

## Moving towards the edge\*

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### Abstract

We argue that the basic formal ontology of semantics reflects grammatical distinctions. Following Arsenijevic and Hinzen (2010) and Hinzen (2011), this basic ontology is one of ‘objects’ in the nominal domain, ‘events’ in the verbal domain, and ‘propositions’ in the clausal domain. These three domains, which represent the basic referential dimensions of human language, are identifiable as the three major ‘phases’ of recent Minimalist grammatical theory. Within each of these ontological categories, finer distinctions can be made. Adapting a modified version of Longobardi’s model for the modes of nominal reference denotation to the clausal domain, with a view to providing a unified account, we argue that there are precisely three basic referential strategies that human language allows, and we give evidence from the syntax of embedded clauses in several languages to support this three-fold distinction in the clausal case. These denotational strategies allow for the broad generalization that as we move from the phase-interior to the phase-edge, intensional semantic information is converted into extensional semantic information. Reference, in the extensional sense, is in this way an ‘edge’ phenomenon.

### 1 Introduction

Unlike earlier incarnations of generative linguistics, current Minimalism programmatically regards syntax as inherently linked with interpretive processes. For example, one defining feature of the unit of syntactic structure called a ‘phase’ in the framework of Chomsky (2008a, b) is that it is a unit of interpretation at the phonetic and semantic interfaces. At the same time, no particular theory of semantic interpretation is proposed, and the general shape of a semantic theory is left open. Chomsky (2000) criticizes traditional philosophical conceptions of reference as inapplicable to natural language, but offers little by way of alternatives. At the same time, linguistic explanation in Minimalism heavily relies on the putative demands that systems of thoughts (‘Conceptual-Intentional’ systems) impose on narrow syntax (Hinzen 2008).

For all the foundational problems surrounding the discipline of semantics there can be no doubt that using language for purposes of reference to the world is a central aspect of meaning – perhaps the most central one. In the ordinary sense of the word (Strawson, 1950), human beings clearly use language to ‘refer’ to the world. With a grammatically structured form of expression at their disposal, a whole new horizon of referential possibilities opens up, in comparison to non-grammar based means of communication, reference, and pointing. In particular, while lexical items such as MAN or RUN reflect perceptually based conceptual

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classifications, and in this sense have a form of semantic reference, they are not used to refer to a particular man as opposed to another, or an event of running that happened yesterday over a certain period of time; and while non-human animal alarm calls have functional reference, they remain stimulus-dependent and indexical rather than symbolic; even where non-human primates are trained to use symbols, symbolic reference remains largely restricted to the Self, Here, and Now of the communicative context (Tomasello, 2008). Grammar-based means of referring, on the other hand, systematically establish relations of relative distance between the object of reference and the immediate features of the speech context. We will in what follows characterize these forms of reference as ‘deictic’ (cf. Bühler (1934) on the ‘deictic centre’). Reference is here not established merely via the substantive lexical content of a concept, nor merely functionally via the presence of physical stimulus, but uniquely grammatically.

Reference of this last sort also allows for formal ontological distinctions, for example the conceptualisation of a given concept such as LAUGH as an event (‘Mary laughed’) or an object (‘Mary’s laugh’). In the former case we can also state a truth, in the latter we cannot. Distinctions such as these exploit the grammatical properties of words, and they need not reflect a difference in the external situation in which these two forms are used. Such grammaticalized modes of reference can be partially stimulus-independent, independent of the physical properties of the objects referred to, and indeed of whether there are any such physical properties. Even where such physical properties exist in an object that we use a word to refer to, the use of the word does not seem to track these, as Chomsky (2000) has extensively argued (see also Hinzen, 2006; 2007).

If we weren’t grammatical creatures, in short, the way we would refer to the world would be systematically different, as it indeed appears to be in other creatures. It makes sense, then, to accord grammatical deixis a central status in the theory of grammar and to attempt to substantiate a theory of interpretation at the interface in such terms. In this article we claim that grammar is organized so as to allow for a specific number of deictic strategies. At one end of the scale, grammar allows for maximally unspecific forms of reference, as in purely quantificational readings in the nominal domain, or in the form of reference to propositions that are possibly true and possibly false, in the clausal domain. At the other end of the scale, it permits maximally specific (‘rigid’) reference, which shows in the form of reference to specific individuals in the nominal case and to truths in the clausal case. Somewhere between these extremes lie less rigid forms of reference, involving aspects of both strategies as observed with definite descriptions and (as we will argue) factive clauses. This is the central claim of the paper, and we argue that there is a specific grammar to each of these strategies.

Arsenijevic and Hinzen (2010) and Hinzen (2011) argue that the ‘phases’ of recent Minimalist theorizing (Chomsky, 2008a) precisely *are* the units of referential-deictic significance in language use: by computing phases, the grammar computes the structures that can be used in acts of reference to entities that are of different formal types. These can be intuitively and conceptually characterized as ‘objects’ in the case of DP, ‘events’ in the case of *v*P, and ‘propositions’ in the case of CP.<sup>1</sup> Within these three broad classes – which define the basic

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<sup>1</sup> This is to assume, with Chomsky (2001) but controversially, that the phases we can identify on syntactic grounds are DP, *v*P and CP.

formal ontology of natural language – finer distinctions are possible. Thus, depending on the internal specification of the nominal phases (DP), reference can be to masses or individuals. Reference to countable individuals or kinds arises derivationally, with relevant functional projections dominating a given lexical root, which otherwise will only denote a mass (Borer, 2005). Similarly, depending on the Aspectual specifications of a verbalized root, an event can be either bounded or not. In the clausal domain, finally, reference can be to propositions, facts, or truth values.

Generally speaking, as we move from a given lexical root to the edge of the phase that it projects, reference becomes more specific. In the nominal case it is maximally specific when a single specific individual is rigidly referred to, as in the case of proper names, on their most standard uses, or complex demonstratives such as *this man* or *these men*. Such specificity requires the DP to be fully projected and the determiner to be present (and overt in English).<sup>2</sup> No such specificity is achieved when the phase edge is unfilled. Thus, a speaker using the phrase *three dogs* could (without help from context) only use it to refer non-definitely to any set of three dogs. If only the word *dogs* is used, as in *I saw dogs (on the common)*, a speaker will refer even less specifically, namely merely existentially to any instances of the kind dog.<sup>3</sup> Reference is in this sense an ‘edge phenomenon’: we can only tell from inspecting the phasal expansion of a given lexical head (and where and how it ends), which referential strategy has been taken. Moreover, as a broad generalization, the more ‘edge-heavy’ a phase becomes – there not only is a phasal head, but it is obligatorily overt (if this option exists in a given language), or phase-internal material obligatorily moves to the edge (overtly or covertly) – the more referentially specific (as opposed to quantificational) it becomes, and contact with the extensional world can be made. We articulate this conception as we proceed.

This article is particularly concerned with the finer ontology of CP. It is about how and which deictic possibilities arise at its edge.<sup>4</sup> In the case of the clause, we argue that maximal specificity is reached when a truth value is assigned: say, in the case of ‘John left’, which, when used as a root, will be used to assert a truth. However, there are two further options: (i) the CP is used to denote an (unasserted) proposition (rather than a truth value), or (ii) the CP is used to refer to a fact. In line with tradition, we are here using ontological terms, yet our claim is that grammatical distinctions underlie these forms of reference. This approach contrasts with the situation in standard type-theoretical semantic ontologies, where relevant ontological categories

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<sup>2</sup> It is a matter of ongoing debate whether languages which fail to display overt determiners actually have a category D. Chierchia (1998) and Bošković (2009, 2010) argue that they do not. Cheng and Sybesma (1999) and Longobardi (2005), amongst others, argue that they do, though Longobardi’s (2008) position is more nuanced. If there is a close connection between syntax and semantics of the kind we propose here, then it follows that all languages must have a category D, overt or covert, unless we are prepared to accept Whorfian implications.

<sup>3</sup> Kind reference in sentences like ‘I like dogs’, is a different phenomenon to which we return, falling on the referential side and patterning with proper names (cf. Longobardi 1994, 2005).

<sup>4</sup> We adopt a single CP projection here, putting to one side how this would work with a more expanded left periphery (Rizzi 1997). In more general terms, the unification of the insights of the Cartographic enterprise and phase theory remains an open issue, which is unfortunately beyond the scope of this paper.

(such as objects or properties, formalized in terms of the logical types  $\langle e \rangle$  and  $\langle e, t \rangle$ , respectively) are effectively primitives. The explanation of their existence, which should be a central question from a biolinguistic perspective and an explanatory approach to semantic theory (Hinzen, 2008, 2011), thus remains unaddressed. We could blame the ontological distinction on the structure of external reality itself, adopting a realist metaphysical perspective, yet this move should depend on the independent identifiability of such objects of reference, which shouldn't in this case merely reflect grammatical distinctions.

Within philosophy, too, the basic methodology has been to assume that the world consists of various kinds of objects, and that, when particular referential expressions behave as 'singular terms' that pick such objects out, an 'ontological commitment' of natural language has been identified. If we are right about the relevant modes of reference being inherently grammatical and reflecting deictic distinctions (ways of signifying rather than something external that is signified, in the terms of Modistic UG), there are no such ontological commitments of natural language.<sup>5</sup> Note that even if there were, and facts existed as entities in some metaphysical sense, the existence of facts out there would be no explanation of why we (and no other species) *refer* to them as such. The fact *that* natural language allows reference to facts is no explanation of *why* this is the case. The explanation, we submit, can only be grammatical: this phenomenon is the result of having, uniquely among all species, a grammatical mind, changing fundamentally the way in which we refer to the world as a species.<sup>6</sup>

The structure of the rest of the paper is as follows. We begin by giving a brief overview of the grammar of nominal reference in Section 2. Section 3 proposes a slight amendment to this typology, essentially moving away from a Russellian analysis of definite descriptions and towards a more Strawsonian account. In section 4 we claim that the nominal semantic ontology has a finite clausal counterpart, comprising indefinite, definite (factive) and 'assertive' clauses. Section 5 considers empirical support for this tri-partite typology in the clausal domain from the distribution of Complementizers, V-to-C movement, intensionality effects, extraction and topicalization. Finally, Section 6 concludes.

## 2 The topological mapping theory of nominals

Longobardi (1994, 2005) suggests that there are two basic denotational strategies in the nominal domain:

- i. Reference mediated by a quantifier binding a variable falling under a descriptive predicate;

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<sup>5</sup> See Betti (2011) for a detailed analysis and critique of the method of ontological commitment. Though often traced to Quine, it is noteworthy that Quine (along with Russell) rejected the notion of singular term and primarily used the method of ontological commitment only for the formalized languages of science. On the Modistic doctrine of parts of speech as *modi significandi* see Leiss, (2009).

<sup>6</sup> This is exactly similar in the nominal case, where, if Longobardi's (1994, 2005) account of rigid nominal reference is accurate, no hypotheses are needed on whether objects exist out there, or which objects exist. Referentiality thus becomes grammatical category, not an ontological one.

- ii. ‘Direct’ reference to an object unmediated by a quantifier or descriptive predicate.

Uncontroversially, quantificational DPs such as ‘every man’, ‘no man’, ‘some man’ fall under (i), whereas proper names and (at least some) pronouns fall under (ii). The status of definite descriptions is less clear, but Longobardi explicitly espouses a Russellian account whereby the former are quantificational in nature and so fall under (i). The novel aspect of his proposal, implicit in Longobardi (1994) but fully developed in Longobardi (2005, 2008), is that these different denotational strategies are grammatically (‘topologically’) induced. This permits a close and principled syntax-semantics mapping, and an implicit rejection of the idea that names enter the derivation as type  $\langle e \rangle$ . Syntactically, both strategies require a full DP in argument positions. In predicate logic, the DP template maps to a quantifier-variable-restriction structure of the following kind:

- (1) a.  $Qx. [NP(x)]$   
 b.  $[DP \text{ every } [NP \text{ man}]] \rightarrow \forall x. [\text{man}(x)]$

Strategy (i) is thus implemented grammatically through a phonologically null or overt determiner functioning in semantic terms as a quantifier that binds a variable of which the NP is the restriction. In the case of definite DPs, this derives a purely quantificational reading in line with Russell’s (1905) theory of descriptions.

