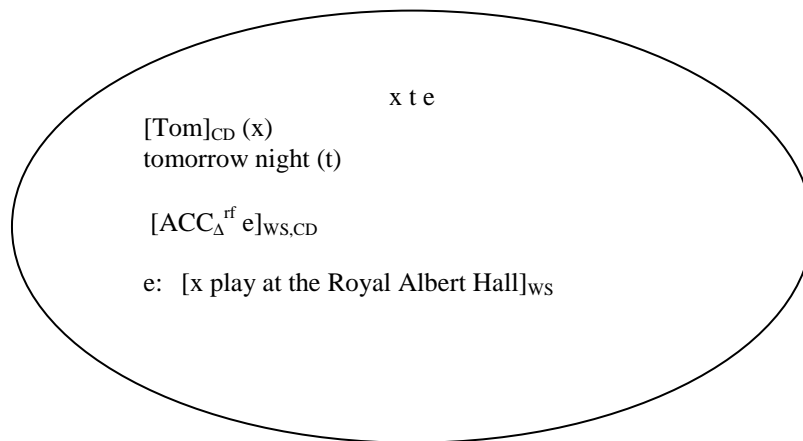


Figure 5. Regular future

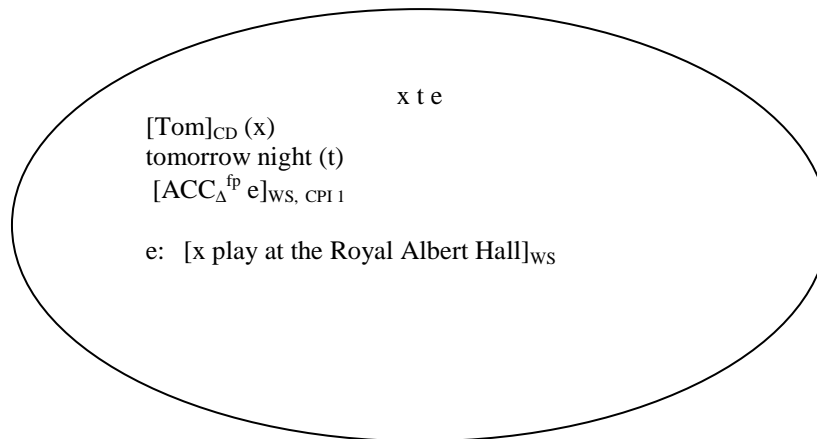


Figure 6. Futurative progressive

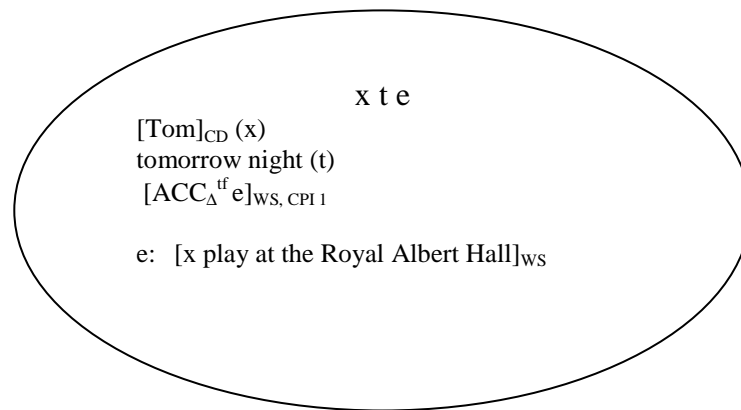


Figure 7. Tenseless future

A disclaimer is due at this point. I am not claiming that this is the only way in which top-down pragmatic inference can be accounted for in a theory of discourse interpretation. There are, of course, many possible ways of incorporating contextual information into semantic representations. It is also possible that solutions to the futurity problem that are closer to the theoretical assumptions of DRT can be construed – in DRT itself or in one of its offshoots. The advantage of the proposal presented here is that we are able to account for all three ways of expressing futurity by means of one modal operator. Moreover, operator *ACC* is also applicable to other clearly modal uses of *will* such as the epistemic and dispositional necessity in (8) and (9) respectively.

- (8) Tom will be playing a concert now.
- (9) Tom will sometimes play out of tune during the rehearsals to annoy the conductor.

