PROLEGOMENA TO DEFAULT SEMANTICS[*]

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The claim that hearers rely on standard, typical, or default meanings in interpreting speakers' utterances can hardly be contested. Or, at least, it can hardly be contested when it is formulated in this general, common-sensically appealing way. In this paper I defend a strong version of such conversational defaults and suggest that default interpretations arise not in pragmatics, but rather already in the domain of semantics. This claim is supported by the evidence for default meanings at the level of mental states (I call them 'cognitive defaults') as distinguished from default meanings on the level of contextually situated discourse (or, what I call 'social defaults'). The first are supported by the property of intentionality of mental states, as suggested in the phenomenological tradition, and the other by the neo-Gricean heuristics of rational communicative behaviour by Levinson (1995, 2000). First, I present briefly the main standpoints in the semantics/pragmatics boundary dispute. Next, I review the current

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semantic and pragmatic approaches that make use of the notion of defaults and point out their limitations. In the third part of the paper I put together the extant support for semantic defaults and summarise my arguments for (i) the default status of the referential interpretation of definite descriptions; (ii) *de re* interpretations of propositional attitude reports (Jaszczolt 1999b); (iii) the preference of binding over accommodation in the case of partial matches of the presuppositional/anaphoric expressions within van der Sandt's (1992) approach to presupposition that regards it as anaphora (Jaszczolt 2002b). Next, I summarise my argument for (iv) the default modal status of the expressions of futurity. I demonstrate that these default interpretations are the cases of cognitive defaults. Finally, I make a tentative proposal concerning other types of expressions standardly regarded as semantically ambiguous or underspecified, such as sentential connectives and number terms, and point out the need for distinguishing cognitive defaults from social/cultural defaults. I also indicate how the representations of Discourse Representation Theory (henceforth DRT, Kamp and Reyle 1993) can be modified and applied for the purpose of analysing such default interpretations.

1. Semantics/pragmatics boundary dispute

The traditional view holds that in addition to lexical and syntactic ambiguity, there is also a third type of ambiguity that we can call semantic. For example, a sentence with a negation operator such as (1) is semantically ambiguous between the wide scope and the narrow scope negation where negation operates on the whole proposition ('It is not the case that *p*') or on the property of baldness respectively.

(1) The present King of France is not bald.

This ambiguity position, held among others by Bertrand Russell, has been successfully refuted. There are ample discussions on this topic in the literature, among others by Kempson, Sperber and Wilson, Carston, Recanati, Bach, Horn, Levinson, and Jaszczolt (see Jaszczolt 1999a, b for detailed references). According to Grice (1975, 1978), such differences in meaning can be attributed to implicated information. Grice postulated a unitary semantics, complemented with conversational implicatures. However, this proposal suffered from an unwelcome consequence that the content of the sentence that intuitively functioned as part of its core meaning had to be relegated to implicatures. Hence, in post-Gricean research it has been suggested that semantics is underspecified as to these aspects of meaning. The semantics of the conceptual representation system is considered to be truth-conditional semantics and it is different from the semantics in the narrow sense (linguistic semantics) which is the direct output of syntactic processing of a sentence (Carston 1988, 1998a, 2002). Pragmatic factors, summarised in Grice's maxims of conversation, or their subsequent reworkings by Horn (e.g.1984), Levinson (e.g.1987, 1995, 2000) and Sperber and Wilson (1986/1995), intrude into such semantics of the conceptual representational system and produce a unique semantic form. According to some representatives of this group, such differences in meaning belong to what is said rather than what is implicated (e.g. Sperber and Wilson 1986/95; Carston 1988, 1998a, 2001, 2002; Recanati 1989, 1993, 2001). According to another standpoint in the semantics/pragmatics interface, the differences in meaning belong to the level of default interpretations. This level has been conceived of in a variety of ways: either as default interpretations that are resolved by semantics (as in DRT, Kamp and Reyle

1993 and its offshoots, e.g. Segmented DRT, Asher and Lascarides 1998a, 2003), by pragmatics (as in Bach's impliciture, 1994a, b, 2001), or as fully-fledged social and cultural conventions for presumptive meanings (Levinson 1995, 2000). According to Levinson, default meanings arise along the lines summarised in the three heuristics, Quantity, Informativeness, and Manner – a development of Grice's maxims of conversation. As another standpoint in this dispute over the boundary between semantics and pragmatics, I propose that although there is no semantic ambiguity, there is no underspecification either. In dynamic approaches to meaning such as Discourse Representation Theory, there is no need for introducing semantic underspecification. Instead, the logical form, as the output of syntactic processing, is enriched with the information coming from the property of mental states called intentionality. Intentionality contributes to utterance interpretation and it is at least worth investigating whether we should consider information coming from intentionality as (i) an additional, pragmatic level of utterance processing or rather as (ii) a non-inferential input to the semantic representation. I call this approach Default Semantics[1]. In such a dynamic approach to meaning construction, default interpretations belong to semantics, and the ambiguity/underspecification dilemma proves to be a problem of little significance for semantic theory.

2. Varieties of defaults

It is increasingly more frequently argued that there are meanings that are neither the output of syntax nor the product of pragmatic inference. Instead, they are default interpretations. For example, (2) by default means (3):

[1] See also Jaszczolt 1999a, b, 2000, 2002a, b, forthcoming.

(2) She pushed him and he fell.

(3) She pushed him and as a result he fell.

Such default meanings have to be considered either as (i) non-inferential components of semantic representation, or as (ii) a result of pragmatic inference in utterance processing. I shall now briefly review some proposals of defaults before presenting my own.

2.1. Presumptive meanings

Levinson (1995, 2000) proposes solution (ii) in saying that such 'presumptive meanings' do not reduce to semantics or pragmatics:

> "…that layer is constantly under attack by reductionists seeking to assimilate it either to the level of sentence-meaning or to the level of speaker-meaning; thus, for example, in the case of G[eneralized] C[onversational] I[mplicature]s, Kamp, Peters, Kempson, van Kuppevelt, and others have all suggested that they should be in effect semanticized, whereas Sperber and Wilson and artificial intelligence local-pragmatics theorists have presumed that on the contrary they should be assimilated to matters of nonce inference at the level of speaker-intention. But GCIs are not going to reduce so easily in either direction, for they sit midway, systematically influencing grammar and semantics on the one hand and speaker-meaning on the other."
>
> Levinson (2000: 25).

Levinson's heuristics 'What isn't said, isn't' (Q-heuristic), 'What is expressed simply is stereotypically exemplified' (I-heuristic), and 'What's said in an abnormal way isn't

normal' (M-heuristic), summarise the rational communicative behaviour that produces such inferences. They account for the fact that the hearer does not always have to go through the process of recovering the speaker's intentions: instead, there are 'shortcuts' that can be assumed by co-operative interlocutors. However, while these heuristics function as adequate generalizations of how we talk, they may not constitute the ultimate explanation. Levinson (2000: 41) admits that I-implicatures are more fundamental than the Q- and M-implicatures in that the latter two 'can only be recovered by reference to what else might have been said but was not'. This suggests that there may be some even more fundamental principles to account for default meanings. This is what we set out to do.

2.2. Rhetorical rules

Defaults are also postulated in computational linguistics in the work on rhetorical structure of discourse (e.g. Lascarides and Asher 1993; Lascarides and Oberlander 1993; Asher and Lascarides 1995, 1998a, b, 2001, 2003; Lascarides and Copestake 1998; Lascarides, Copestake and Briscoe 1996). Interlocutors assume that discourse is coherent and they are governed by certain rules of rhetorical structure. For example, if utterances U1 and U2 represent events and U1 precedes U2, then the relation between them is Narration. In other words, the event represented in U1 precedes the event of U2. If U2 represents a state, then it is a Background to U1. Other such relations include Explanation (event in U2 explains why the event in U1 happened), Elaboration (the event in U2 is part of the event in U1), and Result (the event in U1 caused the event or state of U2). Some of the rules are based on world knowledge (e.g. Causes precede Effects) or a mixture of world knowledge and lexical knowledge

(such as the Push Explanation Law: if U1 refers to falling and U2 to pushing, then the relation between them is Explanation). The relations between rules are captured by other rules such as the axioms of Elaboration and Explanation:

(Elaboration (α, β) → ¬ Narration (α, β))

(Explanation (α, β) → ¬ Narration (α, β))

(from Lascarides and Asher 1993: 464-465). There are a number of rhetorical rules proposed that capture default interpretations. This account makes use of defeasible logic where α defeasibly implies β when from knowing only α one infers β (see e.g. Lascarides and Asher 1993: 438). However, the use we can make of it is only indirect. The main objective of this theory is to produce a formal account of discourse processing, not an explanation of a particular instance of an interpretation process. Asher and Lascarides (see 2003) are concerned with modelling the meaning that belongs to the speaker's competence, they are not aiming at an explanation of how utterance meanings are recovered or created in utterance interpretation. Therefore, their rhetorical relations summarize the ways in which the content of utterances can be linked, they can have truth-conditional effects, but their role is focussed on the task of formalizing meaning. Moreover, as Asher and Lascarides aim to model discourse without recourse to speakers' intentions except for the contexts whose intensionality necessitates this move[2], we have to consider rhetorical relations as alternatives to the Gricean, intention-based explanations. The rules of their competence model are numerous and ineradicable but they are well suited to what they are: functional generalizations that enable a formal semantic account of discourse meaning.