In instances of direct ‘object reference’, on the other hand, the schema is altered and quantification is subverted by substitution of the noun in the D position at LF (N-to-D substitution).<sup>7</sup>

- (2)  $[DP \text{ John } [NP \text{ John}]] \rightarrow j$

As a result, no quantification takes place as no quantifier is present and what occurs instead is reference to an individual, resembling reference via constants in a formal language of logic. Crucially, in other syntactic configurations,  $[N \text{ John}]$  fails to move to D and so is interpreted as a predicate (cf. Reimer 2002):

- (3)  $[DP \text{ The } [NP \text{ John that I know}]] \text{ is nice.}$

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<sup>7</sup> Crucially, (2) holds only where N-to-D *substitution* is involved. N-to-D *adjunction* does not give rise to object reference, as in such cases a quantifier remains at LF (cf. Longobardi 1994). This distinction is necessary to account for the fact that many languages appear to require generalised N-to-D movement in nominals (e.g. Semitic, Celtic), or in certain types of nominals (e.g. Romanian, Scandinavian). In such cases, the D in question is interpreted as a true determiner and is often phonologically expressed. As Ian Roberts reminds us, it is not clear that the substitution/adjunction distinction is possible under Minimalist assumptions. The crucial distinction might rather be between PF-only movement and LF-interpretable movement. We leave this matter to future research, assuming that the spirit of Longobardi’s analysis can be maintained.

This goes some way towards providing an actual mechanism – and more specifically, a grammatical one – behind Kripke’s observation that names in their most standard uses, unlike definite descriptions, are rigid, meaning that they refer unmediated by a descriptive condition (see Hinzen, 2007:ch.5). In later work, Longobardi proposes that the correlation between substitution and object reference is bi-unique, implying a very close relation between the syntax and semantics:

- (4) The topological mapping theory (2005:9):  
 Object reference if N-to-D [substitution]  
 N-to-D [substitution] if object reference.

This is proposed as a universal principle. The data which Longobardi gives in support of (4) come from a range of languages and involve a number of complications. One such complication stems from the fact that N-to-D substitution is parameterised as to its PF-visibility. Even where the relation holds at PF, it can be instantiated either via overt movement or via an expletive-associate chain. Italian is a language in which the N-to-D chain must be visible at PF, whereas English N-to-D substitution holds only at LF. In the following sections, we review some of the evidence for this PF-parameterisation.<sup>8</sup>

## 2.1 Italian: PF-interpretable chains

Longobardi proposes that, in Italian, the connection between D and N must be visible at PF, either in the form of overt movement or via an expletive-associate chain:

- (5) [DP **Il**        mio [NP Gianni ]]...        (expletive-associate chain)  
       the        my     Gianni  
 (6) [DP **Gianni**        mio [NP t<sub>Gianni</sub> ]]...        (movement chain)  
 (7) \*[DP **D**        mio [NP Gianni ]]...        (no PF-visible chain)

In example (6), *Gianni* which is externally merged as N, has undergone substitution in the D position, and hence precedes what would normally be pre-nominal modifiers such as possessors. In (5), *Gianni* remains in the N position but forms a chain with the expletive article in D and hence still gives rise to object reference at LF.<sup>9</sup> The PF-interpretable chain is thus sufficient to satisfy the PF-requirement that N-to-D substitution be visible at PF. Example (7), which is ungrammatical in all dialects of Italian, is not interpretable as a proper name because *Gianni* remains in the N position and neither substitutes into nor forms a PF-interpretable chain

<sup>8</sup> Note that PF-parameters such as these, relating to ‘externalisation’, are exactly the kind predicted to exist by a model of grammar which favours the C-I interface (cf. Berwick and Chomsky 2011).

<sup>9</sup> As Longobardi notes, (5) and (6) are available to differing degrees in the various Italian dialects. What is crucial, though, is that no dialect uses (7) for ‘object reference, or rather, no dialect allows an alternation of (7) with one of the other two strategies. Thanks to Adam Ledgeway and Federico Damonte for discussion.

with the D-position. The fact that (7) is actually ungrammatical even as a quantificational DP stems from independent facts about the syntax of DPs in Italian. Note that proper names such as *Gianni* can serve as NP restrictions in other instances where they remain in the N position:<sup>10</sup>

- (8) Ci            sono   due   Gianni            nelle   mia   classe.  
       there       are    two   Giannis        in.the   my    class  
       'There are two Giannis in my class.'

- (9) Conosco   tre    Marie  
       know.1s   three   Marys  
       'I know three Marys.'

In support of this analysis, Longobardi (2005: 26-27) shows that, despite the morphological identity of the expletive article and true definite articles in Italian, the two can be distinguished in the following ways: (i) The expletive does not act as a quantifier and does not correlate with a descriptive reading; (ii) its equivalent in Catalan is morphologically distinct from non-expletive definite articles; (iii) it cannot scope over NPs other than proper nouns in co-ordinations:

- (10) \*La Maria e            (mia) segretaria è            arrivata in ritardo  
       the Maria and        (my) secretary is            arrived in lateness

As Longobardi points out, languages and dialects vary with regard to the extent to which they allow/require expletive-associate chains rather than overt movement. Thus in Italian, the expletive is generally optional, but becomes obligatory with the surnames of females (e.g. \*(la) Callas, Longobardi 1994: 622). In European Portuguese, the expletive is obligatory with proper names of people, but not all countries or mythical creatures. In French, the expletive is obligatory with proper names of countries (except islands), but not people.

In sum, Longobardi claims that in Italian, only DPs displaying overt N-to-D movement or a PF-interpretable N-to-D chain are interpreted as names with rigid reference.

## 2.2 English: non PF-visible N-to-D substitution

Longobardi proposes that, in English, N-to-D substitution is also required to derive the semantics of a proper name, but that this movement takes place only at LF, via obligatory covert movement:

- (11) \*[DP John old [NP t<sub>John</sub> ]] ...                            (overt movement)  
       # [DP The old [NP John ]]                            (expletive-associate chain)  
       [DP D old [NP John ]]                            (covert movement)

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<sup>10</sup> Thanks to Roberta D'Alessandro for the Italian judgments.

The data in (11-13) are the inverse of the Italian data. As (11) shows, overt substitution of *John* in D results in ungrammaticality in English. Insertion of a definite article in D, as in (12) does not result in ungrammaticality, but rather rules out object reference and gives rise to a non-rigid descriptive reading quantifying over individuals satisfying the predicative use of *John* (i.e. those individuals named John) or else quantifying over stages of one individual called John. The only way to achieve object reference in English is for the D position to remain empty at PF so that it can be targeted by N-substitution at LF, as in (13). As such, (13) is inconsistent with a descriptive reading. DPs that do not denote individuals but are not descriptive either, are derived in the same way, giving rise to kind-readings in the sense of Carlson (1977). As Longobardi points out, in English, DPs used to refer to kinds are indeed incompatible with an overt determiner, as would be explained if these DPs require covert N-to-D movement:

- (14) (\*the) apples are/milk is good for you (\* with a kind reading)

In Italian, on the other hand, bare NPs cannot be kind-denoting, as predicted if a kind-denotation in this language requires an overt expletive determiner:

- (15) I love (\*the) good wine.  
 (16) Amo \*(il) buon vino . [Italian, based on Longobardi (1994: 631)]  
       Love.1SG the good wine

While the bare NP in (15) can receive a kind reading, its Italian equivalent in (16) cannot. In Italian, bare NPs receive only an existential reading, which corresponds to a DP configuration in which the null determiner binds a variable restricted by NP. As a result, Italian ‘bare DPs’ unlike their English equivalents are restricted in their distribution by the ECP, as Longobardi shows. There is thus strong empirical evidence that object reference is established via N-to-D movement in both languages but that it is externalised differently as an overt or covert chain.

### 3 The three-fold ontology of nominals

#### 3.1 Definite DPs are not quantificational

While Longobardi’s proposal provides an elegant account of two of the main denotational strategies associated with the nominal domain, we propose a slight amendment to the typology, given the status of definite descriptions as intermediate between pure quantification and pure object reference. Definite DPs function grammatically as restricted free variables, and as such share many properties with pronouns (Heim 1988, Elbourne 2008), which Longobardi takes to be object referring. We therefore depart from Longobardi (1994, 2005) who, following Russell (1905), takes definite descriptions to be quantificational in nature. In Russell’s influential approach, definite descriptions assert the existence of their referent, so that a sentence like (17) has the predicate-logical form in (18):



(17) The King of France is bald.

(18)  $\exists x(Kx \ \& \ \forall y(Ky \rightarrow y=x) \ \& \ Bx)$

The implication is that a sentence such as (17) asserts that there exists, in an extensional sense, a unique  $x$  such that  $x$  is king of France and  $x$  is bald. In its own terms, Russell's approach has much to recommend it as it appears to solve the many problems facing strictly externalist approaches to reference (e.g. the problems of negative existentials, non-substitutivity of co-referents etc.). Despite this, though, there is a clear sense in which the approach fails to capture native speaker intuitions about the meaning of definite descriptions. At least when using the notion of 'reference' in the ordinary sense, a speaker asserting (17) is clearly using the subject referentially: he uses it to refer to a certain object that he presumes to exist, as Strawson (1950) and Donnellan (1970) both observe.<sup>11</sup> That France has long been a republic is a fact, but grammar knows nothing of it. It therefore makes (17) an odd thing to say, but it does not alter its grammatical meaning or deictic function. Compare that intuitively, the expression 'the president of the US' is now a device that we use to refer to Obama. It cannot be that 'the' simply changes its meaning in the phrase 'the king of France'. Grammatically, there is no difference, and indeed there shouldn't be, for as technology advances and time travel becomes possible, we could easily travel back a few centuries and use exactly the same phrase then, which would clearly function in exactly the same way as our phrase 'the president of the US' is used today.<sup>12</sup>

As Strawson (1950, 1961) recognized, the expressions 'the  $F$ ' and 'one and only one  $F$ ' signal very different speech acts. As Mukherji (2010:112) illustrates, a school teacher might ask: 'How many kings of France were guillotined?', and the answer might be 'One', and a clarification of this answer, after the novel question 'Was it really only one?' might be: 'Yes,

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<sup>11</sup>Referential uses of definite DPs disappear when the relevant DPs appear in predicative position, as in 'John is the tallest boy in the class'.

<sup>12</sup> In line with these intuitions, Donnellan (1970) raised several empirical problems with Russell's approach, notably examples which involve successful reference through an inaccurate description:

(i) Her husband treats her well.

He notes, for example, that (i) could be successfully used to refer to an individual who is assumed (wrongly) to be a woman's husband (see also Reimer 2002 for discussion). Note that on our approach and specifically the phase-based analysis in Section 3.4 it is natural to expect that both referential and attributive uses of definite DPs should be available, given that both the phase edge and the phase interior are filled and interpreted in such cases. In this much, definite DPs differ from rigidly referring proper names where the phase interior is depleted, and the indefinite DPs where the edge can be empty. Thus while the syntax and semantics of definite DPs stays the same, the pragmatics can trigger two partially different interpretive strategies at the interface. We also contend that where the attributive strategy is chosen, the effect is never quite pure, as it is in the non-specific indefinite case: in some sense a speaker using a definite DP with an attributive interpretation is also referring; and even in a referential use of a definite DP, the descriptive content of the phase interior is not completely absent. Pronominals pattern with definite descriptions in this regard, as we argue below. Cf. also Zamparelli's 2000 discussion of 'T-definites', which are predicative definite descriptions with certain special syntactic properties, making them function descriptively when occurring as a syntactic predicate, and referentially when occurring as a syntactic subject, like the definite description 'her husband' in 'I wish that her husband wasn't her husband'.

exactly (or just or only) one', parallel to (18). The answer 'The king of France' by contrast would be infelicitous as an answer to this question. These preferences exactly reverse when we ask another question, having shown a number of pictures of kings: 'Which one of them ruled from Versailles?'. This contrast suggests that 'the' is not quantificational but referential: it is used to designate a particular object, which it identifies. Quantified phrases such as 'one and only one *F*' by contrast signal a quantity of *F*s.<sup>13</sup>

Of course, as Donnellan (1970) notes, and as an anonymous reviewer reminds us, definite descriptions can also have an attributive reading. Without knowing who Smith's murderer is, one can utter the following, asserting it to be true of whomsoever the DP happens to refer to:

(19) [<sub>DP</sub> the man who murdered Smith] is a monster.

Crucially, even the attributive reading of DPs, however, fails to be quantificational in the Russellian sense, otherwise Mukherji's tests would not hold. The difference between the two readings of definite DPs rather seems to lie in the extent to which the NP restriction (i.e. the descriptive element) is active in a particular context (cf. footnote 12).

Interestingly, the attributive/referential distinction is not specific to definite DPs (Tom Hughes, p.c.). Crucially for us, pronominals are also subject to the same distinction in a certain register, in which case they are synonymous with 'ever free relatives':

(20) He who arrives last can buy the coffee.

Even without a relative clause restriction, a pronominal can be used attributively in a given context:

(21) I don't know who killed Smith, but whoever he is, he's a monster.