But this is a separate topic that I discuss elsewhere.¹¹

5. Conclusions

Non-standard ways of expressing future time reference such as futurative progressive and ‘tenseless future’ pose a difficulty for semantic theories in that there is a mismatch between the temporal information carried by the grammatical form of the verb and the temporal information carried by the utterance. The most obvious way to overcome this difficulty is resorting to a post-Gricean pragmatic account according to which truth conditions are predicated of utterances, as in Recanati’s truth-conditional pragmatics. However, what is gained in the power of the theory, is lost in its formalization. I proposed here to use the insights of truth-conditional pragmatics concerning the unit of which truth conditions should be predicated and apply the amended and extended formal apparatus of DRT to such ‘pragmatics-rich’ representations, that is MRs of DS. I have analysed in DS the three types of expressing futurity, proposing a general notion of modality, modelled on Grice’s *Acc*, that subsumes various expressions of futurity (*rf*, *fp*, *tf*). Grice’s *Acc* was translated into the DS-theoretic operator ACC_A^n . I showed that ACC_A^n , combined with CD and CPI 1, allows for representing the degrees of modality and the degrees of informative intentions associated with the acts of communication that make use of these different forms.

6. Final remarks: How much pragmatics?

This analysis is only a sketch of a proposal and leaves many unresolved questions. In fact, it opens up new problems for the semantics/pragmatics interface. The main problem has already been mentioned: in order to apply the formalism of DRT, however amended and extended, to representations that incorporate the output of top-down pragmatic inference, one has to rethink the issue of compositionality in semantic theory. This is a topic for a separate discussion. All that has to be said here is that it seems perfectly acceptable to assume that compositionality has to be understood as a methodological principle and assumed at some

level or other. The semantic theory will have to follow suit in order to accommodate such compositionality. Or, in the words of Groenendijk and Stokhof (1991: 93), "...it is always possible to satisfy compositionality by simply adjusting the syntactic and/or semantic tools one uses, unless that is, the latter are constrained on independent grounds." The question as to whether methodological compositionality is also a compositionality of content, i.e. whether it is 'really' there in mental representations conceived of as merger representations, is still work in progress.¹²

The next problem concerns the degree of the contextual contribution allowed in representing what is said. According to the standpoint called by Recanati (2004) quasi-contextualism, any pragmatic inference that contributes to the addressee's recovery of what is said by the speaker is allowed. According to more radical contextualism, this contextual contribution to the representation of what is said is even mandatory.¹³ Default Semantics goes a little further in allowing pragmatically derived information not only to *add* to the information arrived at through the syntactic processing of the sentence, but also *block* it. In other words, for example, 'is playing' in (2) need not result in the default interpretation as present progressive, but instead the grammatical form interacts with the meaning of the temporal adverbial 'tomorrow night' and with the result of pragmatic inference from the situation and produces, by merger, a future time reference of the event. The form 'plays' in (3) is processed analogously. It remains to be seen whether a semantic theory in which the dependence of the mental representation on the output of syntax is substantially relaxed can be worked out for other problematic constructions and phenomena.¹⁴

Notes

1. In Thai, for example, markers of tense and aspect are not obligatory. See e.g. Srioutai 2004, 2006.
2. See also Jaszczolt 2005, Chapter 6 and 2006 for detailed references.
3. See e.g. Comrie 1976; Jaszczolt 2002, Chapter 13; Rothstein 2004.
4. See e.g. Carston 1988, 2002; Sperber and Wilson 1995; Recanati 1989, 2004.
5. See Jaszczolt 2005, Chapter 3.
6. Cf. e.g. the infelicity of (i):
[?] (i) Tom is suffering from a headache tomorrow night.

7. See also Palmer 1986 for evidentiality as modality. This degree of commitment is what we have to represent.
8. See Parsons 1990
9. This is not the only way of representing the type of ACC. If we were to depart from the Montagovian tradition of the operator-based analysis and adopt the stance that temporality is to be expressed as an argument of predication, the logical form would change accordingly. I adopt the operator analysis as it best captures the degrees of intentionality and intentions that differentiate between the different expressions of futurity in (1)–(3).
11. See Jaszczolt 2005 and 2006.
12. The literature on this topic is vast. See Jaszczolt 2005, Chapter 3 for references. For the compositionality of content see e.g. Schiffer 2003 and Recanati 2004.
13. Cf.: “...Quasi-Contextualism (...) considers the minimal proposition as a theoretically useless entity which plays no role in communication.” Recanati (2004: 86) and “According to Contextualism (...) there is no level of meaning which is both (i) propositional (truth-evaluable) and (ii) minimalist, that is, unaffected by top-down factors.” Recanati (2004: 90).
14. This was attempted in Jaszczolt 2005, Part II, devoted to various applications of DS.

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