[2] see Asher and Lascarides 2003, Chapter 9

2.3. Default reasoning

Bach (1984) has proposed defaults in utterance interpretation in the form of 'default reasoning' or 'jumping to conclusions' because we 'know when to think twice'. Default reasoning is an 'inference to the first unchallenged alternative':

> "…default reasoning is reasoning that contains at least one defeasible step, and what that is can be described intuitively as follows. When you take such a step you do not think, 'Everything is OK, so I'll take this step'. Rather, you just take it unless you think something might not be OK."
>
> Bach (1984: 40).

His defaults were founded on the idea of the degrees of belief and intention (see Bach 1987a, b) but have never been developed into a full theory of default interpretations, although he emphasised the role of standardisation, going beyond the literal meaning which is facilitated by precedents of similar use of the particular expression. Standardisation is an interesting concept – it is not conventionalisation, it merely shortcircuits the inference process in that the hearer performs the inference without realising it (see e.g. Bach 1995: 683; 1998: 713). Conventionalisation, on the contrary, relies on the mutual belief of the speaker and the hearer that the utterance has a certain illocutionary force, different from the one directly conveyed by the sentence. This idea of standardisation is certainly of great use for explaining what default interpretations can be.

2.4. Default Semantics

In Default Semantics, such standard interpretations belong to semantics. In other words, the theory of discourse meaning contains a reference to defaults. Default Semantics is governed by three main principles, which I call the Parsimony of Levels (PoL), Degrees of Intentions (DI), and the Primary Intention (PI).They originated in Jaszczolt 1999a, b and will be introduced here very briefly.

PoL: Levels of senses are not to be multiplied beyond necessity.

In other words, if a level of meaning has no cognitive significance, one should avoid discerning it.

DI: Intentions come in various degrees.

This principle states that meanings can be intended strongly or weakly, with gradable strength.

PI: The primary role of intention in communication is to secure the referent of the speaker's utterance.

The rationale behind this principle is that other things being equal, the addressee is taken by the speaker to intend an interpretation according to which the objects referred to by referring terms are known to the speaker.

I assume here a rather eclectic, but common-sensically plausible, typology of intentions: Sperber and Wilson's (1986/95) informative and communicative intention (the first embedded in the latter), and Bach's (1987a, b, 1992) referential intention:

"…what is said, to the extent that it is not fixed by linguistic meaning, is determined by speaker intentions, which itself can include the intention to refer…" Bach (1992: 140).

This classification of intentions, albeit drawing on two different traditions, seems intuitively necessary: speakers do *communicate* certain content, they *inform* the addressee about certain content, and they also tend to *refer* to objects, states, events and processes.

In Default Semantics, the semantic representation is the product of the logical form and intentions in their default and non-default values. It is an intrusionist model in that it allows for the incorporation of pragmatically derived information in the semantic analysis. But, by PoL, there is no level of underspecified semantics. This interaction of intentions is supported and explained by the property of intentionality of the underlying mental states. The property of intentionality is discussed at length in Section 2.4.1. For the moment, let us define it as the property of beliefs, thoughts, doubts, etc. of being *about* an object, i.e. their *aboutness*. The reason for connecting intentionality and intentions in one explanation is that intentional mental states such as beliefs need vehicles of meaning, and language constitutes one such vehicle. As a result, language shares their property of intending, being about objects (referents or eventualities). This property of mental states is realised in discourse as a property of intending, i.e. an intention to refer, to inform, and to communicate some content.

The principle of parsimony with respect to the number of proposed levels of meaning is taken further here than in other post-Gricean approaches. Instead of

discerning an underspecified logical form and pragmatic intrusion, I treat both sources of meaning on equal footing. The output of the compositional process of constructing meaning is a partial semantic representation. It contains information from sentence structure and individual concepts. This representation is frequently in need of various further adjustments, be it enrichment or adjustment of some concepts (see Carston 2002). However, it does not follow from this further adjustment that we have to postulate a level of underspecified representation. In addition to compositionality, there is another source of meaning construction, namely intentionality of the mental states that are represented[3] by utterances. Intentionality and compositionality seem equally valuable as sources of information and it seems plausible to postulate a level of representation to which they both contribute on equal footing.[4] Such a common level of representation is assumed in Default Semantics – let us call it a compositionality-intentionality merger. In accordance with the DI and PI principles, information from the degree of intentionality of the mental state (or: the strength of intending, informativeness of an utterance) merges with the information from compositionality and produces a complete propositional representation. This representation conforms to the principle of economy spelled out in PoL.

Default Semantics offers a more economical alternative to the approaches founded on underspecified semantics. It also seems to be in line with the current discussions on the possible redundancy of the underspecified level of representation for utterance processing (see e.g. Carston 2000; Vicente 2002). It simply takes these proposals a step further and implements Occam's razor 'one level up', so to speak, from the level assumed by Grice (1978) in his modified version that has been left largely uncontested ever since. In other words, in addition to saying that

[3] or, as phenomenologists would say, *externalised*. See Jaszczolt 1992, 1999a.
[4] In fact, intentionality is even more 'basic' as a source of meaning than the compositional structure of the sentence as it operates, so to speak, higher up, in the domain of mental states.

underspecified semantic representation is not normally a cognitively real level of utterance processing, I am saying that even theoretically it need not be discerned very often. In fact, it is only needed when it *does* play a cognitive role, i.e. in the situations where the addressee reasons from genuinely underspecified or ambiguous premises.

I employ discourse representation structures of DRT as such compositionality-intentionality mergers. The way in which DRSs are used is exemplified in Section 3.

2.4.1. Intentionality in Default Semantics

In Latin, *intendere* means to aim in a particular direction, to direct the thoughts to something, similar to drawing and aiming a bow at a target. Intentionality means the property of mental acts (or, in more recent tradition, *states*, see Searle 1983, 1984, 1990) of having content, being about something. These mental acts include for example belief, desire, want, need, or expectation. Taken from Aristotle through Avicenna and the medieval doctrines of knowledge and experience, intentionality was later developed in nineteenth-century phenomenology. Intentionality was brought to the fore by Bolzano (1837), Brentano (1874) and his students, notably Husserl (1900-1901), Meinong and Twardowski. Phenomenology means here a study of conscious experience, including the ways things (phenomena) are presented in consciousness. Intentional acts provide the meaning of expressions.

In order to better understand the idea of mental acts having objects as correlates, let us think of demonstratives. Indexicals ('he') show how demonstration can matter to meaning: an open symbol 'he' requires an act of demonstration, which assigns meaning to it (in contemporary terminology, this is called 'procedural meaning', see Wilson and Sperber 1993).

For Husserl, ‘mental acts’ mean intentional experience, referring to some object. Not all experiences are intentional: there are also sensations, such as having an itch, which are not intentional. Intentional acts have objective referents, be it objects or whole states of affairs (states, events and processes). Husserl proposes the compositionality of meaning in that he distinguishes independent categories such as names and sentences, as well as dependent categories which, combined with names, build such sentences. This idea, deriving from his *Logical Investigations*, later became the foundation of categorial grammar. What is relevant for the present purpose is that all such component acts, acts that sum up to propositions, exhibit this intentionality, ‘aboutness’, having an object:

> “Each act has its own appropriate, intentional, objective reference (...). *Whatever the composition of an act out of partial acts [m]ay be, if it is an act at all, it must have a single objective correlate, to which we say it is ‘directed’* (...). Its partial acts (...) likewise point to objects, which will, in general, not be the same as the object of the whole act, though they may occasionally be the same. (...) The act, e.g., corresponding to the name ‘the knife on the table’ is plainly complex: the object of the whole act is a knife, of one of its part-acts, a table. (...) [T]he knife is the object *about* which we judge or make a statement, when we say that the knife is on the table; the knife is not, however, the primary or full object of the judgement, but only the object of its subject. The full and entire object corresponding to the whole judgement is the *state of affairs* judged: the same state of affairs is presented in a mere presentation, wished as a wish, asked after in a question, doubted in a doubt etc.”
>
> Husserl (1900-01: 114).

At present, intentionality is also sometimes known as *representationality*. It is now often understood as a feature of our brains, and in a secondary sense as a feature of language. Language is intentional in so far as sentences express our beliefs and desires (cf. e.g. Lyons 1995: 44). For Fodor, intentionality is the capacity to be

representational, to be 'about something', or, in other words, to have informational content. In an even wider sense, brain cells are intentional in being 'about other things':

"Cells in the kidney or liver perform their assigned functional roles and do not represent any other cells or functions. But brain cells, at every level of the nervous system, represent entities or events occurring elsewhere in the organism. Brain cells are assigned by design to be *about* other things and other doings. They are born cartographers of the geography of an organism and of the events that take place within that geography. The oft-quoted mystery of the 'intentional' mind relative to the representation of external objects turns out to be no mystery at all. The philosophical despair that surrounds this 'intentionality' hurdle (...) – why mental states represent internal emotions or interactions with external objects – lifts with the consideration of the brain in a Darwinian context: evolution has crafted a brain that is in the business of directly representing the organism and indirectly representing whatever the organism interacts with." Damasio (1999: 78-79).