In (21), the referent of the pronoun *he* is explicitly unknown to the speaker and yet is referred to 'attributively' in Donnellan's sense. This implies that the attributive/referential distinction is a more general property of non-rigid non-quantificational DPs.<sup>14</sup> In the following section we propose an account of the denotation of definite DPs which assimilates them to pronominals.

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<sup>13</sup> There are other arguments against a Russellian approach, discussed by Elbourne (2008), such as the fact that, unlike quantificational DPs, definite descriptions fail to give rise to weak crossover effects:

(i) His mother loves the man that Mary's dating.

(ii) \*His<sub>i</sub> mother loves [one and only one man]<sub>i</sub> that Mary has dated.

Elbourne also cites the following from Heim (1991), which shows that the truth conditions of the two kinds of DPs clearly differ:

(iii) If the ghost in my attic starts to make scary moaning noises, my boring guests will leave.

(iv) If there is exactly one ghost in my attic and it starts to make scary moaning noises, my boring guests will leave.

<sup>14</sup> Hughes (in progress) raises examples where a quantificational DP apparently functions referentially, contrary to our expectations:

### 3.2 Definite DPs are pronominal

A less problematic semantics for definite descriptions takes them to be interpreted essentially like pronouns with an additional grammatical restriction.<sup>15</sup> It is widely accepted that pronouns can function as determiners (Postal 1966), and it has also been proposed that they can be interpreted as determiners in contexts of Donkey anaphora (Elbourne 2000). It is therefore worth exploring the extent to which definite determiners also have the semantics of pronouns.<sup>16</sup> Pronouns are widely taken to be interpreted as contextually-bound variables associated with certain presuppositions relating to their phi (gender, number and person) specification (Heim & Kratzer 1998). In formal semantic theories, they are formalized as functioning like free variables that are assigned a value in context  $c$  via the assignment function  $g$  (based on Heim and Kratzer 1998: ch. 9;  $[[\dots]]$  is the denotation function):

- (22)  $[[\text{Mary likes him}]]^{g_c} = 1$  iff likes (m)(him<sub>1</sub>)  
 where  $g_c := [1 \rightarrow i]$  and  $i$  is a phi-compatible individual in  $c$ .

Our claim is that definite DPs, where they are used referentially, are also interpreted as free variables which are contextually bound in this way (cf. Heim 1988 for a similar idea). The only difference is that the latter carry an additional grammatical restriction stemming from their NP complement:

- (23)  $[[\text{Mary likes the King of France}]]^{g_c} = 1$  iff likes (m)(him<sub>1</sub>) & king-of-France (him<sub>1</sub>)  
 where  $g_c := [1 \rightarrow i]$  and  $i$  is a phi-compatible individual in  $c$ .

Of course there are additional felicity conditions on the use of definite descriptions, but upon consideration these turn out to be very similar to those observed with free pronouns. The pronoun 'he' for example is only felicitous in a context in which there is a salient unique male singular referent who is picked out by the speaker. The same is true with definite descriptions. A singular definite description requires a salient singular referent who satisfies the NP restriction, sometimes of a particular gender, in order to be used felicitously. A plural definite description requires a salient unique plurality of referents, who satisfy the NP restriction. In the

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(i) It looks like someone's going to get promoted.

In a given context, 'someone' in (i) can felicitously refer to the speaker, addressee or a third party who is contextually present as designated by the speaker. Note, however, that such examples are not possible with all quantificational DPs, and not even with all indefinites. They are also associated with a certain level of sarcasm according them a special non-canonical status.

<sup>15</sup> A connection between pronouns and determiners has long been noted in the linguistic literature (cf. Postal 1966, Abney 1987, Longobardi 1994, Elbourne 2000). Nonetheless, the claim that pronouns are D-heads has not, as far as we are aware, been cashed out in this way.

<sup>16</sup> Elbourne (2008) explores the inverse, but very similar possibility that pronouns are really concealed definite descriptions.

absence of such a referent, the DP/pronoun becomes infelicitous. As such, definite descriptions of this kind are primarily referential in nature, though appropriate contexts may exploit or tap into their descriptive specifications.

### 3.3 Back to rigidity

Because definite DPs denote a contextually bound free variable, rather than a constant, they are not rigid in reference in the way that proper names are. This allows us to capture Kripke's core rigidity observation. The prediction, then, is that pronouns too will be non-rigid, and indeed there is evidence for this position. Consider the following contrast based on data in Elbourne (2008):

(24) The Pope is usually Italian.

(25) (Pointing at the Pope) He is usually Italian.

(26) #Joseph Aloisius Ratzinger is usually Italian.

Whereas both definite descriptions and pronouns can refer to different individuals, proper names cannot, as (26) shows.

As definite DPs carry an overt NP restriction, they are more restricted in meaning than contextually-bound pronouns. Both nonetheless occupy the middle ground between names and purely quantificational DPs. Like names, and especially pronouns, definite DPs involve reference rather than logical quantification, but like quantificational DPs they carry an NP restriction, which renders them more susceptible to contextual variability of the kind discussed by Kripke.<sup>17</sup>

### 3.4 A phase-based analysis

What does this imply for the syntax of definite descriptions? Longobardi clearly shows that definite descriptions (and pronouns) have a different syntax from proper names. In his terms, only the latter display overt or covert N-to-D substitution: in all and only instances of object reference does N move to D. The PF-parameter equates simply to how the movement chain is realised at PF. In Italian, the highest link of the chain is spelled out at PF (and this can be an expletive). In English, PF targets the lowest link of the chain, for arbitrary reasons. Nonetheless, the syntax of pronominals/definite descriptions and names is similar in that in all three cases, the edge of the DP (the D head) needs to be filled and interpreted at LF:

(27) a. [DP Gianni [NP Gianni]]

[Italian]

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<sup>17</sup> One question that arises from this proposal is why determiners and pronouns have different PF-forms if they share both a semantics and syntax. This is plausibly just a morphological matter which can be handled by a late insertion model (cf. Halle and Marantz 1993). Note also that there are significant morphological overlaps in certain languages in this domain.

- b. [<sub>DP</sub> (lui) [<sub>NP</sub> 3sm]]  
     he  
 c. [<sub>DP</sub> I' [<sub>NP</sub> uomo]]  
     the man

As such, referential DPs without an overt determiner (e.g. null pronouns or kind-referring 'bare NPs' in English) are not restricted to complement positions, as by hypothesis, the ECP affects only categories which are empty at LF. The situation is different with quantificational DPs containing an empty determiner position, as in Romance, which, as Longobardi shows, are essentially restricted to complement positions.<sup>18</sup> We infer from this that if a DP refers either as a variable or as a constant, the D-position must be filled (though not necessarily at PF). We see again that as we move to the edge of the phase there is a transition from minimal referential specificity, as in the case of indefinite existential NPs, to NPs that have a precise numerical quantifier and pick out sets of instances of the NP with a particular cardinality, to NPs that pick out individuals, as in the case of definite descriptions, pronouns and proper names.

These three modes of reference all have direct grammatical correlates, and are in this sense topological. When the D-position is empty (there is no determiner and there is no movement to D), a default existential interpretation is derived, where reference is to an arbitrary instance of the predicate. In short, reference is restricted merely in virtue of the predicate's content, or by the interior of the nominal phase. With definite specific reference ('the men'), the pronominal determiner must also be present (and overt in English), and reference is now restricted to a single individual who satisfies the NP restriction specified in the phase interior, as well as matching the phi-featural specifications of the DP in question. In this case, both the phase interior and phase edge determine reference. With proper name reference, finally, N is substituted for D, and the description encoded in the phase-interior is discarded. Where this happens, as in kind-referring nouns or individual-referring names, reference is unmediated by a descriptive content and only the phase edge determines reference.

Broadly speaking, then, the three referential possibilities nicely correlate with the three logically possible ways in which the phase edge and interior can contribute to the determination of reference: only the phase interior mediates reference, or both the interior and edge do, or only the edge is involved. Where the phase head D is radically underspecified, only the phase interior is interpreted and reference is purely configured via the NP description, containing a variable bound by a default existential quantifier.<sup>19</sup> This gives rise to an indefinite DP which is

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<sup>18</sup> The distribution of null categories was accounted for by the Empty Category Principle (ECP) under Government and Binding Theory. From a Minimalist perspective, it is not clear what accounts for these basic specifier/complement asymmetries (cf. Landau 2007 for one approach). We abstract away from the analysis of the ECP here, and, like Longobardi, use it as an empirical generalisation, indicating a fundamental difference between object-referring DPs with a null D and their quantificational counterparts. The fact that English bare plurals with an existential interpretation are not restricted to 'governed' positions is arguably because they are NumPs, rather than full DPs (cf. Sheehan 2011).

<sup>19</sup> Strongly quantificational DPs, such as *every man* differ in that they involve an interpretable quantifier in the phase edge. We abstract away from these complications here, mainly because in the clausal domain, as we shall see shortly, only existential quantification is observed.

restricted in distribution via the ECP. In definite readings, both the phase edge and the phase interior enter the interpretive process, and a reading that is intermediate between a referential and a purely quantificational one is derived. Finally, after substitution of the head of the phase interior into the phase edge, only the edge is left to be interpreted, and no restriction enters into the way that reference is configured, yielding rigidity. This follows if only heads are interpreted and substitution involves the radical removal of the N head from NP at LF. In such cases, the NP interior of the phase is not available for interpretation.

Every sub-sentential phase, then, computes an expression that has *some* independent referentiality, yet all initial (nominal, verbal, and embedded clausal) phases will automatically be deficient in the sense that no truth value is computed. Moreover, all phases can be deficient in other ways: thus, although each nominal phase sets out to compute a referential expression, reference may remain non-specific and predicative as noted earlier, which we hypothesize to correlate with interpretation only of the phase-interior. Subextraction becomes more difficult where the phase edge is also involved in the interpretation, and the phase becomes more referential (as opposed to quantificational). We return to this issue in section 5.5.

In sum, in the nominal domain the limit of referential specificity is reached when the N-head, after substitution, is (semantically) only interpreted in D and the NP-restriction plays no role in mediating reference. This would fully explain the rigidity that Kripke observed, turning it into a purely grammatical phenomenon. If there is a pronominal phasal head, the relevant heads carry a contextually specified restriction, if they contain a null NP complement, as Postal (1966) and Elbourne (2008) claim. Arguably, in donkey anaphora contexts, a richer context-specific restriction is clearly present syntactically, but is elided at PF (Elbourne 2000, 2008). This appears to capture the referential meaning of definite DPs and pronouns. If one refers today to ‘the president of the US’, this act of reference is not typically (though in some circumstances it could be) consistent with the addition ‘whoever he might be’. Definite descriptions pick out individuals in this sense, by means of a description, illustrating their intermediate status between proper names on the one side, and indefinites on the other side. The reason why definite descriptions can also pick out unknown unique individuals (i.e. ‘the kindest man in County Durham, whoever he may be’) is because of their status as variables complete with lexical restrictions. Pronouns can also be used in this fashion, as noted above:

(28) He who dares wins.

With this tripartite nominal ontology in place, we go on to consider the clausal correlates.

#### 4 Clausal correlates

We now claim that there is an exact parallel to these strategies in the clausal case, and that matrix and embedded clauses divide into exactly three kinds, displaying syntactic and semantic properties parallel to those found in the nominal domain, and similarly reflecting the progression from an initial predicative root to an object-referring expression that is rigid in the sense of being unmediated by a descriptive condition. In intuitive-ontological terms, this progression is one from (i) to (iii):

- (i) Propositions
- (ii) Facts
- (iii) Truth.

Option (i) is parallel to indefinite existential nominal reference: where reference of an embedded clause is to a proposition, the reference of this proposition – ultimately, the truth value True – is not yet specific. Option (ii) is parallel to definite nominal reference. Given the independent difference in the internal specification of the descriptive condition determining this referent in the nominal and the clausal case, respectively, the referent can now not be an object, but must be a fact, a proposition evaluated as true. Finally, option (iii) is parallel to a nominal phase that is fully evaluated in terms of its referential potential. This ultimate referent, in the case of clauses, is a truth value, and it is always the value True, for falsehoods are never asserted. As in the nominal case, this reference is fully extensional and unmediated by a descriptive condition, and in this sense rigid. A given truth, once determined, cannot be false, just as a proper name, once it refers to Bill, cannot refer to John. In this sense, declarative root clauses behave like proper names, and can be called ‘derived proper names’, updating an old Fregean claim in a contemporary grammatical setting.<sup>20</sup>

In the rest of the paper we propose that all three options are grammatically configured internally to the C-phase in terms of the exact same three strategies that we have found in the nominal domain.<sup>21</sup> In short, we formulate:

### **The Topological Mapping Theory for Clausal Reference:**

- (A) C is empty or underspecified, through a quantificational operator (optionally null in English), yielding an indefinite interpretation;
- (B) C is pro-form (obligatorily overt in English) with a TP-restriction, yielding a referential interpretation;
- (C) C is substituted by V/T overtly or covertly (covertly in English, overtly in V2 languages), yielding a rigid interpretation unmediated by a descriptive condition.