For the purpose of Default Semantics, we can remain fairly non-committal: what matters is that there are intentional mental states that underlie utterances and that the property of intentionality gives us a key to explaining unmarked, default meanings. In short, intentionality can be understood for our purposes as that property of linguistic expressions that makes them refer to objects – be it individuals or states, events or processes. 'Intentional' can be coarsely equated with having a referent. If we allow events, states and processes to count as such referents, then intentionality can be understood as the *referentiality* of linguistic expressions[5].

Now, it is compatible with the theory of intentionality to say that intentionality allows for degrees: it can be stronger or weaker. The strongest intentionality is the default intentionality, not impeded by the subject's mistakes, lack of knowledge and other similar factors in cognition and communication. On the level of communication,

[5] I owe this term to Ray Jackendoff (personal communication).

the strongest intentionality naturally corresponds to the strongest referring in non-modal contexts[6]. It corresponds to the strongest referential intention, where there is one, and otherwise informative and communicative intentions. This idea of the strength of intentionality and intentions, as well as the presumption that the referential intention is present where it can possibly be considered to be present under some interpretation of the utterance, are summarised in the principles DI and PI. The referential intention stems directly from the aboutness of the mental state underlying the utterance and can be put to use in the analysis of referring expressions and propositional attitude expressions, as well as more particular problems of coreference in the case of anaphora and presupposition.

In short, where intentionality-based defaults are discernible, intentions interact with the logical form and produce a full semantic representation. This idea is captured by the PoL principle and is directly supported by the methodological principle of parsimony known as Occam's Razor which prevents from multiplying beings beyond necessity – be it entities, or senses in Grice's modified version of it (1978), or, here, levels of explanation. Where default interpretations come from social or cultural conventions, the result of such unconscious pragmatic enrichment is also constitutive of the semantic representation.

I present some examples of intentionality-based, cognitive defaults in Section 3. There is, however, an open question as to how to treat the types of expressions that generate multiple readings but are not at present subsumed under the cognitive defaults account. These may give rise to what I called social and cultural defaults, i.e. preferred interpretations that arise with the help of some background world knowledge, linguistic knowledge, or the mixture of the two. In other words, there is a

[6] 'Non-modal' is a category that is intended to subsume extensional contexts as well as some intensional contexts such as attitude ascriptions. *De re* and *de dicto* readings of belief reports are also governed by the rule of the strength of intending – see Section 3.1.

sub-class of Levinson's presumptive meanings for which either there are no corresponding cognitive defaults, or such defaults have not yet been discerned. I shall attend to some instances of these in Section 4.

2.4.2. Discourse Representation Theory: A brief introduction

Default Semantics makes use of a revised and extended formalism of DRT (Kamp and Reyle 1993). While the details of the amendments to the formalism will not interest us in this paper[7], it is important to understand why DRT as an approach to meaning is a suitable framework in which to couch the discussion of defaults. DRT is a theory of natural language semantics which can be characterized by three leading tenets: (i) that discourse processing is incremental, i.e. proceeds 'bit by bit'; (ii) that a theory of meaning has to capture this dynamic nature of discourse interpretation; and, connected with these, (iii) that natural language semantics should invoke representations of meaning that go beyond sentence boundary to discourse. The theory (see mainly Kamp 1981; Kamp and Reyle 1993; van Eijck and Kamp 1997) arose mostly from research on the problem of the so-called *donkey sentences*: 'If Pedro owns a donkey, he beats it'. In such sentences, the anaphoric link between the indefinite noun phrase 'a donkey' and the pronoun 'it' is problematic due to the fact that the indefinite NP need not be existential: the relation holds for *all* donkeys that Pedro might own. Another trigger of the DR-theoretic approach to meaning was the need to represent formally tense and aspect.

The theory is truth-conditional and model-theoretic, but at the same time accounts for the interpretation of discourses. Interpretations are constructed in the form of the so-called Discourse Representation Structures (DRSs). DRSs are abstract

[7] See Jaszczolt, forthcoming.

structures that are arrived at by applying the so-called *DRS construction rules* to the sentences of a discourse. The interpretation of a sentence is dependent on its syntactic structure, as well as on the context of the sentences produced earlier in the discourse. DRSs are composed of so-called *discourse referents* (*x*, *y*, *z*, …) that stand for individuals, and *discourse conditions* – mainly of a predicative type such as 'x likes y', 'woman (y)'. A DRS is true if for each of the discourse referents there are individuals such that the DRS conditions for these referents are satisfied by their corresponding individuals (cf. Kamp and Reyle 1993: 73). Such discourse representations can be regarded as mental representations formed by the speaker in response to the verbal input (cf. Kamp 1981: 5). As such, they combine the advantages of providing a formal account of meaning and accounting for the *process* of discourse interpretation that relies on the coherence of the processed material and on the reasoning performed by the addressee.

All in all, DRT is a dynamic[8] and suitably 'intrusionist' model that allows for the semanticization of inference, and hence it allows for an adequate representation of the various stages, including defaults, at which information from various sources can merge with the output of syntactic processing.

3. Default Semantics: Applications

3.1. Defaults for referring expressions and propositional attitude reports: A summary

Definite descriptions can be interpreted referentially when they refer to a particular individual, or attributively, in which case they are used to attribute some property to

[8] It is dynamic in the sense that the semantics allows for contextual update. For discussions on the meaning of 'dynamic' see Geurts 1999 and Asher and Lascarides 2003.

whoever or whatever undergoes the description. In my earlier work, I demonstrated with a variety of semantic, philosophical and syntactic arguments that the referential reading is the unmarked reading, assigned to the description by default, unless the context signals that the speaker intended the attributive interpretation (see Jaszczolt 1997, 1998, 1999a, b, 2000). It has been extensively argued in the literature that there are default senses of referring expressions. For example, we use the pronoun 'it' when the referent is in focus of attention. We use a definite noun phrase when the entity is uniquely identifiable. This has been summarised in a scale called the Givenness Hierarchy (Gundel, Hedberg, and Zacharski 1993). The Default Semantics goes beyond such presentations of cognitive statuses of referring expressions and explains *why* the expressions are associated with particular cognitive statuses. The main argument comes from the intentions in communication. A speaker means something by uttering a sentence, which is equivalent to saying that he or she utters the sentence with an intention to induce a belief in the hearer by means of the recognition of this intention (cf. Grice 1957: 219). In the case of definite descriptions such as in (1), the hearer normally assumes that the speaker utters the sentence with a referential intention. This assumption is corroborated by the intentionality of the mental state. The intentionality (or *aboutness*, referentiality) is the strongest when a particular individual has been intended. Now, since according to the standpoint adopted here language is one of the vehicles of such mental states (thoughts), intentionality also dictates the interpretation of utterances. The stronger the intentionality, the stronger the speaker's intentions. In the case of referring expressions, the stronger the intentionality, the stronger the referential intention. I have argued that there are three degrees of intentionality in the case of definite descriptions: (1) the strongest, corresponding to the referential reading; (2) the intermediate one, corresponding to the

referential reading where a referential mistake is involved (see Donnellan's 1966 scenario of an incorrect description successfully picking out an individual); and (3) the weakest, corresponding to the attributive reading and to the lack of the referential intention.

These three strengths of intentionality also apply to belief reports and other propositional attitude constructions. In Fig. 1 (from Jaszczolt 1999b: 287), I suggested a single representation of such three readings of (5). This representation uses DRSs of Kamp and Reyle (1993), combined with Reyle's (1993) device of signalling underspecification by a broken line. Here the broken line signals that there are three possibilities of embedding of the discourse referent *y* ('the best Italian painter') in the DRSs: (i) the outermost box, corresponding to the *de re* reading of (5), about a particular person, say, Michelangelo; (ii) the placement of *y* in the middle box corresponds to Mary's belief about a particular person (*de re*) but a referential mistake committed on her part, say, by thinking about Picasso and calling him 'the best Italian painter'; (iii) the placement of *y* in the inner box corresponds to a belief about whoever might have painted the given picture (belief *de dicto*) and a report about whoever might have done so (report *de dicto*).

(4) The best Italian painter painted this picture.

(5) Mary believes that the best Italian painter painted this picture.