Analogously to NP in the nominal case, TP constitutes the descriptive core of the proposition. Analogously to DP, CP serves to make a proposition ‘refer’, either by providing it with a quantifier, a pro-form or serving as the host for T-to-C substitution. The prediction is thus that

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<sup>20</sup> This is to implicitly reject a suggestion originally due to Tarski and recently revived in Pietroski (2011), according to which sentences are effectively *predicates* (true of all sequences of entities, or else none), and they are not of a special ‘type <e>’.

<sup>21</sup> Clearly, this three-fold clausal ontology only arises in the declarative case, which is the only one we deal with in this paper. Where a question is asked, not even a proposition (in our sense) is denoted, as captured by the traditional semantic idea that questions denote disjunctions of possible propositions. Complications arise on a number of fronts here, such as [+wh]-matrix clauses that have a factive character.

clauses which lack a CP layer, such as the complements of raising, ECM and restructuring verbs, therefore fail to gain independent deictic status and as such form a more mono-clausal structure with the matrix clause. In the rest of this section we flesh out these three options by pointing out that semantically, they parallel the ones we have found in the nominal domain.

#### 4.1 Rigid and Indefinite CPs

It is generally accepted that matrix clauses differ from all embedded clauses in that they hold extensionally. Hence the intuition that the following two sentences share the same truth conditions, as both involve reference to the same individual, even if a person may not believe them under the same conditions:

(29) Superman is a superhero.

(30) Clark Kent is a superhero.

Like proper names, then, asserted matrix clauses are rigid in reference, referring only to extensional truth. It is irrelevant to extensional truth whether the truth in question is described as the truth that Superman is a superhero or that Kent is: clauses that are referential in this sense bear no restriction. Note again that no sentence is ever asserted to be false: one could not say ‘John left’ and mean by this that this sentence is false. And if one says, ‘John didn’t leave’, one still asserts this as a truth.

Indefinite CPs are the opposite case. They systematically exhibit intensionality, as indicated by the fact that the complements in (28a) and (28b) are not interchangeable *salva veritate*:

(31) a. Lois Lane thinks [(that) Superman is a superhero]

b. Lois Lane doubts [(that) Clark Kent is a superhero]

In short, when these occur in a derivation, they are not evaluated as true by the speaker: the truth value is not decided, and whatever truth value they objectively happen to have (when evaluated ‘against the world’), that truth value is irrelevant to whether the whole sentence is true or not. As a consequence they cannot occur self-standingly, or in matrix position, except in exceptional cases (discussed below). Having an open truth value is in this sense the clausal equivalent to being a non-specific indefinite, the existence of which is left open.

Given our model the prediction is therefore that, in English indefinite CPs, T stays *in situ* and is introduced by an optionally null phase head C with a default existential interpretation, which on analogy with the nominal case should be restricted in its distribution by the ECP, where it is null:

(32) I believe/doubt [C Mary will come].



Note, crucially for this view, that the absence of a Complementizer in phonology can be the surface effect of two very different phenomena, as was the case in the nominal domain. On the one hand, a null C might stem from covert T-to-C movement in an assertive (truth-referring) CP; on the other, it might stem from the presence of an optionally null indefinite C in propositional contexts. Evidence from ECP effects will be crucial in teasing these two different structures apart.

## 4.2 Definite CPs

In the case of CP, the intermediate case – between fully extensional CPs in matrix positions and fully intensional CPs in embedded positions – is the *factive* one. We take factive CPs as the clausal equivalent to definite DPs, sharing with Melvold (1991) and Haegeman and Ürögdi (2010) the intuition that referentiality, not factivity *per se*, is the crucial explanatory notion underlying the phenomena in question. The crucial property of factive clauses is that they are presupposed by the speaker to be true, hence contradiction is impossible, as are untrue ‘facts’ (cf. Kiparsky and Kiparsky 1970):

- (33) #John cares [that the world is flat].  
 (34) a. He thinks/supposes/expects/says that it’s raining, but it’s not.  
       b. #He regrets/resents/is glad that it’s raining, but it’s not.

Another crucial property of such clauses is that a matrix negation or question operator fails to affect the presupposition (ibid.):

- (35) a. He didn’t say that it’s raining.                   (cancels the assertion)  
       b. He doesn’t realise that it’s raining.       (does not cancel the presupposition)

This presupposition of truth closely parallels the presupposition of existence associated with definite DPs and pronominals. On analogy with our proposal for definite DPs, we claim that the Complementizer ‘that’, which surfaces obligatorily (with some complications, discussed below) in factive clauses, is a fact pro-form, which behaves exactly like a pronominal in picking out the salient compatible contextual referent (formally, a fact). As is the case with definite DPs, fact pro-forms carry a grammatical restriction, namely their TP complement. The broad class of ‘factive’ predicates, on the other hand, is by no means uniform in its grammatical behaviour, and notable complications arise in relation to ‘semi-factives’, which we tackle in section 5.4.

Note, crucially, that on this view the pro-form *that* is not a D-head but a C-head. Since Kiparsky and Kiparsky (1970) it has often been claimed that facts are inherently nominal, so that factive complements contain a silent fact nominal. But there are empirical problems with this claim (also discussed by Picallo 2002, Ambridge and Goldberg 2008 and Haegeman and Ürögdi 2010). For example, factive clauses are weak islands, whereas complex NPs are strong islands. More generally, factive CP clauses do not have the same distribution as DPs (they are not limited to case positions):

(36) I am surprised (\*at)/aware (\*of) that you feel that way.

(37) I am surprised \*(at)/aware \*(of) that.

As Betti (2011) shows, there are also cases where the DP ‘the fact that’ is permitted but clausal complements are disallowed:

(38) Dargle bemoaned the fact that the colander was expensive.

(39) \*Dargle bemoaned that the colander was expensive.

Another problem stems from the fact that the noun *fact* cannot select non-finite complements, and yet these too can surface as factive complements:

(40) \*I was glad (of) the fact to see you.

The arguable absence of some phonologically null N standing for the lexical entry ‘fact’ in nominalized factive clauses (Picallo, 2002) also clearly speaks to our contention that factivity is a grammatical, not a lexical phenomenon. Note, moreover, that there is no reason to assume that all pro-forms are D-heads. The pro-form *one*, for example, appears to be an NP, and Moro (1997) argues for the existence of pro-predicates. Although there is also a D-head *that* which functions as a demonstrative (and served as the grammaticalization source for the C-head *that*), we assume that the C-head relevant to the present discussion is categorially and semantically distinct.

On analogy with definite DPs, which we saw are intermediate between intensional and fully extensional DPs, definite CPs should now similarly display intermediate properties with respect to intensionality. This turns out to be the case (cf. Larson 2002, de Cuba and Kawamura 2008,). On the one hand, substitutivity fails in such contexts, as is the case with intensional CPs, and so (38) can be true while (39) is false:<sup>22</sup>

(41) Lois Lane regrets [that Superman is a superhero]

(42) Lois Lane regrets [that Clark Kent is a superhero]

On the other hand, a factive CP must also hold extensionally, hence the infelicity of sentences involving false facts, as shown above.

On the one hand, then, definite CPs are referential rather than quantificational, since a speaker clearly uses such clauses to refer to a particular fact, or something that he takes to be one. As such, (30) is infelicitous for the same reason that sentences about the present King of France are. The question is really why they display any intensional effects at all. In the next section we claim that this is an effect of their status as arguments, rather than their internal syntactic structure.

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<sup>22</sup> Whether one chooses false or # as the value is equivalent to the Strawson/Russell argument regarding non-existent DPs.

### 4.3 Embedded Root Clauses

Truth-denoting CPs in the rigid sense above only occur in matrix positions, indefinite CPs usually only in embedded positions. However, since Hooper and Thompson (1973) it has been known that at least some embedded clauses exhibit the properties of root clauses, and indeed are similar to them in being ‘asserted’ in some sense, hence should be regarded as denoting a truth, even if it is not the speaker who uses them to refer in such a way. Thus, consider the following three embedded CPs:<sup>23</sup>

- (43) a. Lois believes/doubts [(that) Superman’s dead]  
       b. Lois cares [\*(that) Superman’s dead]  
       c. (\*(that) Superman’s dead, Lois thinks.

(40a) embeds an indefinite CP, with the quantificational Complementizer optionally null in English, (40b) embeds a definite CP, where the Complementizer cannot be dropped, and (40c) embeds an assertive CP. Following Grimshaw (2010), we take (40c), an example of ‘slifting’ (Ross 1973), to be an embedded context where only assertive CPs are possible. The important thing to note here is that all of the embedded clauses in (40) are intensional to some extent. In none of these cases does the *speaker* assert the embedded clause to be true. Even the assertive CP in (40c), which in matrix contexts would of course be fully extensional, takes on an intensional dimension when embedded. Thus in all cases substitution of co-extensional *Clark Kent* fails. To reformulate this observation in Neo-Davidsonian terms, all of the embedded clauses in (40) function semantically as descriptive predicates applying to (and restricting) the referents of the events/states denoted by the respective matrix *v*P. For example, the (mental) event/state of doubting in (40a) is one of doubting that Superman is a superhero.

The implication of the above is that, independently of the internal constitution of the embedded phase, the process of embedding itself contributes to the CPs’ semantics. The phasal model provides a natural explanation, and a purely grammatical one. The explanation, developed in Arsenijevic and Hinzen (2011) and Hinzen (2011) relates to a general mechanism of phasal composition: when derivation is by ‘single phase’ (Chomsky, 2008a,b), and a phase is a unit of referential significance based on a predicative root, as on the model above, there can only be a single referent computed at any one time during the derivation. Ipso facto, lower phases, if and when they become part of higher phases, can only function as predicates in these higher phases and specify descriptive conditions for the referent computed at their respective edges (for example, the event derived at the edge of matrix *v* above). This is essentially the situation that is formalized in the semantic notation of a standard Neo-Davidsonian framework, where all arguments become thematic predicates of the higher head (event) with which they are associated, irrespective of whether they indefinite quantificational or referentially specific in nature.

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<sup>23</sup> As we shall see shortly, assertive CPs are possible in simple complement position. However, in such case they alternate either with factive or indefinite CPs and so the obligatory absence of *that* is obscured.

The intensionality of clauses embedded in argument positions has created a puzzle in the philosophy of language for more than a century. In formal semantics (Heim and Kratzer, 1998), the phenomenon has been credited to the special semantic value of a particular class of verbs, hence to a lexical rather than grammatical fact. However, the fact that intensionality gradually disappears as we loosen the syntactic connectivity of matrix and embedded clause – as in parentheticals, adjuncts, and parataxis – supports a more grammatical take on this phenomenon. Moreover, *semantically or logically*, there is no reason why intensionality effects should obtain: The semantics of *Lois believes that Superman is dead*, for example, could have been such that this sentence is true iff Superman is dead and Lois believes this. In this case there would have been no intensionality and no substitutivity failures. Clearly, this is the wrong semantics. But the *lexical meaning* of ‘believes’ (nor the meanings of the other words in the sentence) does not seem to exclude it (Hinzen, 2011).

The implication is that while all clauses we have distinguished – asserted or truth-denoting ones, definite, and indefinite ones – occur in embedded positions, when clauses of the first of these types do so occur, they still do not become fully referential or rigid, in the way that only matrix clauses can be. In terms of their semantic behaviour, our proposal therefore holds: modulo the fact that CPs, unlike DPs, can occur both embedded and unembedded, the parallel between the three referential strategies in the nominal and clausal domains holds: like DPs, CPs can be indefinite (quantificational), definite (referential), or rigid.

In sum, assertive CPs pattern semantically and syntactically with proper names, factive/definite CPs with definite DPs, and indefinite CPs with indefinite DPs. We now provide syntactic evidence for this claim from the distribution of Complementizers in matrix and embedded contexts and the distribution of V2 and embedded root phenomena. We argue that the same syntactic structure gives rise to the semantic effects we have noted in both cases. This is broadly in line with recent attempts to regard factive clauses as patterning with referential ones in general, and to see referentiality constrained in similar ways in the case of both DP and CP (Melvold, 1991, Haegeman and Ürögdi, 2010), and as derived in the same ways.

## 5 Syntactic evidence for the proposal

### 5.1 The syntax of matrix assertive clauses

Many languages, including English, do not permit overt Complementizers in assertive matrix clauses (cf. Koster 2003 for a similar observation):

(44) (\*That) superman is a superhero.

This ban on an overt Complementizer in matrix assertions like (44) is not likely to be due to a ban on C heads in matrix clauses *per se*, as V2 languages provide clear evidence that matrix clauses *can* be CPs in other languages. The pattern in (44) would be explained, however, if the mechanism behind clausal rigidity in our sense is overt or covert V-to-C movement, along with phasal Transfer. In other words, C must be null in English as covert T/V-to-C movement is required to establish extensional truth-reference and the presence of a Complementizer would

block this movement. As V-to-C movement is covert in English, a lower copy of the verb will be targeted at PF:

(45) [<sub>CP</sub> honestly [<sub>CP</sub> is [<sub>TP</sub> Superman is a superhero] → Honestly, Superman is a superhero

On our model, this is directly parallel to what is observed with names in English:

(46) (\*The) John...

The PF-parameter applies in the same way here, though, so in other languages, the copy of the verb in C is targeted at PF, and the result is a V-initial or V2 language. As a result of this movement, only the phase edge determines reference in such cases, giving rise to rigid reference unmediated by a description/predicate.

V2 languages such as German, Dutch, Icelandic, Yiddish, Swedish, Norwegian, Old French, Kashmiri and Karitiana, then, require the V/T-to-C chain to be established overtly in matrix truth-denoting clauses and thus display the clausal equivalent to Italian overt N-to-D movement (cf. Den Besten 1981, Vikner 1995, Diesing 1990 on Yiddish, Storto 1999 on Karitiana, Bhatt and Yoon 1999 on Kashmiri and Holmberg 2010 for an overview). The fact that this involves movement into the C-domain is suggested by the position of adverbials/negation, and the fact that the presence of another XP in preverbal position licenses subject-verb inversion:

- |              |           |         |   |
|--------------|-----------|---------|---|
| (47) laRkan  | por       |         | akhbaar                                 |
| Boy.ERG      | read.PAST |         | newspaper                               |
| (48) az      | por       | laRkan  | akhbaar                                 |
| today        | read.PAST | boy.ERG | newspaper                               |
| (49) akhbaar | por       | laRkan  | az                                      |
| newspaper    | read.PAST | boy.ERG | today [Kashmiri, Bhatt & Yoon 1999: 48] |

A few influential approaches to V2 movement (Weerman 1988, Truckenbrodt 2006, Julien 2010), have taken this movement to be semantically motivated, and our proposal builds on these approaches, situating them in a more general semantic system. Our proposal goes beyond previous accounts of V2 in that it provides not only a plausible semantic correlate for the head-movement involved, but also assimilates it to head-movement in the nominal domain, with parallel semantic implications. In both cases, substitution of a lexical head into a functional head gives rise to constant reference, either to an individual or a truth.

Our proposal further predicts that in non-V2 languages, where an Complementizer is present and hence covert V-to-C movement is blocked, no truth should be denoted. Consider the following example from French, with an overt *que* and subjunctive morphology (which is usually found in embedded clauses):

- (50) Que Jean soit malade de la tuberculose en 2003!  
 That Jean be.SUBJ ill of the tuberculosis in 2003  
 ‘For Jean to be sick with tuberculosis in 2003!’ [Schlenker (2005:10)]

As it turns out, these clauses are interpreted as polar exclamatives, and as Schlenker notes, do not assert a truth. Rather they presuppose the truth of the TP in question, as is generally true with exclamatives (cf. Abels 2010 for a recent defence of this idea). Similar data are found in Swedish (cf. Delsing 2010):

- (51) a. Att du hann med tå get!  
           that you reached with train.def  
           I am surprised you caught the train                   [Swedish, Delsing (2010:17)]  
       b. SOM vi skrattade!  
           som we laughed  
           ‘How we laughed!’                                       [Swedish, Delsing (2010:19)]

As such, (50) and (51) are matrix instances of what is in our terms a definite CP, rather than a truth-denoting clause. For this reason the pro-form Complementizer is obligatorily overt, blocking V-to-C movement.<sup>24</sup>

In Spanish, Catalan, Romanian and formal Portuguese, subjunctive clauses introduced by an overt Complementizer can surface as matrix clauses, as a pragmatically restricted alternative to matrix imperatives (Kempchinsky 2009, Noonan 2007):

- (52) Que           vengas                   temprano       mañana!  
       That       come.2s.SUBJ           early           tomorrow  
       ‘Come early tomorrow!’

- (53) Să            continuăm                                       [Romanian, Noonan (2007:65)]  
       that        continue.3PL.SUBJ  
       ‘Let’s continue!’

Such examples also fail to assert a truth. In our terms, this is due, once again, to the fact that V/T-to-C movement is blocked by the presence of C, and that such movement is required for truth to be denoted.<sup>25</sup>

Truckenbrodt (2006) notes that V-to-C movement in German takes place in all assertive matrix clauses):<sup>26</sup>

<sup>24</sup> A potential question is why the overt Complementizers in Swedish cannot be interpreted as expletives, establishing the PF-visible V-to-C chain and giving rise to object (truth) reference. This is not the case with the French data, however, as an overt C in a language with covert V-to-C movement can never be expletive.

<sup>25</sup> Other apparent instances of overt complementizers in matrix clauses in Spanish probably involve covert embedding, given their quotative semantics (cf. Etxepare 2010).

<sup>26</sup> This raises the question of the role of T-to-C movement in English matrix questions. This appears to be a restricted relic of V2, as is often noted, which co-exists with the more general requirement for covert-movement in truth-denoting clauses.

- (54) Der Peter hat das gemacht.  
 'Peter has done this.'

This is not to say, though that all matrix clauses in German require V-to-C movement. Crucially, though, where V-to-C movement is lacking the result is a lack of assertion (Truckenbrodt 2006: 268-9):

- (55) Dass du ( ja) das Fenster öffnest!  
 that you (PRT) the window open  
 '(Don't forget to) open the window!'  
 (56) Dass ich noch einmal Venedig sehen könnte!  
 that I still once Venice see could  
 'I would like to see Venice once more.'  
 (57) Das Fenster öffnen!  
 the window open.INF  
 'Open the window!'  
 (58) Noch einmal Venedig sehen!  
 Still once Venice see.INF  
 'I would like to see Venice once more.'

Once again we find that such sentences, as Truckenbrodt claims, following Meibauer (1989), are not assertions of truth. Rather they can only have exclamative or deontic readings. Insofar as these sentences relate to the phenomenon of truth, they do so in a similar way as factives: they have a factive presupposition (namely, that the window is not open now, that I have not seen Venice again, etc.). The same applies to the following type of sentence in German, which only have epistemic interpretations, and are non-assertive:

- (59) Ob der Peter das gemacht hat?  
 whether det Peter that done has  
 (60) Wo eine Bleibe finden?  
 where a place.to.stay find

(59), apart from asking the question whether Peter has done the thing in question, involves a serious doubt as to whether he has. (60), in addition to asking the question of where to find a place to stay, points the hearer to the salient fact that there is no such place (yet).<sup>27</sup>

## 5.2 The syntax of embedded clauses: the non-assertive case

Hooper and Thompson (1973), in a seminal paper, provided the following typology of clause-embedding predicates:

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<sup>27</sup> Welsh and Gaston may well be languages which employ expletive complementizers in assertive CPs (Ian Roberts, Adam Ledgeway p.c.). We plan to investigate this further in future research.

CLASS A – **strongly assertive predicates** (say, claim, assert, report, vow)  
 CLASS B – **weakly assertive predicates** (think, believe, suppose, guess, imagine)  
 CLASS C – **non-assertive predicates** (doubt, deny, be possible)  
 CLASS D – **factive predicates** (regret, resent, be surprised)  
 CLASS E – **semi-factive predicates** (know, discover, find out, forget)

Melvold (1991) additionally argues for a further class, which we label as follows, giving a tripartite typology of factives:

CLASS F – **communication semi-factives** (disclose, divulge, confess, reveal)

Hooper and Thompson's 'factive' predicates are then – in line with Melvold's terminology – classified as 'emotive factives' and their 'semi-factives' as 'cognitive semi-factives' (again based on Melvold's terminology). Class C is expanded to include volitional verbs such as *wish* and *want* as well as directives like *order* and *ask*. This provides us with the following typology, with several natural classes: definite/indefinite, communication/cognitive/other, assertive/non-assertive:

Figure 1: Amended verb typology<sup>28 29</sup>

		Definite	indefinite
assertive	Communication (strongly assertive)	Class F- communication semi- factives ( <i>disclose, divulge, confess, point out, reveal</i> )	Class A – non-factive communication predicates ( <i>say, claim, assert, report, vow</i> )
	Cognitive (weakly assertive)	Class E – cognitive semi-factives ( <i>know, discover, find out, forget, realise, grasp, see</i> )	Class B – non-factive cognitive predicates ( <i>think, believe, suppose, guess, imagine, prove, decide</i> )

<sup>28</sup> As Kiparsky and Kiparsky (1970) and Melvold (1991) note, the boundary between factivity and non-factivity is not that fixed. Many verbs can be used in either a factive or non-factive sense, a point to which we return below. The table indicates the most usual use of the predicates in question. Various kinds of coercion are possible (cf. also Kallulli 2006).

<sup>29</sup> It is possible to show, building on Hooper and Thompson and Pesetsky (1991), that the cognitive and communication classes also behave in uniform ways. This cognitive predicates factive and non-factive permit ECM, neg-raising and tags in their complement CPs, whereas communication predicates do not. We do discuss these matters here for reasons of space, but note merely that they lend support to our reconceptualisation of the verb classes.



Non-assertive	?	Class D – emotive factives ( <i>regret, deplore, resent, detest, hate, be glad, be surprised, be aware, care, mind</i> )	Class C – non-assertive ( <i>doubt, (deny), be possible, be likely, wish, want, order, ask</i> )
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In matrix predicates here classified as ‘assertive’, the complement is taken to be true by the grammatical subject, and perhaps understood by the hearer as if asserted by the matrix subject, but the *speaker* does not assert them, as noted earlier. Note that where factive predicates are assertive in this sense, they can lose their factivity in certain contexts, hence they are not universally factive, as the term ‘semi-factive’ suggests. This suggests that a three-fold ontology of clausal complements, figuring assertive, definite-referential, and indefinite clauses, may be on the right lines.

By contrast, much recent work on complementation has argued that the crucial distinction in figure 1 is that separating assertive and non-assertive complements. In our terms, classes D and C form a class only in negative terms (these complements are not asserted). Others however have claimed that the complement CPs to both predicate classes are semantically and syntactically identical. Thus, one tradition takes non-assertive CPs to be syntactically ‘defective’, lacking in recursive CP structure (McCloskey 2006, Haegeman 2006, Basse 2008, de Cuba 2007, de Cuba & Ürögdi 2010). A related, but distinct approach takes non-asserted CPs to be ‘referential’ with a relative like structure whereby a null operator occupies spec CP (Haegeman and Ürögdi 2010). In these terms non-defective/non-referential CPs, on the other hand, either have an additional specifier position or lack this null operator and hence allow movement to and through spec-CP. Unlike Kiparsky & Kiparsky (1970), both of these approaches reject ‘factivity’ as a crucial explanatory factor. The problem with this stance is that the precise syntax/semantics mapping and the connection between referentiality/defectiveness and factivity is unclear. Most problematically, the complements of non-assertive predicates like ‘doubt’ are taken to be of the same semantic type as the complements of emotive factives. But the former are clearly not presupposed to be true, unlike the latter.<sup>30</sup> We argue that there are conceptual and empirical problems with a two-fold typology of this kind, and a three-fold ontology is to be preferred.

As noted, conceptually it seems strange to say that the complements of predicates like ‘doubt’ or ‘be possible’, which denote open propositions rather than facts, are ‘referential’.<sup>31</sup>

<sup>30</sup> As Bentzen (2010) notes, *deny* is different in that it appears to permit factive complements. In this sense, though, it has intermediate status between being an emotive factive and a non-factive predicate. Other non-assertive predicates like *want, wish, doubt be possible* can never be factive and are thus better standards of comparison. Bentzen discuss a further potential parallel between emotive factive and non-assertive predicates in relation to the distribution of Hungarian *az*. As Bhatt (2010) notes, it is difficult to know how to interpret these facts.