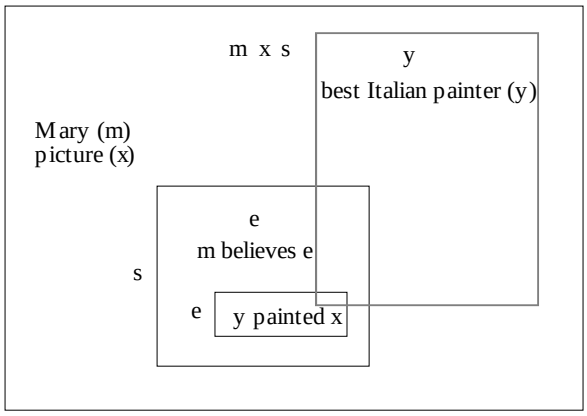

Fig. 1

In the practice of utterance interpretation, information from the strength of the intentionality of the underlying mental state of belief is translated into information from the strength of the referential intention and produces a default *de re* interpretation (*y* in the outermost box) or contextually-triggered departures from this default, as suggested by DI and PI. In agreement with the methodological principle of PoL, which is, like Grice's MOR, a version of Occam's razor, there seems to be no need to postulate semantic ambiguity or semantic underspecification. Although the output of grammar is semantically underspecified, there is no need to discern an underspecified logical form separate from the output of intentionality. Instead, they *merge*.[9] This merger of the output of grammar and the output of intentionality is compatible with dynamic semantic accounts such as DRT where semantic domain allows for the intrusion of information from various sources, but it goes one step further: the output of syntactic processing is not necessarily the dominant ingredient, it can be overridden if other sources of meaning information signal the need to do so.

[9] The exact process of this merger is a topic for further research. For the time being, merger is to be regarded as a term for the output of all the sources of meaning information taken together.

The details of this interaction of the output of various sources will, however, have to be put aside.[10]

3.2. Argument from the properties of presuppositional expressions: A summary[11]

According to one account of presupposition, presuppositional expressions are anaphoric expressions, similar to pronouns and other anaphors. Van der Sandt (1992) demonstrates that presuppositions cannot be defined in terms of entailment because they are non-monotonic relations and presupposition can disappear with the growth of information, as in (6) and (7):

(6) It is possible that Harry's child is on holiday.
(presupposes: Harry has a child.)

(7) It is possible that Harry does not have a child, but it is also possible that {*he/Harry's child*} is on holiday.

(from van der Sandt 1992: 335). Pragmatic approach to presupposition is equally problematic in that presuppositions are not resolved separately from the semantic content. According to van der Sandt, when presuppositions are analysed in terms of DRT, they exhibit the capacity to *bind* to an antecedent or to *accommodate* in the relevant context. This is possible because DRT reflects the incremental process of utterance interpretation, i.e. the fact that processing proceeds 'bit by bit'. Discourse referents collect the information about the referent that is available during this discourse, from whatever sources it may come. On this account, presuppositions are

[10] See the previous footnote and Jaszczolt, forthcoming.
[11] For a detailed account of partial matches in Default Semantics see Jaszczolt 2002b in which this argument originated.

anaphors and can be analysed on a par with pronominal and other anaphors (see also Geurts 1999). The main difference is that, unlike pronouns, they are rich in semantic content and so they can function even when there is no antecedent to be found. In such cases they are contextually *accommodated*. Normally the antecedent is inserted in the outermost box, i.e. the accommodation is global as in (8):

(8) If John has grandchildren, his children will be happy. They wanted to have offspring long ago.

(from van der Sandt 1992: 351).). The presupposition that John has children is assumed here and the expression 'his children' is accommodated. But sometimes there are several potential antecedents and it may not be the case that the nearest potential antecedent is the intended one. Presuppositional anaphors can be 'genuinely ambiguous' and be potentially bound to various antecedents. They can also exhibit an ambiguity between binding and accommodating (cf. van der Sandt 1992: 349). For example, in (9), 'his girlfriend' may or may not be coreferential with 'an oriental girlfriend'. This is an example of a so-called *partial match*:

(9) If John has an oriental girlfriend, his girlfriend won't be happy.

The presuppositional anaphor 'his girlfriend' can be either bound to 'an oriental girlfriend' or it can be accommodated. When it is accommodated, it creates a presupposing reading, which is evident from (10):

(10)If John has an oriental girlfriend, his girlfriend won't be happy. She has

always been rather jealous.

(*ibid*., pp. 350-351). Accommodation is generally global, it takes place at the highest possible level (in the outermost DRS). It generally occurs when binding does not work. Binding, on the contrary, is local: as a general rule, it selects the nearest possible antecedent, going upwards from the anaphor along the projection line. Intuitively, this is so because we may go all the way up the projection line to try to bind an anaphor and not find a suitable antecedent, in which case, at the top, accommodation takes over.

Now, van der Sandt claims that all these generalizations fail to account for partial matches such as (9). For him, such partial matches are genuinely ambiguous. This ambiguity is what I have questioned (Jaszczolt 2002b). Firstly, binding and accommodation allow for degrees of preference. There are preferences determined by the distance along the projection line which make local binding default among binding sites and global accommodation default among accommodation sites. If 'his girlfriend' in (9) is accommodated, it is accommodated globally. Secondly, there is a general preference for full over partial matches. In addition, van der Sandt allows for pragmatic disambiguating factors such as background knowledge and principles of the organization of discourse. For example, preference for binding over accommodation results in the (12) interpretation of (11), leaving (13) as marked.

(11) Every man loves his wife.

(12) Every man who has a wife loves her.

(from van der Sandt 1992: 363-364)

(13)Every man loves Tony Blair's wife. [when the previous but distant discourse was about Tony Blair]

Various attempts have been made to provide a successful explanation of presupposition resolution. Krahmer and van Deemter (1998) say that in the case of partial matches, the non-identity reading is likely to have an accented anaphor, as in (14). This is so because accented weak quantifiers behave like strong quantifiers and induce a presupposition of existence.

(14) If John talks to some partygoers, the CHILDREN will laugh at him.

(from Krahmer and van Deemter 1998: 364). On this reading, 'the children' are a real subset of the set of partygoers or some other set of children. Without the accent, we obtain the non-presupposing, binding reading where all the partygoers are children. This, however, is not a successful explanation in that focussing of the anaphor is not always the case and even when it is, it does not provide us with the semantics of presupposition. It is presupposition that sheds light on the semantics of focus, by providing alternatives to the focussed element, rather than the other way round (for *alternative semantics* see Rooth 1996[12]). Ultimately, it is the cognitive status of the referent that has to be recovered from the discourse. So, although information structure has some role in disambiguating partial matches, it is not a solution either.

Asher and Lascarides (1998b, 2003) translated accommodation into discourse update: binding presuppositions to the context by 'rhetorical links' discussed in the previous section. For example, the interaction between the rule 'Prefer Global

[12] For discussion see Cohen 1999 and Bosch and van der Sand (eds) 1999.

Attachment' (cf. global accommodation) and 'Maximize Discourse Coherence' results in the local accommodation of the presupposition that the problem has been solved in (15):

(15)Either John didn't solve the problem or else Mary realized that the problem has been solved.

(from Asher and Lascarides 1998b: 265). The type and strength of rhetorical relations account for presupposition projection. Alternatively, in Asher and Lascarides (2003: 23-24), they account for the oddity of sentence (15) by employing a relation of Alternation that contrasts the two disjuncts.[13] However, as I indicated earlier, this theory does not aim at explaining the interpretation process, albeit it successfully models competence. Our aim is somewhat different in that we want to arrive at one discourse representation structure – the one intended by the speaker and recognized by the addressee as the one so intended.

Instead, for modelling the process of utterance interpretation, let us begin with a working assumption that there is one cognitive principle that triggers such default interpretations. Methodological parsimony and cognitive plausibility certainly warrant such an assumption. If it yields a semantic theory which is equally powerful in explaining the seeming semantic ambiguitites and underspecifications as the extant post-Gricean approaches and in addition is methodologically more parsimonious and cognitively plausible, our task has been achieved. I suggest that the preferences in reference resolution should be accounted for by appealing to the properties of the underlying mental states. Just as in the case of referring by definite descriptions in extensional and intensional contexts, in this specific context of partial matches we can

[13] See also Asher and Lascarides 2003 on the revised status of *Maximize Discourse Coherence* as a general principle.

appeal to the degree of intentionality, 'translated', so to speak, into the degrees of the informative intention (see the DI principle), and where applicable into the strength of the referential intention embedded in it (see the PI principle). Binding and accommodation allow for degrees of salience of the sites for the antecedent, and hence they allow for the degrees of salience of various potential antecedents. In Jaszczolt 2002b, I proposed that this salience corresponds to the degree of intentionality with which the utterance was produced – or, strictly speaking, the degree of intentionality of the underlying thought. This is so because just as the most salient referent is the default referent, so the strongest intentionality ('aboutness') is the default 'aboutness'. In the stressed version of (14), the referential intention is weaker than in the unstressed version: the set of children is not clearly specified, it can be either a subset of the partygoers or some other group of children. This is not the default reading when there is no stress on 'children': the stress helps bring it about. The intentionality of the underlying mental state – and, hence, on my account, the referential intention of the utterance – are weaker as compared with the unstressed, non-presupposing reading. So, the strength of intentionality yields correct results: binding with a partial match is preferred to accommodation and the presupposing, 'accommodating' reading is not the default.