<sup>31</sup> Interestingly, de Cuba (2006: 130) proposes that an operator is present in non-factive contexts which “serves to remove the speaker from responsibility for the truth of the lower clause”. Basse (2008), on the

What does it mean to be referential in this case? Moreover, there is solid empirical evidence that the two-fold typology is inadequate. The main empirical reason why classes C and D have been grouped together stems from the fact that they behave alike in certain syntactic respects, particularly in regards to disallowing root transformations in their complement domain (in the sense of Emonds 1970, 1976, 2004).<sup>32</sup> Thus, compare (59) and (60) with the complement of communicative and cognitive predicates in (58) (cf. Hooper & Thompson 1973, Heycock 2006, Haegeman 2006, Bentzen et al. 2007, Basse 2008, de Cuba 2007, de Cuba & Ürögdi 2010):

- (61) My mother claims/says/thinks/knows that to read so many comic books is a waste of time.  
 (62) ??My mother doubts/denies that to read so many comic books is a waste of time.  
 (63) ??My mother resents/minds/cares that to read so many comic books is a waste of time.

Judgements in English are not that clear, but there seems to be general agreement in the literature that there is a contrast here and that the assertive/non-assertive distinction is what is at stake. The contrast is arguably clearer in contexts of ‘slifting’ (Ross 1973), which is only possible with asserted complements (semi-factive or non-factive, exemplified in (61)), as Hooper and Thompson note:

- (64) (\*that) the class is cancelled, he said/affirmed/revealed/I assume/believe/discovered/found out.  
 (65) \*The class is cancelled, he regrets/resents/doubts/denies/it’s possible.

This is presumably because assertion is involved in the fronted complements of the verbs in (61), but not in (62).<sup>33</sup> In line with this analysis, it is impossible to contradict the content of the fronted clause in (62), suggesting some commitment to its truth even on the part of the speaker (as required for an assertion), not only on that of the matrix subject:

- (66) The class is cancelled, he said/affirmed/revealed, #but it’s not.

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other hand, proposes that an assertive Operator is present in assertive CPs. Without a very specific semantics of the operator it is difficult to assess the claim that it is present in non-assertive complements (as Bhatt 2010 also notes).

<sup>32</sup> Classes C and D also pattern together in that they both require obligatorily subjunctive complements in French, Spanish and European Portuguese, though Spanish *alegrarse* (‘to be glad’) and *negar* (to deny) are exceptions (cf. Rivero 1971). Cognitive and communication predicates, by contrast, often allow for either indicative or subjunctive complements, giving rise to differences in interpretation (cf. Rivero 1971). As Quer (2009) notes, citing Farkas (1992), in Romanian, emotive factives often take indicative complements, and this is true also in other languages (cf. Noonan 2007). Other complications arise in relation to Polarity triggered subjunctives (cf. Quer 2009).

<sup>33</sup> If so, our approach predicts correctly that it is impossible to use an overt Complementizer in (62). This fact is strange when we consider that null complementizers are generally restricted in their distribution by something akin to the ECP. We return to this matter shortly.



class F can also combine with gerunds giving a clearly factive interpretation, somewhat undermining this correlation:

(70) I recall/remember [(him) being right].

In fact, other semi-factive assertive verbs allow this where a certain preposition is present:

(71) I know about/admitted (to) being right

The distribution of gerunds cannot, therefore, be taken as evidence that classes C and D form a natural class. Rather, what it shows is that gerunds can be either definite or indefinite, but never assertive, as expected if assertion requires a more projected clausal structure.

In fact, the differences between the complements of class C and D are so striking that it is impossible to maintain the idea that they are of the same syntactic/semantic type. Firstly, while complements of non-assertive predicates like communication and cognitive predicates can function as the main point of utterance (MPU in the sense of Simons 2007), the same is not true with the complements of emotive factives (cf. A2 below). The test for being the MPU is whether an embedded clause can answer a matrix *wh*-question. In (72), we have used corner brackets to indicate what are potential MPUs in an answer to the question concerned:

(72) Q. What's up with Mary?

A1. I think/guess/know [she's not feeling well].

A2. #[I care/mind that she's not feeling well].

A3. It's possible/likely [she's not feeling well].

If being the MPU is possible wherever the clause in question constitutes new information, then an obvious reason emerges for this contrast: emotive factive verbs require CP complements whose truth is *presupposed*.<sup>37</sup> Accounts which posit the same kind of CP complements with emotive factive and non-assertive predicates fail to account for these facts.

Additionally, as has long been noted in the literature, the correlation between 'bridge verbs' which permit subextraction from their CP complements and verbs which permit embedded root phenomena in their CP complements is only partial (cf. Vikner 1995: 70, fn 7). In fact, while the complements of emotive factive predicates are always weak islands, permitting extraction only of (preferably D-lined) direct objects, the complements of non-assertive predicates are non-islands, allowing argument and adjunct extraction:

(73) \*When do you mind that he arrived?

(74) When is it likely that he arrived?

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<sup>37</sup> Bentzen et al. (2007) claim that in Mainland Scandinavian non-assertive predicates pattern with factives in this regard. This potential difference requires further investigation.

This is a serious challenge for approaches which posit a two-fold distinction of the kind described above. In Haegeman and Ürögdi's approach, for example, weak islandhood is elegantly connected to the impossibility of root transformations by the presence of a null operator in spec CP. This operator serves to rule out movement of sufficiently similar XPs to or through the CP-layer. The data in (73)-(74) show, however, that the correlation between weak islandhood and the impossibility of embedded root transformation (including embedded V2) is not absolute: a CP can disallow embedded root transformations without being a weak island.

Finally, while verbal emotive factives strongly disallow CP complements with a null C (in our terms because the fact pro-form is obligatorily overt in English), non-assertive predicates freely allow CP complements with null Cs:

(75) I regret/resent/care/mind \*(that) John's late.<sup>38</sup>

(76) I doubt/it's possible/likely (that) John's late.

In our terms this is as expected if non-assertive predicates select only for indefinite CPs with an optionally null C, whereas emotive factive predicates select only definite CPs. In approaches which claim that the same kind of CP complement is at stake, it remains unclear why this contrast would exist.

We conclude this discussion by contending that there is a strong empirical case against the claim that classes C and D take the same kinds of CP complements, either syntactically or semantically. The complements of emotive factive predicates are always presupposed to be true, whereas the same is not true with the complements of non-assertive predicates, and their syntactic behaviour is also very different in several respects. In our three-fold typology there is a clear explanation for this fact: emotive factive predicates take only definite CPs and non-assertive predicates take only indefinite CPs. In our terms, classes C and D form a natural class only in negative terms: they are both non-assertive. Thus while French, Spanish and Portuguese generally require the subjunctive in finite CP complements of classes C and D predicates, other languages make the subjunctive/indicative split in different ways. Noonan (2007:109), for example, notes that in some languages the complements of emotive factives take the indicative (e.g. in Russian and Persian). This strongly supports the suggestion that, as Schlenker (2005) claims, the CP complements of factive and non-assertive form a natural class only in negative terms. They are both non-assertive, but they do not share the same syntax or semantics. The fact that root transformations are banned in both kinds of CP complements can be attributed to the fact that such operations are possible only in truth-denoting or assertive CPs. Definite and indefinite CPs, on the other hand are more restricted as to the kinds of movement they allow into their edges, a point to which we return in section 5.5.

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<sup>38</sup> A complication arises from the behaviour of non-verbal emotive factive predicates *be glad*, *be surprised*, *be sorry*, *be happy*, *be annoyed*, *be upset*, *be ecstatic* which appear to allow C-drop to varying degrees:

(i) I'm glad/?ecstatic/happy you're here.

(ii) I'm surprised/sorry things didn't work out.

We do not understand these facts at present..

### 5.3 The syntax of assertive embedded clauses

Class C and D predicates take only one kind of CP complement: referential/factive in the one case, indefinite in the other. In the case of assertive predicates, however, matters become more complex. We now argue that the patterns become systematic and fully expected once we allow for the fact that classes E and F predicates can take either a definite *or* an assertive complement, and that classes A and B can take either an indefinite *or* an assertive CP complement. This variability in clausal selection complicates the picture but the predictions of our three-fold typology can nonetheless be shown to hold. Note that this variability is reflected by semantic intuitions such as the following. One can believe in the existence of a fact or in a truth, but one doesn't doubt either a truth or a fact. Likewise, one can know a truth or a fact, but one cannot regret or resent a truth: it is a fact that one resents.

The first thing to note is that embedded assertive clauses are generally strong islands. This is easier to show for Mainland Scandinavian, which permit overt V-to-C movement in embedded assertive CPs (Holmberg 2010):

- (77) Vilken festi sa hon [att vi (\*behöver) inte (behöver) köpa roliga hattar till ti ]?  
 which party said she that we (need) not (need) buy funny hats for  
 'Which party did she say that we don't need to buy funny hats for?'  
 [Swedish, Holmberg 2010, citing Holmberg 1986: 111]

Note that the islandhood of embedded V2 clauses cannot be attributed to intervention: even the XP occupying the edge of the embedded clause is not available for extraction in such cases:

- (78) \*Den här artikeln sade hon att [ t hade hon inte tid att läsa t].  
 this here article said she that had she not time to read  
 [Swedish, Anders Holmberg, p.c.]

Moreover, these clauses behave like strong, not weak islands, in blocking extraction of objects as well as adjuncts and subjects. Under our three-fold ontology of clauses, this correlates with the fact that assertive CPs are more projected and extensional than either definite or indefinite CPs, creating a stronger island given the conception above of phases as units of referentiality and deictic significance.

The strong islandhood of embedded asserted CPs is more difficult to show for English for the simple reason that class B and A predicates also allow indefinite CP complements which can look superficially identical to embedded assertive CPs: both display the possibility of C-drop for the reasons discussed above. In instances of slifting, however, only assertive CPs are permitted, and as expected, subextraction is ruled out in such cases, as Grimshaw (2010: 6) shows:

- (79) \*What kind of car Fred would buy was Mary saying

Our proposal also provides an explanation for the fact that slifting appears to violate the ECP. In all other cases, clauses introduced by a null C are (descriptively) restricted in their distribution by the ECP (cf. Kayne 1981, Stowell 1981, Bošković & Lasnik 2003). In our system this can be attributed to the fact that (i) indefinite CPs introduced by a null quantificational C, like DPs introduced by a null quantificational D (e.g. in Romance), are limited to ‘governed’ positions, and (ii) assertive CPs are limited to assertive positions. It is generally accepted that preverbal subject positions are non-assertive, and this explains why C-drop is banned in such contexts: all subject CPs are either definite CPs (with an obligatorily overt C), or indefinite CPs, where C-drop is blocked by the ECP. In this sense, slifting constructions provide crucial evidence of a case where an assertive CP is permitted in a specifier position, for information-structure reasons. In such cases, there is no ECP effect because, in our terms, covert N-to-D movement has taken place. As such, indefinite CPs are subject to the ECP, just as Romance bare nouns are, whereas assertive CPs are not, just as English kind-nouns are not.<sup>39</sup>

Despite certain complications, then, once we allow for the fact that certain predicates can combine with more than one type of finite CP complement, the syntactic patterns are basically as predicted by our approach, and indeed, many previously problematic facts are explained.

## 5.4 Semi-factives

One of the greatest challenges for any account of clausal embedding is the behaviour of semi-factive predicates. Firstly, the complements CP of class E and F predicates differ from the complements of class D predicates in freely permitting C-drop, unlike their emotive counterparts:

(80) He realised/knew/found out/confessed/disclosed it was raining.

Moreover, as Karttunen (1971) observed, unlike the complements of emotive factives, the complements of what we are calling cognitive semi-factives lose their factivity in certain contexts:

(81) #I found out/regret/mind/care that the world is flat.

(82) If I find out that the world is flat, I’ll be very surprised.

(83) #If I regret/mind/care that the world is flat, I’ll let you know.

We propose that these two properties are immediately explained once we accept that class E and F predicates can combine with either an assertive or a definite CP complement. As noted above, emotive factive predicates can combine only with definite CP complements, requiring a PF-interpretable edge, which mirrors the situation in the nominal domain, where definite

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<sup>39</sup> The data in Grimshaw (2010) strongly suggest that slifting involves movement of an assertive CP to a specifier position. As she shows, slifted CPs are clearly selected by the predicates they occur with, but syntactically they behave like matrix clauses, displaying root transformations and being obligatorily finite. This follows if slifted CPs are base-generated as complements and moved to a higher position..

articles are generally overt, whereas indefinites need not be. Where predicates permit C-drop, then, they will not be truly fact-referring.<sup>40</sup> Rather C-drop in such cases will be the reflex of covert V-to-C movement, if we are right. The prediction is that C-less complements of class E and F predicates should be strong islands for subextraction, whereas complements with an overt C should be weak islands. This prediction turns out to hold for some (though not all) semi-factive predicates:

- (84) a. I saw I'd offended her.  
 b. Which relative did you see ??(that) you'd offended?