Similarly, in the case of presuppositions other than existential, it seems to be the case that non-presupposing readings come with stronger intentionality (referentiality) and are the default, as (16) and (17) demonstrate.

(16) If someone at the conference solved the problem, it was Julius who solved it.

(17) If John murdered his wife, he will be glad that she is dead.

(from van der Sandt 1988: 158). Stressing ‘AT THE CONFERENCE’ and ‘MURDERED’ result in the presupposing readings. The presuppositions of the consequent, that someone solved the problem and that John’s wife is dead, respectively, can be either anaphoric on the more informative statement in the antecedent or have to be accommodated. Intending the eventuality represented in the antecedent is the case of stronger intentionality, and the non-presupposing readings again turn out to be the default. The communicative intention is stronger: the eventuality is, so to speak, communicated more strongly. If we allow the referential intention to apply to states, events and processes, not merely over individuals, then the referential intention is present and is also stronger. In this way, the argument from intentions in communication, derived from the argument from the intentionality of the underlying mental states, gives us the uniform tool to explain the behaviour of the alleged ‘genuine ambiguities’ of partial matches in presuppositional anaphora. By Occam’s razor, this explanation in terms of one, over-arching principle has to be preferred to any sets of rules or heuristics.

In addition, the defaults and departures from defaults in partial matches witness against the need for underspecified semantics. Although binding is essentially a semantic phenomenon, while accommodation is essentially pragmatic, they constitute a continuum in the search for antecedents along the projection line and they are both guided by a syntactic restriction on possible sites. The informative intention (and referential intention where applicable) interacts with the output of syntactic processing and produces a semantic representation, in accordance with PoL, DI and, where applicable, PI. Neither ambiguity nor underspecification need be postulated, unless they genuinely are present in the process of utterance interpretation – as they sometimes are.

To demonstrate that my solution to appeal to a cognitive principle goes 'one level up' as compared with other extant approaches, let us have a look at some more proposals. Zeevat (2000) suggests intensional anchoring of referents in DRSs[14]. Such anchors contain information from the speaker's concept and therefore are richer than the referring expression itself and can aid the reference resolution process. But, how these anchors can be created in utterance interpretation remains an unresolved problem. Next, it has also been attempted in the literature to explain the properties of presupposition by an informativeness principle (Geurts 2000). (18) induces a presupposition in (19) in spite of the initial modal expression:

(18)Perhaps Fred does not know that the dean is a woman.
(19)The dean is a woman.

(from *ibid*.: 316). He continues:

"If it is true that presuppositions must be accommodated as closely as possible to the main DRS, there should be a reason for this. But van der Sandt does not explain why this preference holds" (p. 319).

Geurts adopts an Informativeness Principle (IP) saying that stronger, more informative readings are preferred. But this generalization is also rather *ad hoc* and sometimes renders wrong predictions: the more informative reading is not always preferred. So,

"If IP is not a satisfactory solution to the problem (…), what is? The shortest answer I can currently give to this question is that I don't know…" (p. 330).

[14] On types of anchoring see also Kamp 1996.

However, Geurts seems to underestimate somewhat the power of generalization of the IP. He invokes examples (20)-(23) to demonstrate that the more informative reading (reading (i)) is not necessarily preferred.

(20)Fred picked a fight with a Yankee.

(i) Fred picked a fight with an inhabitant of the Northern States of the US.

(ii) Fred picked a fight with an inhabitant of the US.

(21)Barney's social circle consists of inarticulate philosophers and literary critics.

(i) inarticulate [philosophers and literary critics]

(ii) [inarticulate philosophers] and [literary critics]

(22)The cover of Betty's latest novel is decorated with pink fruits and vegetables.

(i) pink [fruits and vegetables]

(ii) [pink fruits] and vegetables

(23)Everybody in this room speaks two Romance languages.

(i) Two Romance languages are spoken by everybody in this room.

(ii) Everybody in this room speaks two Romance languages.

(from Geurts 2000: 327).When informativeness is not discussed in a vacuum but is seen instead as the strength of the informative intention, founded on the degree of intentionality of the underlying mental state, then we can see that (20) is not accounted for. It falls out because it is a case of social/cultural conventions and hence not an ambiguity that would be of concern to us, but rather an ambiguity that has to do

with social defaults discussed in Section 4. Examples (21) and (22) are instances of syntactic ambiguity and hence a 'genuine ambiguity' which no one would question. A preferred interpretation would have to be context-driven, or possibly social/cultural default-driven, such as, for instance, an interpretation that literary critics are not *normally* inarticulate or that vegetables are not *normally* pink. (23) is indeed a case of a cognitive default where 'two Romance languages' defaults to 'exactly two Romance languages' rather than, for instance, to 'French and Italian'. I shall take up this problem further in Section 3.3.

Kamp (2001) argues for the need to recognise stages that are intermediate, so to speak, between binding and accommodation. When binding fails, it is not the case that global accommodation takes over, but instead some missing contextual information can be added so as to make binding possible. So, we may need a theory of presupposition types. This, again, advocates a typology that cannot be but an intermediate stage in the search for a cognitively plausible explanation of what the interlocutors actually do while resolving anaphoric links.

The degrees of intentionality and degrees of intentions of Default Semantics go one level up, to the properties of mental states, and provide the required explanation. Levinson (2000: 270-271) also points out that anaphoric linking lies largely outside the domain of grammar and has to be resolved pragmatically, with the help of default interpretations in that semantically general expressions such as pronouns I-implicate local coreference, whereas semantically specific expressions such as definite descriptions M-implicate disjointness from the local potential antecedent. Default Semantics goes one level up from these heuristics-based defaults to cognitive, intentionality-based defaults that are not 'shortcuts' through pragmatic inference but instead are built-in (albeit defeasible) features of certain linguistic expressions.

3.3. Further applications

Temporality is another area where default interpretations stare us in the face. For example, in (24), it is implicated that Peter no longer plays the violin. This can be explained by a Q-implicature based on the scale in (25):

(24)Peter used to play the violin.

(25)<PRESENT, PAST>

(cf. Levinson 2000: 95). This implicature can be cancelled by adding (26):

(26)In fact, he still does.

A statement about the present state of affairs is certainly informationally more relevant. But it is not stronger in terms of intentionality of the underlying mental state. It does not come with the strongest informative intention or intentionality. The speaker refers to an event using past tense whose main communicative function is to communicate a past event or state. So, it can be tentatively hypothesised that (24) and (26) can be explained in terms of a default degree of intentions associated with the grammatical form, and in particular in terms of the informative intention. Hence, it is at least possible that (24) can be further explained as a case of a cognitive, intentionality-based default.

Next, the ambiguity between the modal and temporal sense of *will* can be resolved in Default Semantics by the strength of the intentionality and intentions. In (27), *will* refers to future time in the real world, without reference to possible worlds, and hence

does not appear to be modal (see Enç 1996 for a detailed discussion and references). In (28), *will* is modal as it expresses a belief about the present:

(27)Mary will go on holiday tomorrow.
(28)Mother will be eating her dinner now.

(from Jaszczolt 2002a: 264). However, the future *will* can be regarded as a type of modal *will* in that it involves a prediction that is itself a type of modality. It involves the future, but so do other modals, such as *must* in (29):

(29)You must come to see me on Sunday.

(*ibid*.: 265). Now, intentionality is a property of thoughts that makes them have objects as correlates. It is also instantiated in the property of linguistic expressions that makes them refer to objects – individuals or states of affairs. Since it relates language to such objects strongly or weakly, it may be reflected in a semantic analysis in terms of possible worlds, as it is the case with modals. The degree of the speaker's commitment to the described eventuality is involved. Future *will* represents a strong commitment and therefore can also be discussed without invoking possible worlds. But future *will* is not qualitatively different from modal *will*: it merely corresponds to the strongest intentionality. In other words, intentionality and its gradations strongly suggest that *will* is modal.

The three ways of expressing futurity in (30)-(32), regular future, futurative progressive and tenseless future respectively, represent three degrees of strength of intending an eventuality, and hence also three degrees of strength of intending with which the statement can be made.

(30) Mary will go to the opera tomorrow night.

(31) Mary is going to the opera tomorrow night.

(32) Mary goes to the opera tomorrow night.

However, these three degrees can be represented by a single modal operator, indexed for the value of intending. I proposed (in Jaszczolt 2003) that an operator ACC, loosely modelled on Grice's acceptability operator, can perform this function when introduced to DRT.[15] Sentences (30)-(32) obtain the representation as in Fig. 2. *ACC* stands for the modal acceptability operator[16], *m* for the mode of presentation under which the proposition is acceptable, and Δ^n for the degree of informativeness (fineness of grain) that *m* has to contain in order to fulfil the required semantic role (that is, in order to get the meaning of the sentence right). Mode of presentation *m* is loosely modelled on Schiffer's (1992) type of mode of presentation as a constituent of logical form of belief reports.[17]

[15] Grice (2001). *Acc* ├ *p* "it is acceptable that it is the case that p" for epistemic/alethic modality, and *Acc ! p* "it is acceptable that let it be that p" for practical modalities.
[16] The semantics of this operator is constructed by analogy to that of the belief operator (e.g. Hintikka 1969 and subsequent discussions on the accessibility of doxastic worlds). However, the analysis in terms of the accessibility (and acceptability) of possible worlds does not add much to the current discussion and will not be pursued here. For a more detailed account see Jaszczolt 2003 and forthcoming.
[17] I.e., his Φ*. See Schiffer 1992 and Jaszczolt 1999b for a discussion.

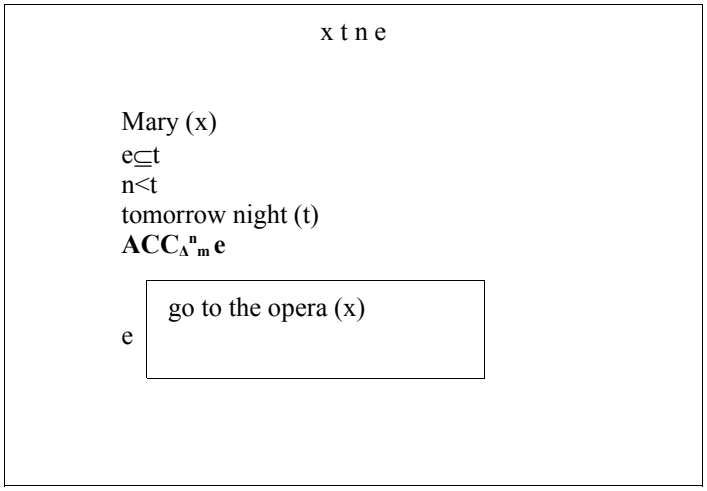

Fig. 2

The DRSs for (30)-(32) are as in Fig. 2, differing only in the value of *n*. This value belongs to the scale from *tf* (tenseless future, very informative, finely grained m), through *fp* (futurative progressive), to *rf* (regular future) where *m* is not required or of very little use for the semantic representation.

A similar scale of intending motivates the use of *will* for epistemic and dispositional necessity as in (33) and (34) respectively:

(33) Mary will be in the opera now.

(34) Mary will sometimes go to the opera in her tracksuit.

(from Jaszczolt 2003). Just as different expressions of futurity form a scale based on degrees of intentions, so different uses of *will* form a scale of intentions that is founded on the recognition of the path from regular future for which *will* is used by default, to context-dependent modality as in (33) and (34).[18]

[18] This latter scale is not a genuine, cognitively plausible semantic scale though. It is put together for the purpose of the current problem, namely the problem as to whether the various uses of *will* are semantically connected. The true semantic and cognitive scales will collect various linguistic means of expressing (33) on the one hand, and various linguistic means of expressing (34) on the other. The linguistic expressions grouped in a scale correspond to various degrees of strength of intending. This exercise can be directly modelled on my discussion of (30)-(32) and hence need not be performed. See Jaszczolt 2003 for a fuller account.

While introducing Default Semantics, I said that the default interpretation for non-modal contests, but including attitudinal contexts, is the one that comes with the strongest intentionality. However, in modal expressions, the degree of speaker's commitment to the described eventuality is involved. The 'most modal' reading is the one that corresponds to the weakest intentionality and at the same time is the default. This reversal is founded on the shared knowledge of how modals are used and on the semantics of modalities and hence does not seem to be controversial. By this criterion, and by adding the premise that futurity is modality, as evidenced by the plausibility of the unary account using ACC, (30) appears to be a default form of expressing futurity.

Another category of which default interpretations have been predicated is that of sentential connectives. Levinson accounts for them by the I-principle: a conditional in (35) is 'perfected' to biconditional in (36); a conjunction communicates temporal or causal connectedness as in (38) and (40) respectively:

(35) If you mow my lawn, I'll give you five dollars.

(36) If and only if you mow my lawn will I give you five dollars.

(37) John took off his clothes and went to bed.

(38) John took off his clothes and then went to bed.

(39) He broke his finger and couldn't play the piano.

(40) He broke his finger and as a result could not play the piano.

It seems that the I-implicature is not the end of the story. We can account for the enriched meaning of a conjunction and a conditional by appealing to the strength of the informative intention: the enriched propositions communicate more information. Now, communicative and informative intentions do not exhaust the explanation

either, we can go one step higher to the properties of mental states. If intentionality is extended to intending eventualities (states, events, processes), then the more informative the reading of the utterance, the stronger the intentionality. And, by analogy to the analyses in Section 3.1 and 3.2, the strongest intentionality is the default. By analogy to other defaults recognised in Default Semantics, the defaults will have to arise on a sentential, not sub-sentential level, and be realised, or not realised (albeit not 'cancelled' or 'overridden') in particular contexts. This proposal concerning connectives is, however, still highly programmatic and is signalled here to point out the range of expressions to which Default Semantics applies (see Jaszczolt, forthcoming).

Similarly, Q-implicatures conform to the Default Semantics account. Q-induced disjoint reference as in (41), founded on the scale in (42), is a case of a weaker referential intention than the corresponding reflexive pronoun would signal:

(41) Only John approved of him.

(42) <REFLEXIVE PRONOUN, NONREFLEXIVE PRONOUN>

Finally, numerals have been regarded either as having the 'at least' semantics (Horn, e.g. 1972, 1984, 1985, 1992; Kempson and Cormack 1981; tentatively also Levinson 2000); as underspecified as to their 'exactly', at least' and 'at most' sense (e.g. Carston 1998b); or as having punctual, 'exactly' semantics (Koenig 1993; Geurts 1998). However, versions of punctual semantics seem to be emerging as the dominant orientation (see also Bultinck 2002[19]). It seems that punctual semantics and the corresponding strongest referential intention suggest the cognitive defaults analysis: the 'exactly' sense is the cognitive default. Koenig (1993: 147) appeals here to the

[19] Bultinck proposes an 'absolute value' of numerals, which eschews the problem of boundedness.

informativeness of interpretations. Greater informativeness is connected with the property of being a proper subset of a truth set:

"If the truth set of a sentence A is a proper subset of the truth set of a sentence B, A is more informative than B." Koenig (1993: 147).

So, by saying 'three' the speaker conveys that it is not the case that the number is four, five or more. There is only one step from such considerations of the strength of information to the explanation in terms of the strength of the referential intention. By saying 'three', the speaker refers to 'exactly three' (items, objects, entities, units…) and the associated referential intention, and *a fortiori,* the informative and communicative intentions in which this intention is progressively embedded, are the strongest. And so is the intentionality of the corresponding mental state.

It may seem that such defaults, proposed on the level of semantic representation, would not stand up to evidence from language acquisition. Noveck (2001) conducted some experiments in which she showed that children interpret scalar expressions logically: the logical meaning is the default. For example, 'might' is compatible with 'must', just as 'some' is compatible with 'all'. By the same token, 'three' would be compatible with 'four' or 'five' and hence have the semantics 'at least three'. Interpretations that would incorporate scalar implicatures develop later. However, when we consider language acquisition in terms of a developing language system, this is no counterevidence at all: what is a semantic representation for children ceases to be a semantic representation for adults. There is no need to postulate an extra level of utterance processing just on the grounds that children's semantic representations differ from those of adults. It is merely necessary to acknowledge that language development includes the development of the ability to perform pragmatic

inference, at whatever stage of processing this inference fits in: as pre-contextual cognitive defaults and hence no conscious inference at all, as social defaults, or particularized, context-dependent implicatures.

4. Cognitive and social defaults

Naturally, not all default interpretations are further reducible to cognitive defaults. For example, possessive interpretations are clearly dependent on background knowledge, so are interpretations of spatial expressions and inferences to a stereotype, as in (43) – (45) respectively:

(43) Pablo's painting is of a crying woman. (implicated: 'the picture he painted')

(44) I have a splinter in my thumb. (implicated: 'at least partly buried in my thumb')

(45) We need a new nanny. (implicated: 'a female nanny')

Even if there are some general predictions, they are very vague, such as, for example, for (43), that there is some relation between Pablo and the painting (authorship, ownership, the one he is looking at, the one he chose to write an article about, etc.). Further specification of the relation has to be performed in the context, with the help of background information. Negative-raising mentioned in the previous section may not be a cognitive default either. Negative-raising is a tendency for negation on the main clause to be interpreted as negation of the subordinate clause, as in (46):

(46) I don't think he will come. (communicates: 'I think he will not come')

Some verbs do not give rise to neg-raising, for example 'hope' as in (47):

(47) I don't hope he will come. (does not communicate: 'I hope he will not come')

But this lexical dependence of the phenomenon can be explained by properties of verbs and hence belongs to lexical semantics.

Levinson (2000: 118) asks, 'in what sense are (…) I-inferences *generalized*'. They are the result of an interpretation of an utterance in context, hence they are, strictly speaking, not defaults as such but *defaults for that context:*

"But at a sufficient level of abstraction, it is quite clear that the kinds of inferences here collected -- for example, conjunction-buttressing, negative-strengthening [e.g. from 'not like' to 'positively dislike'], preferred patterns of coreference [pronouns being anaphoric on the locally preceding fully referring expression] – do hold as preferred interpretations across contexts and indeed across languages. And at a slightly higher level of abstraction, the different types collected can be seen to share the property of maximizing the informational load by narrowing the interpretation to a specific subcase of what has been said."