This is a kind of reverse that-trace effect whereby the complement can more easily be extracted over an overt C than a null C. There is, moreover, further evidence that the null Complementizer observed with class E and F predicates is different from that observed with class C predicates (and optionally with class A and B predicates). The former, unlike the latter, fail to alleviate that-trace effects in instances of subject extraction:

- (85) Who did you deny/doubt/believe had left first?  
 (86) ??Who did you see/find out/forget had left first?

The CP complements of semi-factive predicates appear to lose their factivity wherever the clause immediately containing them is interpreted intensionally. Thus, embedding under a non-assertive predicate cancels the factivity of CP complements of class E and F predicates, but not of class D:

- (87) Mary doubts she'll find out/reveal/discover/see that the world is flat.  
 (88) #Mary doubts she'll regret/care/mind that the world is flat.

This follows if assertive CPs become intensionalised in such contexts. Consider also that in slifting constructions, the obligatorily assertive nature of the fronted CP rules out contradiction:

- (89) The class was cancelled, John realised, #but it wasn't.

We propose that this is the root of the explanation for the properties of semi-factives. Class E and F predicates can take either definite CP complements, with a true factive interpretation, or assertive CP complements, in which the truth of the embedded CP is also asserted at some level. In such cases, the truth of the CP complement is asserted, but not presupposed. In many

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<sup>40</sup> The reverse claim, that where they do not display C-drop they will always have a factive interpretation is false, as other factors may intervene (Karttunen 1971):

- (i) If I find out that he's been fired, I'll go mad  
 (ii) If I regret that he's been fired, I'll let you know.

This is arguably due to the fact that a semantically vacuous subordinating C is also available in such contexts, as is the case in other instances of embedded root phenomena.



contexts, the meaning of the two kinds of CPs are quite close, but only assertions and not presuppositions are cancelled in intensional contexts.

The strange behaviour of semi-factives can therefore be taken as further evidence for our tri-partite typology, and against alternative approaches.

## 5.5 On movement to and through the phase edge

The three kinds of clauses appear to behave differently in terms of whether they allow movement to or through their edges. Assertive CPs are strong islands, allowing movement to but never through their edge. Definite CPs, being weak islands, appear to block movement through their edge (cf. Cinque 1990). Haegeman and Ürögdi (2010) provide an account of these facts very similar to that proposed in Melvold (1991), but backed up with additional evidence from Topicalization patterns. According to them, the presence of a null Operator in spec-CP acts as an intervener for movement *to* or *through* spec-CP:

- (90) I am glad [Op that she likes him]
- (91) (?)Who are you glad that she likes?
- (92) \*When are you glad that she left?

As we pointed out above, a problem with this account is that there are CPs which disallow movement to spec CP but freely permit extraction (indefinite CPs). In such cases, then, it cannot be that the lack of embedded root phenomena is due to the presence of the null operator, as movement through the phase edge appears to be possible. In fact, there is also evidence that definite CPs do allow movement of certain restricted kinds to their phase edge in exclamative contexts. Grimshaw (1979) claims that the *wh*-complements of emotive factive predicates are embedded exclamatives, as shown by the possibility of ‘very’ in (93):

- (93) John regretted [[how (very) cold] it was]
- (94) \*I asked how very cold it was.

As noted above, there is widespread agreement in the literature that exclamatives are factive (Zanuttini and Portner 2003, Abels 2010). If factivity arose from the presence of a null operator, as in (90), then *wh*-movement should not be possible in (93).

Note that a similar point can be made for non-specific indefinite DPs, which are also weak islands (cf. Bennis, Corver & Den Dikken 1998 for discussion):

- (95) [[how big] a problem] is it?

Here too, there is a disassociation between the possibility of movement *to* and *through* the phase edge. Finally, indefinite CPs display yet a different pattern, allowing only movement *through* the phase edge, and ruling out the presence of anything in spec-CP, hence the fact that the

complements of non-assertive predicates such as *doubt* fail to permit embedded root phenomena.

In our terms, these facts follow from the architecture of phases and the various kinds of interpretations they can receive. Although on our model all phases are units of referentiality, they can be expanded to different degrees, and their interpretation may involve their edge or not. The more edge-heavy and expanded they are, the harder extraction. This predicts that truth-denoting clauses and definite specific nominals will be hardest to extract from. Extraction is easier the more interpretation is determined via the phase-interior. However, an interesting asymmetry emerges in this regard between the behaviour of clauses and nominals. Whereas definite DPs, like names, are strong islands, definite CPs are weak islands. Moreover, indefinite DPs, rather than being non-islands, like indefinite CPs, are actually weak islands. We contend that this asymmetry, which has long been noted (cf. Chomsky 1977), plausibly reflects an independent difference in the deictic character and potential that distinguishes the two phases in question: nominals, and more specifically object-referring expressions, are the very *paradigm* of a ‘referential expression’. We have argued that referentiality is a notion that spans *across* the Noun-Verb divide, and that grammar allows a referential option even in clausal phases, where the ‘objects’ of reference become ‘facts’. But we do not expect from this that, given the inherently greater grammatical complexity of a clause, objects of reference will be as transparent in the clausal case as they are in the nominal case: indeed, once we go to matrix clauses, it has always been completely obscure to specify, in intuitive terms, what these ‘refer’ to. Accordingly, we should not be surprised that extraction remains possible in the case of definite CPs while it is banned with definite DPs

In summary, despite certain complications regarding variable complementation in the case of assertive predicates, the syntax of embedded CPs provides strong support for the three-fold typology we propose. The grammar of the purest factive complements – of class D predicates – is most clearly that of definites or referential expressions, as witnessed by the ungrammaticality of C-drop in such contexts (correlating with obligatory D in the nominal phase), the absence of embedded root phenomena, and the inability of such complements to serve as MPU. Yet complements of this sort never reach the level of reference available (only in the matrix case), for assertive clauses where truth cannot be presuppositional, and where assertoric force is necessarily bound to the speaker. V2 effects reflect movement of material towards the phase edge, leading to assertion of a truth value, and as such they are restricted to environments where some assertoric force is present and indexed to either the matrix subject or the speaker. Where such force is absent, as in emotive factives, in which truth is presupposed, or in non-assertoric predicates, where a truth-commitment is rejected, V2 appears to be banned. In accordance with that, we see complements of emotive factives introduced by an obligatorily filled phasal head C, whereas complements of indefinite predicates are introduced by an optionally null phasal head, in line with the nominal indefinites. This solves the problem faced by de Cuba and Ürögdi (2010) and Haegeman & Ürögdi (2010), of explaining how and why emotive factives and non-assertive predicates pattern alike in some respects but differently in others. It also avoids the problematic step of claiming that non-assertive predicates select definite (referential) CP complements.

## 5.6 Parallels in clausal/nominal selection

Kiparsky and Kiparsky (1970: 167) note an interesting correlation between nominal and clausal selection. Verbs which select factive CP complements also select specific nominal complements:

- (96) I ignored an ant in my soup  
 (97) I imagined an ant in my soup

In (96) a specific ant is at stake, whereas in (97) this is not the case. This reflects a difference in the degree of intensionality of the DP in question. This follows on the analysis proposed here if indeed the crucial factor is referentiality, in which case what we notice here is that predicates can select for definiteness irrespective of the lexical head of the phasal complement. Further evidence that certain predicates select for definite complements comes from the interpretation of bare plurals with non-factive, semi-factive and factive verbs. Following Carlson (1977), the test for kind-reference is whether the statement is downward entailing:

- |   |         |
|---|---------|
| (98) John is imagining/expecting good students.       | EX      |
| Entails that John is imagining/expecting students.    |         |
| (99) I know/remember good students.                   | EX/KIND |
| Can entail that I notice/know/remember students       |         |
| (100) I ignore/deplore/resent bad students.           | KIND    |
| Does not entail that I ignore/deplore/resent students |         |

This parallel makes a unification of the syntax/semantics mapping in clausal and nominal environments doubly desirable, as it suggests that kinds and facts form a natural class: they are referential, involving a filled phase edge. The parallel structure proposed here allows us to capture these clausal/nominal parallels without taking certain embedded clauses to be covertly nominal. The possibility of factive gerunds, too, illustrates our basic claim: that factivity is an instance of the more general phenomenon of referentiality, which cuts across the different lexical domains.

## 6 Conclusions

Human language allows referential-deictic possibilities unparalleled in any non-linguistic system of reference or pointing. The most plausible – perhaps the only available – explanation for this fact is that human language is grammatically structured, unlike non-human animal communication systems. If so, grammar can be functionally viewed as a device of extended deixis, and we expect that its internal organization should reflect this fact. Here we have argued that it does, and that no independent stipulation of objects of reference as primitives is needed, beyond what referential strategies the grammar affords. Specifically, Universal Grammar allows for essentially three such strategies in both the nominal and the clausal domains. If we interpret this fact against a phasal model of grammar, and against a conception of phases as units of reference, it transpires that reference in human language is an ‘edge phenomenon’: it depends

on the extent to which a phase edge is involved in the determination of reference. The more edge-heavy the phase becomes (through Determiner or Complementizer phasal heads, or movement of phase internal material into these positions), the more referential the phase becomes, giving rise to object reference and fact reference in nominals and clauses, respectively. Only outside of argument positions, however, i.e. in the final phase of a derivation, can fully extensional forms of reference be achieved.

## 7 References

- Abels, Klaus. 2010. Factivity in exclamatives is a presupposition. *Studia Linguistica* 64:141–157.
- Abney, Steven P. 1987. The English noun phrase in its sentential aspect, Ph.D thesis: MIT.
- Ambridge, Ben, and Goldberg, Adele. 2008. The island status of clausal complements: evidence in favor of an information structure explanation. *Cognitive Linguistics* 19:349 - 381.
- Arsenijević, Boban, and Hinzen, Wolfram. 2011. On the absence of X-within-X recursion in human grammar. *Linguistic Inquiry*, to appear.
- Basse, Galen 2008. Factive complements as defective phases. In *Proceedings of the 27th West Coast Conference on Formal Linguistics*, eds. Natasha Abner and Jason Bishop, 54-62. Somerville, MA: Cascadia Proceedings Project.
- Bennis, Hans, Corver, Norbert, and Den Dikken, Marcel 1998. Predication in nominal phrases. *The Journal of Comparative Germanic Linguistics* 1:85–117.
- Bentzen, Kristine, Hrafnbjargarson, Gunnar Hrafn, Hróarsdóttir, Þorbjörg, and Wiklund, Anna-Lena. 2007. The Tromsø guide to the Force behind V2. *Working Papers in Scandinavian Syntax* 79:93–118.
- Bentzen, Kristine. 2010. Exploring embedded main clause phenomena: The irrelevance of factivity and some challenges from V2 languages. *Theoretical Linguistics* 36:163-172.
- Berwick, Robert. C. and Chomsky, Noam. 2011. The Biolinguistic Program: The Current State of its Evolution and Development. In *The Biolinguistic Enterprise*, eds. Anna-Maria Di Sciullo and Cedric Boeckx, 19-41. Oxford, Oxford University Press.
- den Besten, Hans. 1981. 'On the interaction of Root Transformations and lexical deletive rules. *Groninger Arbeiten zur germanistischen Linguistik* 20:1-78.
- Betti, Arianna. 2011. Against Facts. Amsterdam: VU University Amsterdam
- Bhatt, Rajesh. 2010. Comments on "Referential CPs and DPs: An operator movement account". *Theoretical Linguistics* 36:173-177.
- Bhatt, Rakesh, and Yoon, James. 1999. On the composition of comp and parameters of V2. In *The proceedings of the tenth West Coast conference on formal linguistics*, 41-51. Stanford.
- Biberauer, Theresa. 2002. Reconsidering embedded verb second: How 'real' is this phenomenon? *Cambridge working papers in linguistics* 8:25-60.
- Borer, Hagit 2005. *In name only*. Oxford University Press.
- Bošković, Željko. 2009. More on the no-DP analysis of article-less languages. *Studia Linguistica* 63:187–203.
- Bošković, Željko. 2010. On NPs and Clauses. Ms. University of Connecticut
- Bošković, Željko, and Lasnik, Howard. 2003. On the Distribution of Null Complementizers. *Linguistic Inquiry* 34:527-546.

- Bühler, Carl. 1934. *Sprachtheorie*: Jena.
- Carlson, Gregory. 1977. Reference to kinds in English, Ph.D thesis: University of Massachusetts.
- Cheng, Lisa Lai-Shen, and Sybesma, Rint 1999. Bare and Not-So-Bare Nouns and the Structure of NP *Linguistic Inquiry* 30:509-542.
- Chierchia, Gennaro. 1998. Reference to Kinds across Languages. *Natural Language Semantics* 6:339-405.
- Chomsky, Noam. 1977. On Wh-Movement. In *Formal Syntax*, eds. Peter W. Culicover, T. Wasow and Adrian Akmajian, 71-132. New York: Academic Press.
- Chomsky, Noam. 2000. *New horizons in the study of language and mind*. Cambridge: Cambridge University Press.
- Chomsky, Noam. 2001. Derivation by phase. In *Ken Hale: a life in language*, ed. M Kenstowicz, 28-53. Cambridge, Mass.: MIT Press.
- Chomsky, Noam. 2008a. Approaching UG from below. In U. Sauerland and H.-M. Gärtner, editors, *Interfaces + Recursion = Language? Chomsky's Minimalism and the view from syntax-semantics*, 1-29. Berlin, New York: Mouton de Gruyter.
- Chomsky, Noam. 2008b. On Phases. In C. Otero et al. (eds.), *Foundational Issues in Linguistic Theory*, Cambridge, MA: MIT Press.
- Cinque, Guglielmo. 1990. *Types of A-bar-dependencies*. Cambridge, Mass. ; London: MIT Press.
- De Cuba, Carlos 2006. The Adjunction Prohibition and Extraction from Non-Factive CPs. In *Proceedings of the 25th West Coast Conference on Formal Linguistics*, eds. Donald Baumer, David Montero and Michael Scanlon, 123-131. Somerville, MA: Cascadilla Proceedings Project.
- De Cuba, Carlos. 2007. On (Non)Factivity, Clausal Complementation and the CP-Field, Ph.D thesis: Stony Brook University.
- De Cuba, Carlos, and Kawamura, Tomoko. 2008. Intensionality and extraction as reflexes of syntactic structure. Paper presented at *ConSOLE VIX*.
- De Cuba, Carlos, and Ürögdi, Barbara 2010. Clearing up the 'Facts' on Complementation. *U. Penn Working Papers in Linguistics* 16.
- Delsing, Lars Olof. 2010. Exclamatives in Scandinavian. *Studia Linguistica* 64:16-36.
- Diesing, Molly. 1990. Word order and the subject position in Yiddish. *Natural Language & Linguistic Theory* 8:41-79.
- Donnellan, Keith S. 1970. Proper Names and Identifying Descriptions. *Synthese* 21:335-358.
- Elbourne, Paul. 2000. E-Type Pronouns as Definite Articles. In *WCCFL 19 proceedings*, eds. Billerey and Lillehaugen, 83-96. Somerville, MA: Cascadilla Press.
- Elbourne, Paul. 2008. Demonstratives as individual concepts. *Linguistics and Philosophy* 31:409-466.
- Emonds, Joseph Embley. 1970. Root and structure-preserving transformations, MIT.
- Emonds, Joseph Embley. 1976. *A transformational approach to English syntax : root, structure-preserving, and local transformations*. New York ; London: Academic Press.
- Emonds, Joseph Embley. 2004. Unspecified Catgories as the Key to Root Constructions. In *Peripheries: Syntactic Edges and their Effects*, eds. David Adger, Cecile de Cat and George Tsoulas, 75-120: Kluwer Academic Publishers.
- Etxepare, Ricardo. 2010. From hearsay evidentiality to samesaying relations. *Lingua* 120:604-627.

- Farkas, Donka. 1992. On the semantics of subjunctive complements. In *Romance Languages and Modern Linguistic Theory*, eds. P. Hirschbueler and K. Koerner, 69–104. Amsterdam/Philadelphia: John Benjamins.
- Grimshaw, Jane. 1979. Complement Selection and the Lexicon. *Linguistic Inquiry* 10:279–326.
- Grimshaw, Jane. 2010. Main Clauses as Arguments. Ms. Rutgers University.
- Haegeman, Liliane. 2006. Conditionals, factives and the left periphery. *Lingua* 116:1651–1669.
- Haegeman, Liliane, and Ürögdi, Barbara. 2010. Referential CPs and DPs: An operator movement account. *Theoretical Linguistics* 36:111–152.
- Halle, Morris, and Marantz, Alec. 1993. Distributed Morphology and the Pieces of Inflection. In *The view from building 20*, eds. Ken Hale and Samuel Keyser, J., 111–176. Cambridge, MA.: MIT Press.
- Heim, Irene, and Kratzer, Angelika. 1998. *Semantics in generative grammar*. Oxford: Blackwell.
- Heim, Irene. 1988. The semantics of definite and indefinite noun phrases. New York; London, Garland.
- Heim, Irene. 1991. Artikel und Definitheit. In *Semantik. Ein internationales Handbuch der zeitgenössischen Forschung*, eds. A. von Stechow and D. Wunderlich, 487–535. Berlin: Walter de Gruyter.
- Heycock, Caroline. 2006. Embedded Root Phenomena. In *Blackwell Companion to Syntax*, eds. Martin Everaert and Henk van Riemsdijk, 174–209.
- Hinzen, Wolfram. 2006. *Mind design and minimal syntax*. Oxford: Oxford University Press.
- Hinzen, Wolfram. 2007. *An essay on names and truth*. Oxford: Oxford University Press.
- Hinzen, Wolfram. 2008. Prospects for an Explanatory Theory of Semantics. *Biolinguistics* 2:348–363.
- Hinzen, Wolfram. 2011. Phases and semantics. In *Phases: the Framework*, ed. Angel Gallego, forthcoming.
- Holmberg, Anders. 1986. Word order and syntactic features in the Scandinavian languages and English, University of Stockholm.
- Holmberg, Anders. 2010. Verb second. To appear in *Syntax - an International Handbook of Contemporary Syntactic Research*, eds. Tibor Kiss and Artemis Alexiadou. Berlin: Walter de Gruyter.
- Hooper, Joan B, and Thompson, Sandra A. 1973. On the applicability of Root Transformations. *Linguistic Inquiry* 4:465–497.
- Julien, Marit. 2010. Embedded clauses with main clause word order in Mainland Scandinavian. Lund.
- Kallulli, Dalina. 2006. Triggering factivity: prosodic evidence for syntactic structure. Paper presented at WCCFL 25.
- Karttunen, Lauri. 1971. Some observations on factivity. *Papers in Linguistics* 4:55–69.
- Kayne, Richard. 1981. ECP extensions. *Linguistic Inquiry* 12:93–133.
- Kempchinsky, Paula. 2009. What can the subjunctive disjoint reference effect tell us about the subjunctive. *Lingua* 119:1788–1810.
- Kiparsky, Carol, and Kiparsky, Paul. 1970. Fact. In *Progress in Linguistics*, eds. Manfred Bierwisch and Karl Erich Heidolph, 143–173. The Hague: Mouton.

- Koster, Jan. 2003. All languages are tense second. In *Germania et Alia: a linguistic webschrift for Hans den Besten*, eds. Jan Koster and Henk van Riemsdijk. PP
- Landau, Idan. 2007. EPP extensions. *Linguistic Inquiry* 38:485-523.
- Larson, Richard. 2002. The grammar of intensionality. In *Logical form and language*, eds. Gerhard Preyer and Georg Peter, 228-262. Oxford: Oxford University Press.
- Leiss, E. 2009. *Sprachphilosophie*. de Gruyter
- Longobardi, Giuseppe. 1994. Reference and proper names. *Linguistic Inquiry* 25:609-665.
- Longobardi, Giuseppe. 2005. Toward a unified grammar of reference. *Zeitschrift für Sprachwissenschaft* 24:5-44.
- Longobardi, Giuseppe. 2008. Reference to individuals, person, and the variety of mapping parameters. In *Essays on Nominal Determination: From morphology to discourse management*, eds. Henrik Høeg Müller and Alex Klinge, 189-211. Amsterdam: John Benjamins.
- McCloskey, James. 2006. Questions and Questioning in a Local English. In *Crosslinguistic Research in Syntax and Semantics: Negation, Tense, and Clausal Architecture*, eds. Raffaella Zanuttini, Héctor Campo, Elena Herburger and Paul H. Portner, 87-126: Georgetown University Press.
- Meibauer, Jörg (1989). Ob sie wohl kommt? Zum Satzmodus von selbständigen Sätzen mit Endstellung des finiten Verbs. In *Studien zur kontrastiven Linguistik und literarischen Übersetzung*, ed. Andrzej Katny, 11-33. Frankfurt am Main: Lang.
- Melvold, Janis. 1991. Factivity and definiteness. *MIT Working Papers in Linguistics* 15:97-117.
- Moro, Andrea. 1997. *The raising of predicates : predicative noun phrases and the theory of clause structure*. Cambridge: Cambridge University Press.
- Mukherji, Nirmalangshu. 2010. *The primacy of grammar*. Cambridge, Mass.: MIT Press.
- Noonan, Michael. 2007. Complementation. In *Language typology and syntactic description*, ed. Timothy Shopen, 52-151. Cambridge: Cambridge University Press.
- Pesetsky, David. 1991. Zero Syntax: vol. 2: Infinitives. Ms. MIT.
- Picallo, Carme 2002. Abstract agreement and clausal arguments. *Syntax* 5:2, 116-147.
- Pietroski, Paul M. 2011. Minimal semantic instructions. In C. Boeckx, ed., *The Oxford Handbook of Linguistic Minimalism*, Oxford University Press, 472-498.
- Postal, Paul. 1966. On so-called 'pronouns' in English. In *Report on the seventeenth annual round table meeting on linguistics and language studies*, ed. F. Dinneen, 177-206. Washington, DC: Georgetown University Press.
- Quer, Josep. 2009. Twists of mood: The distribution and interpretation of indicative and subjunctive. *Lingua* 119:1779-1787.
- Reimer, Marga. 2002. Ordinary proper names. In *Logical form and language*, eds. Gerhard Preyer and Georg Peter, 444-466. Oxford: Oxford University Press.
- Rivero, María-Luisa. 1971. Mood and Presupposition in Spanish. *Foundations of Language* 7:305-336.
- Rizzi, Luigi. 1997. The fine structure of the left periphery. In *Elements of Grammar. Handbook of Generative Syntax*, ed. Liliane Haegeman, 281-337. Dordrecht: Kluwer.
- Ross, John Robert. 1973. Slifting. In *The Formal Analysis of Natural Languages*, eds. Maurice Gross, Morris Halle and Marcel-Paul Schutzenberger, 133-169. Hague: Mouton de Gruyter.
- Russell, Bertrand. 1905. On denoting. *Mind* 14:479-493.

- Schlenker, Philippe. 2005. The Lazy Frenchman's Approach to the Subjunctive (Speculations on Reference to Worlds and Semantic Defaults in the Analysis of Mood). In *Proceedings of Going Romance XVII*.
- Sheehan, Michelle. 2011. Extraposition and Antisymmetry. In *Linguistic Variation Yearbook 2010*, eds. J. van Craenenbroeck and J. Rooryck, 203-254. Amsterdam: John Benjamins.
- Simons, Mandy. 2007. Observations on embedding verbs, evidentiality, and presupposition. *Lingua* 117:1034–1056.
- Storto, Luciana R. . 1999. Aspects of a Karitiana Grammar. Ph.D thesis: MIT.
- Stowell, Tim. 1981. Origins of phrase structure. Ph.D thesis: MIT..
- Strawson, P. F. 1950. On referring. *Mind* 59:320-344.
- Strawson, P. F. . 1961. Singular Terms and Predication. *The Journal of Philosophy* 58:393-412.
- Tomasello, Michael. 2008. *Origins of human communication*. Cambridge, Mass. ; London: MIT.
- Truckenbrodt. 2006. On the semantic motivation of syntactic verb movement to C in German. *Theoretical Linguistics* 32-3:257–306.
- Vikner, Sten. 1995. *Verb movement and expletive subjects in the Germanic languages*: Oxford studies in comparative syntax. New York ; Oxford: Oxford University Press.
- Weerman, Fred. 1988. *The V2 conspiracy : a synchronic and a diachronic analysis of verbal positions in Germanic languages*. Dordrecht, Holland ; Providence, RI, U.S.A.: Foris Publications, 1989.
- Wiklund, Anna-Lena, Bentzen, Kristine, Hrafnbjargarson, Gunnar Hrafn, and Hróarsdóttir, Þorbjörg. 2009. On the distribution and illocution of V2 in Scandinavian that-clauses. *Lingua* 119:1914–1938.
- Zamparelli, Roberto. 2000. *Layers in the determiner phrase*: Outstanding dissertations in linguistics. New York: Garland Pub.
- Zanuttini, Raffaella, and Portner, Paul. 2003. Exclamative Clauses: At the Syntax-Semantics Interface. *Language* 79:39-81.