In light of the intentionality-based Default Semantics, this is certainly a true generalization but it is not the final explanation. We are here in a domain different from cognitive defaults, at the level of abstraction that makes use of social patterns of talk, or cultural and social defaults. Levinson's interpretation of generalised conversational implicatures allows them to arise at the level of words, phrases, sub-sentential expressions, and whole sentences. This leads to a rather eclectic category of presumptive meanings that comprises lexical and phrasal defaults on one end (e.g. 'bread knife' as a knife for cutting bread, 'pocket knife' as a folding knife kept in a

pocket), and sentential defaults on the other. Sometimes, the level on which the default meaning arises cannot be clearly delimited (cf. 'secretary' > 'female secretary'). The fact that some of these meaning presumptions are driven by social conventions ('female secretary'), while others seem more deeply entrenched in our cognitive processes and have to do with the strength of intending ('if' > 'iff') only adds to the diversity of the class and fuels justified criticism (see e.g. Recanati 2003). Default interpretations of Default Semantics eschew this infelicity by distinguishing two separate construals of default interpretations: (i) cognitive defaults, triggered by the strength of intentionality of mental states and hence activated on the level of the compositionality-intentionality mergers (propositional representation, a DRS), and (ii) social/cultural defaults, activated by social and cultural conventions on any level on which it is appropriate for those defaults to arise. This latter type of defaults lies largely outside the concerns of constructing the compositionality-intentionality mergers: they are simply cases of a 'compressed', 'short-circuited' pragmatic inference whose origin lies in sociology or social anthropology and outside semantics or theory of cognition.

5. Conclusions

I have argued in this paper that Default Semantics provides an over-arching principle for explaining the default status of some interpretations of some types of utterances that allow for several readings. I have used evidence from referring expressions, propositional attitude constructions, and presupposition as anaphora, as well as tentatively suggested how sentential connectives, number terms and temporality may be handled in Default Semantics. The interpretation process of such utterances makes

use of default meanings, which are cognitive, intentionality-based defaults. The output of intentionality interacts with the output of grammatical processing and, in accordance with my application of Occam's razor in the PoL principle, there is no need to discern an underspecified semantic representation unless the addressee has a need for it because the speaker's reasoning is performed from underspecified or ambiguous premises. Instead, there is a level of representation which I call a compositionality-intentionality merger and which can be modelled on discourse representation structures of DRT. Where the resolution in terms of intentionality is not possible, interlocutors resort to what I called social/cultural defaults, conceived of as a sub-category of Levinson's presumptive meanings.

A final caveat is needed here. While objecting to the ubiquity of underspecification and ambiguity, I indicated that are not to be exorcised *tout court*. By eliminating both ambiguity and underspecification, I am not suggesting that they never appear. I am merely suggesting that these terms are grossly overused. Sometimes there can be no preferred reading and the anaphoric links are genuinely unclear as in (48):

(48) A man was quietly walking down the street, when he was joined by another man. The man said: …

(from Krahmer and van Deemter 1998: 362). Underspecification, on the other hand, is a useful term when our interests focus on the properties of logical reasoning and the degree to which the discourse has to be disambiguated by the utterance processor (human or machine) for such reasoning to proceed (see van Deemter 1998 on 'ambiguous logic', a logic for underspecified representations). However, the fact that it is possible to reason from ambiguous premises does not yet justify introducing an

underspecified semantics as a stage in utterance processing – or even as a theoretical construct – wherever multiple readings are possible.

REFERENCES

Asher, N. and A. Lascarides. (1995). "Lexical disambiguation in a discourse context". *Journal of Semantics* 12. 69-108.

Asher, N. and A. Lascarides. (1998a). "Bridging". *Journal of Semantics* 15. 83-113.

Asher, N. and A. Lascarides. (1998b). "The semantics and pragmatics of presupposition". *Journal of Semantics* 15. 239-300.

Asher, N. and A. Lascarides. (2001). "Indirect speech acts". *Synthese* 128. 183-228.

Asher, N. and A. Lascarides. (2003). *Logics of Conversation*. Cambridge: Cambridge University Press.

Bach, K. (1984). "Default reasoning: Jumping to conclusions and knowing when to think twice". *Pacific Philosophical Quarterly* 65. 37-58.

Bach, K. (1987a). *Thought and Reference*. Oxford: Clarendon Press.

Bach, K. (1987b). "On communicative intentions: A reply to Recanati". *Mind and Language* 2. 141-154.

Bach, K. (1992). "Intentions and demonstrations". *Analysis* 52. 140-146.

Bach, K. (1994a). "Semantic slack: What is said and more". In: S.L. Tsohatzidis (ed.). *Foundations of Speech Act Theory: Philosophical and Linguistic Perspectives.* London: Routledge. 267-291.

Bach, K. (1994b). "Conversational impliciture". *Mind and Language* 9. 124-162.

Bach, K. (1995). "Standardization vs. conventionalization". *Linguistics and Philosophy* 18. 677-686.

Bach, K. (1998). "Postscript (1995): Standardization revisited". In: A. Kasher (ed.). *Pragmatics: Critical Concepts*. Vol. 4. London: Routledge. 712-722.

Bach, K. (2001). “You don’t say?” *Synthese* 128. 15-44.

Bach, K. and R. M. Harnish. (1979). *Linguistic Communication and Speech Acts*. Cambridge, Mass.: MIT Press.

Bosch, P. and R. van der Sandt (eds). (1999). *Focus: Linguistic, Cognitive, and Computational Perspectives*. Cambridge: Cambridge University Press.

Bolzano, B. (1837). *Theory of Science*. Transl. B. Terrell in 1973. Dordrecht: D. Reidel.

Brentano, F. (1874). *Psychology from an Empirical Standpoint*. Transl. A.C. Rancurello, D.B. Terrell, and L.L. McAlister in 1973. London: Routledge and Kegan Paul.

Bultinck, B. (2002). *Numerous Meanings: The Meaning of English Cardinals and the Legacy of Paul Grice*. Doctoral dissertation, University of Antwerp. Also forthcoming from Oxford: Elsevier.

Carston, R. (1988). “Implicature, explicature, and truth-theoretic semantics”. In: R.M. Kempson (ed.). *Mental Representations: The Interface Between Language and Reality*. Cambridge: Cambridge University Press. 155-181.

Carston, R. (1998a). “Postscript (1995)” to Carston 1988. In: A. Kasher (ed.). *Pragmatics:Critical Concepts*. Vol. 4. London: Routledge. 464-479.

Carston, R. (1998b). “Informativeness, relevance and scalar implicature”. In: R. Carston and S. Uchida (eds). *Relevance Theory: Applications and Implications*. Amsterdam: J. Benjamins. 179-236.

Carston, R. (2000). ‘Explicature and semantics’. *UCL Working Papers in Linguistics* 12. 1-44.

Carston, R. (2001). “Relevance Theory and the saying/implicating distinction”. *UCL Working Papers in Linguistics* 13. 1-34.

Carston, R. (2002). *Thoughts and Utterances: The Pragmatics of Explicit*

Communication.Oxford: Blackwell.

Cohen, A. (1999). "How are alternatives computed?". *Journal of Semantics* 16. 43-65.

Damasio, A.R. (1999). "How the brain creates the mind". *Scientific American*, December 1999. 74-79.

Donnellan, K. S. (1966). "Reference and definite descriptions". *Philosophical Review* 75. 281-304.

Enç, M. (1996). "Tense and modality". In: S. Lappin (ed*.). The Handbook of Contemporary Semantic Theory*. Oxford: Blackwell. 345-358.

Geurts, B. (1998). "The mechanisms of denial". *Language* 74. 274-307.

Geurts, B.(1999). *Presuppositions and Pronouns*. Oxford: Elsevier Science.

Geurts, B. (2000). "Buoyancy and strength". *Journal of Semantics* 17. 315-333.

Grice, H. P.(1957). "Meaning". *Philosophical Review* 66. Reprinted in: H.P. Grice. 1989. *Studies in the Way of Words*. Cambridge, Mass.: Harvard University Press. 213-223.

Grice, H. P. (1975). "Logic and conversation". In: P. Cole and J.L. Morgan (eds). *Syntax and Semantics*. Vol. 3. New York: Academic Press. Reprinted in: H.P. Grice. 1989. *Studies in the Way of Words*. Cambridge, Mass.: Harvard University Press. 22-40.

Grice, H. P. (1978). "Further notes on logic and conversation". In: P. Cole (ed.). *Syntax and Semantics*. Vol. 9. New York: Academic Press. Reprinted in: H.P. Grice. 1989. *Studies in the Way of Words*. Cambridge, Mass.: Harvard University Press. 41-57.

Grice, P. (2001). *Aspects of Reason*. Ed. by R. Warner. Oxford: Clarendon Press.

Gundel, J.K., N. Hedberg, and R. Zacharski. (1993). "Cognitive status and the form of referring expressions in discourse". *Language* 69. 274-307.

Hintikka, J. (1969). "Semantics for Propositional Attitudes". In: J.W. Davis et al. *(eds). Philosophical Logic*. Dordrecht: D. Reidel. Reprinted in: A. Marras (ed.). 1972. *Intentionality, Mind and Language*. Urbana: University of Illinois Press. 429-457.

Horn, L.R. (1972). *On the Semantic Properties of Logical Operators in English*. PhD dissertation, University of California, LA.

Horn, L. R. (1984). "Toward a new taxonomy for pragmatic inference: Q-based and R-based implicature". In: *Georgetown University Round Table on Languages and Linguistics* 1984. Ed. By D. Schffrin. Washington, D.C.: Georgetown University Press. 11-42.

Horn, L.R. (1985). "Metalinguistic negation and pragmatic ambiguity". *Language* 61. 121-174.

Horn, L.R. (1992). "The said and the unsaid". *Ohio State University Working Papers in Linguistics* 40 (SALT II Proceedings). 163-192.

Husserl, E. (1900-1901). *Logical Investigations*. Transl. J.N. Findlay in 1970. London: Routledge and Kegan Paul. Reprinted in 2001. Vol. 2.

Jaszczolt, K.M. (1992). *Belief Sentences and the Semantics of Propositional Attitudes*. D.Phil. dissertation, University of Oxford.

Jaszczolt, K.M. (1997). "The Default *De Re* Principle for the interpretation of belief utterances". *Journal of Pragmatics* 28. 315-336.

Jaszczolt, K.M. (1998). "Discourse about beliefs". *Theoretical Linguistics* 24. 1-28.

Jaszczolt, K.M. (1999a). "Default semantics, pragmatics, and intentions". In: K. Turner (ed.). *The Semantics/Pragmatics Interface from Different Points of View*. Oxford: Elsevier Science. 199-232.

Jaszczolt, K.M. (1999b). *Discourse, Beliefs, and Intentions: Semantic Defaults and Propositional Attitude Ascription*. Oxford: Elsevier Science.

Jaszczolt, K.M. (2000). "The default-based context-dependence of belief reports". In: K.M.Jaszczolt (ed.). *The Pragmatics of Propositional Attitude Reports*. Oxford: ElsevierScience. 169-185.

Jaszczolt, K.M. (2002a). *Semantics and Pragmatics: Meaning in Language and Discourse*. London: Longman.

Jaszczolt, K.M. (2002b). "Against ambiguity and underspecification: Evidence from presupposition as anaphora". *Journal of Pragmatics* 34. 829-849.

Jaszczolt, K.M. (2003). "The modality of the future: A Default-Semantics account". In: P. Dekker and R. van Rooy (eds). *Proceedings of the 14th Amsterdam Colloquium*. ILLC, University of Amsterdam. 43-48.

Jaszczolt, K.M. (forthcoming). *Default Semantics*. Oxford: Oxford University Press.

Kamp, H. (1981). "A theory of truth and semantic representation". In: J. Groenendijk, T.M.V. Janssen, and M. Stokhof (eds). *Formal Methods in the Study of Language*, Mathematical Centre Tract 135, Amsterdam, 277-322. Reprinted in: J. Groenendijk, T.M.V. Janssen, and M. Stokhof (eds). *Truth, Interpretation and Information. Selected Papers from the Third Amsterdam Colloquium.* Dordrecht: FORIS. 1-41. Also in: P. Portner and B. H. Partee (eds). *Formal Semantics: The Essential Readings.* Oxford: Blackwell. 189-222.

Kamp, H. (1996). "Some elements of a DRT-based theory of the representation of mental states and verbal communication". Forthcoming as Chapter 3 of H. Kamp and U. Reyle, *From Discourse to Logic II* (in progress).

Kamp, H. (2001). "Presupposition computation and presupposition justification: One aspect of the interpretation of multi-sentence discourse". In: M. Bras and L. Vieu (eds). 2001. *Semantic and Pragmatic Issues in Discourse and Dialogue: Experimenting with Current Dynamic Theories*. Oxford: Elsevier Science. 57- 84.

Kamp, H. and U. Reyle. (1993). *From Discourse to Logic: Introduction to Modeltheoretic Semantics of Natural Language, Formal Logic and Discourse Representation Theory*. Dordrecht: Kluwer.

Kempson, R.M. and A. Cormack. (1981). "Ambiguity and quantification". *Linguistics and Philosophy* 4. 259-309.

Koenig, J.-P. (1993). "Scalar predicates and negation: Punctual semantics and interval interpretations". *Chicago Linguistic Society* 27. Part 2: The Parasession on Negation. 140-155.

Krahmer, E. and K. van Deemter. (1998). "On the interpretation of anaphoric noun phrases: Towards a full understanding of partial matches". *Journal of Semantics* 15. 355-392.

Lascarides, A. and N. Asher. (1993). "Temporal interpretation, discourse relations and commonsense entailment". *Linguistics and Philosophy* 16. 437-493.

Lascarides, A. and A. Copestake. (1998). "Pragmatics and word meaning". *Journal of Linguistics* 34. 387-414.

Lascarides, A., A. Copestake, and T. Briscoe. (1996). "Ambiguity and coherence". *Journal of Semantics* 13. 41-65.

Lascarides, A. and J. Oberlander. (1993). "Temporal coherence and defeasible knowledge". *Theoretical Linguistics* 19. 1-37.

Levinson, S. C. (1987). "Minimization and conversational inference". In: J. Verschueren and M. Bertuccelli-Papi (eds). *The Pragmatic Perspective. Selected Papers from the 1985 International Pragmatics Conference.* Amsterdam: J. Benjamins. 61-129.

Levinson, S.C. (1995). "Three levels of meaning". In: F.R. Palmer (ed.), *Grammar and Meaning. Essays in Honour of Sir John Lyons*. Cambridge: Cambridge University Press. 90-115.

Levinson, S.C. (2000). *Presumptive Meanings: The Theory of Generalized Conversational Implicature*. Cambridge, Mass.: MIT Press.

Lyons, W. (1995). *Approaches to Intentionality*. Oxford: Clarendon Press.

Noveck, I.A. (2001). "When children are more logical than adults: Experimental investigations of scalar implicature". *Cognition* 78. 165-188.

Recanati, F.(1989). "The pragmatics of what is said". *Mind and Language* 4. Reprinted in: S.Davis (ed.). 1991. *Pragmatics: A Reader*. Oxford: Oxford University Press. 97-120.

Recanati, F. (1993). *Direct Reference: From Language to Thought*. Oxford: Blackwell.

Recanati, F. (2001). "What is said". *Synthese* 128. 75-91.

Recanati, F. (2003). "Embedded implicatures". Paper presented at the seminar *The Explicit/Implicit Distinction and the Semantics/Pragmatics Interface*, Trondheim, November 2003.

Reyle, U. (1993). "Dealing with ambiguities by underspecification: Construction, representation and deduction". *Journal of Semantics* 10. 123-179.

Rooth, M. (1996). "Focus". In: S. Lappin (ed*). The Handbook of Contemporary Semantic Theory*. Oxford: Blackwell. 271-297.

Schiffer, S. (1992). "Belief ascription". *Journal of Philosophy* 89. 499-521.

Searle, J. R. (1983). *Intentionality: An Essay in the Philosophy of Mind.* Cambridge: Cambridge University Press.

Searle, J. R. (1984). "Intentionality and its place in nature". *Synthese* 61. Reprinted in: J. R. Searle. 2002. *Consciousness and Language*. Cambridge: Cambridge University Press. 77-89.

Searle, J. R. (1990). "Consciousness, unconsciousness and intentionality". In: C. A. Anderson and J. Owens (eds). *Propositional Attitudes: The Role of Content in*

Logic, Language, and Mind. Stanford: CSLI Publications. 269-284.

Sperber, D. and D. Wilson. (1986). *Relevance: Communication and Cognition*. Oxford: Blackwell. Reprinted in 1995. Second edition.

van Deemter, K. (1998). "Ambiguity and idiosyncratic interpretation". *Journal of Semantics* 15. 5-36.

van der Sandt, R. A. (1988). *Context and Presupposition*. London: Croom Helm.

van der Sandt, R. A. (1992). "Presupposition projection as anaphora resolution". *Journal of Semantics* 9. 333-377.

van Eijck, J. and H. Kamp. (1997). "Representing discourse in context". In: J. van Benthem and A. ter Meulen (eds). 1997. *Handbook of Logic and Language.* Amsterdam: Elsevier Science. 179-237.

Vicente, B. (2002). "What pragmatics can tell us about (literal) meaning: A critical note on Bach's theory of impliciture". *Journal of Pragmatics* 34. 403-421.

Wilson, D. and D. Sperber. (1993). "Linguistic form and relevance". *Lingua* 90. 1-25.

Zeevat, H. (2000). "Demonstratives in discourse". *Journal of Semantics* 16. 279-313.